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THE QUARTERLY JOURNAL OF THE ROYAL ECONOMIC SOCIETY

EDITED BY R. F. HARROD & E. A. G. ROBINSON

ASSISTED BY R. G. O. MATTHEWS

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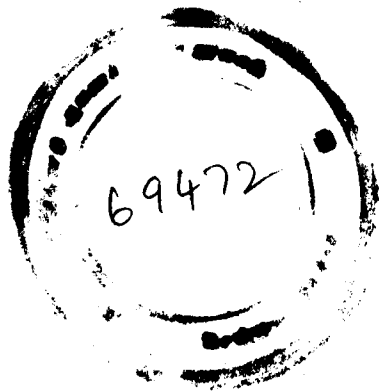
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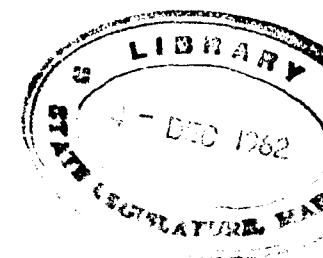
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assisted by
R. C. O. MATTHEWS

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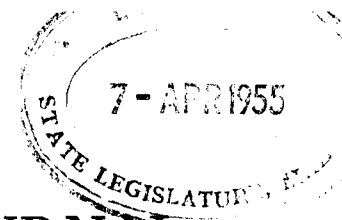
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ECONOMIC GROWTH AND THE PRICE LEVEL

1.0. THE object of this paper is to account for the alternating phases, of twenty to thirty years in length, apparent in the course of economic growth, and particularly to offer an explanation of the associated movements of prices, as these things have presented themselves in the United Kingdom. In 1930 Kuznets¹ named them "secondary secular movements," and summarised earlier discussion. Since then, they have been further studied by Arthur Burns,² Kuznets himself,³ Rostow⁴ and Brinley Thomas.⁵ In the United Kingdom they present the following pattern.

1.1. Their best-known manifestation is the rise and fall of the *wholesale price level* (Fig. 1(a)) by whose turning-points, indeed, the successive phases are usually marked off.⁶

1.2. The *long-term rate of interest*, as shown by the yield of Consols (Fig. 1(a)), has moved in strikingly close sympathy with the wholesale price level. This has become known as the Gibson paradox.⁷

1.3. The movements of the *terms of trade* (Fig. 1(b)) suggest that the rise and fall of wholesale prices were not simply part of a general movement of all prices, but were connected with shifts in the barter rates of exchange at which primary products were available. In one sense, such rates are displayed by the net barter terms of trade.⁸ But since these were so

¹ S. S. Kuznets, *Secular Movements in Production and Prices*.

² A. F. Burns, *Production Trends in the U.S. since 1870*, Ch. V.

³ S. S. Kuznets, *National Income, a Summary of Findings*, II, 5.

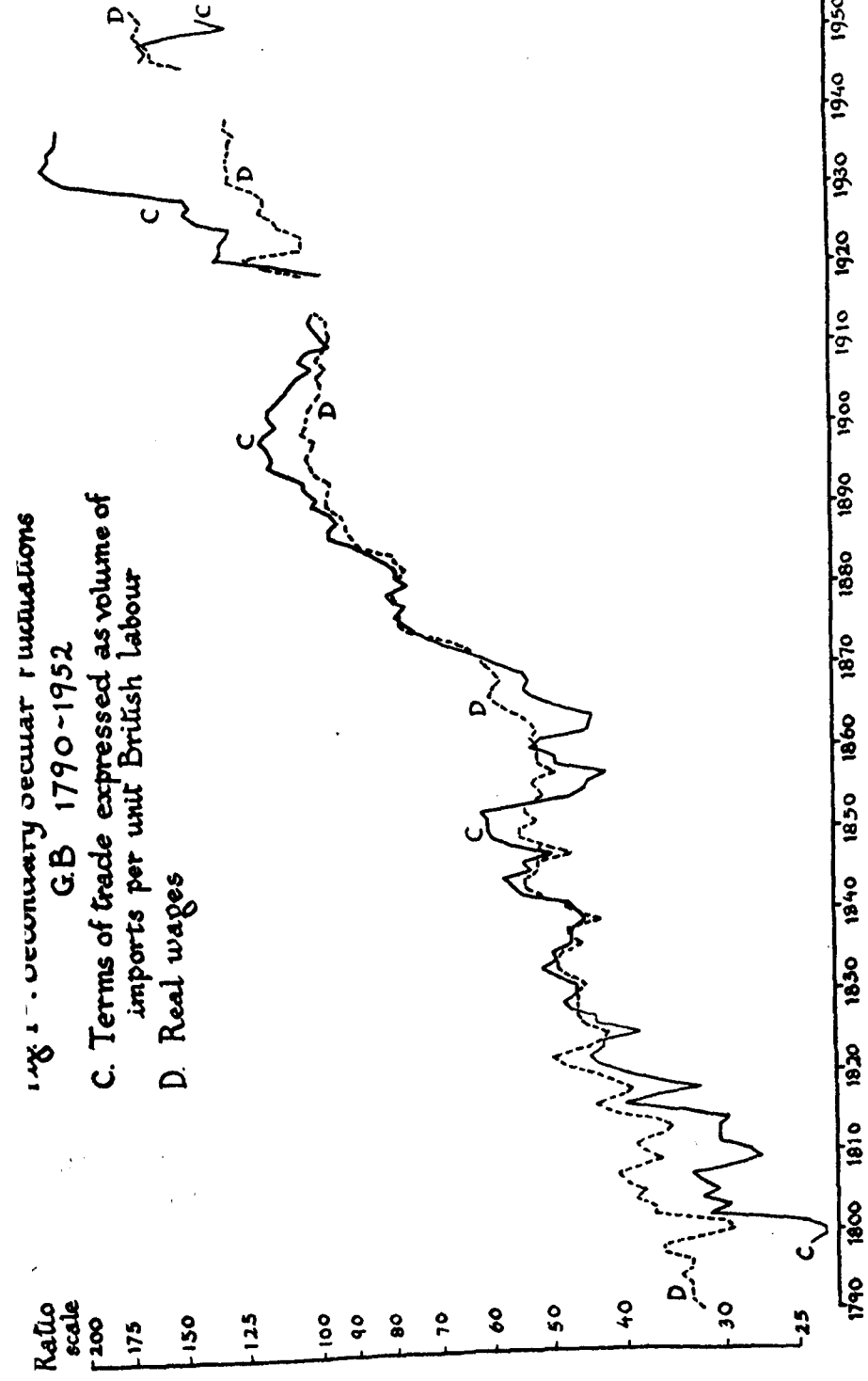
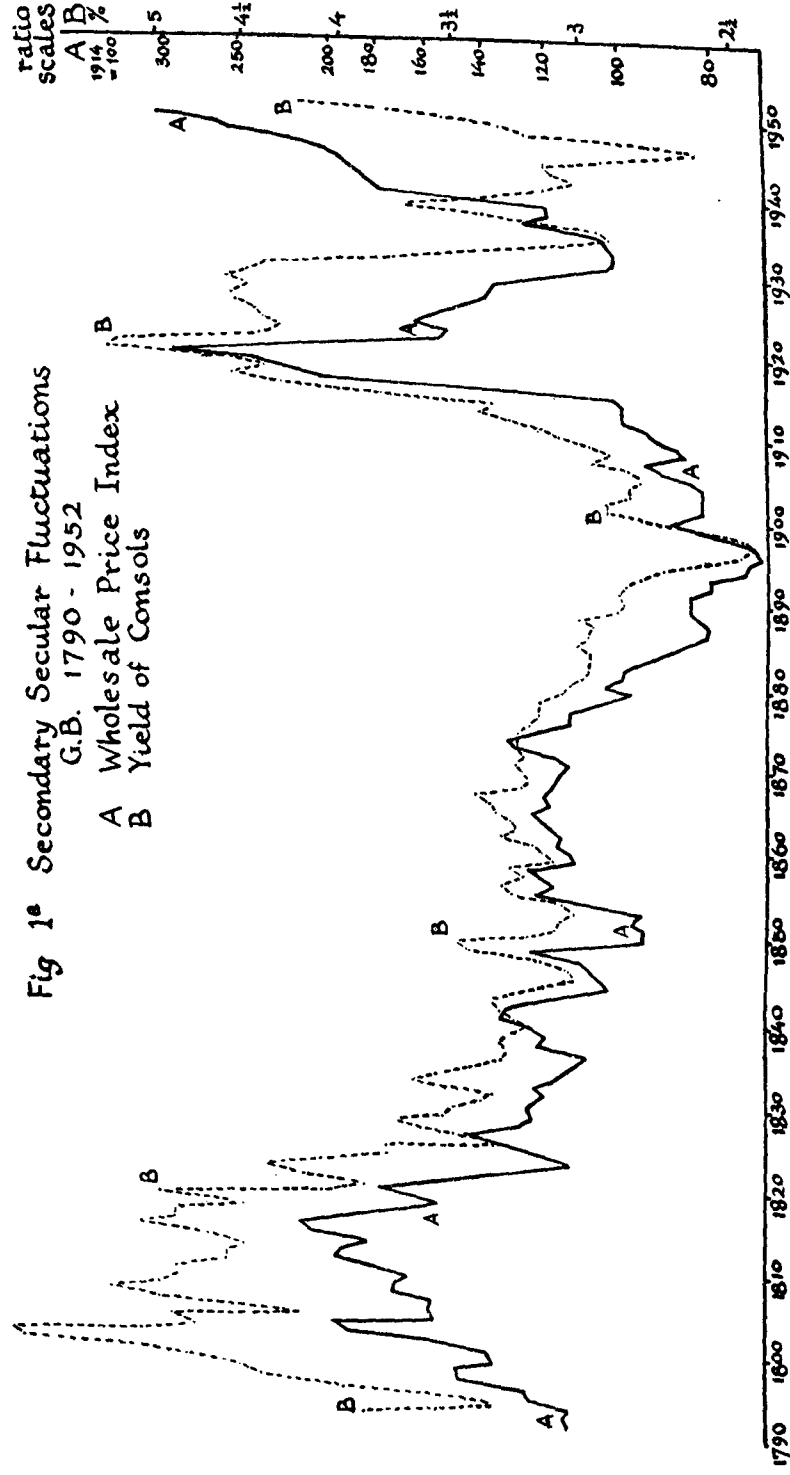
⁴ W. W. Rostow, *British Economy of the Nineteenth Century*, I, 1; *The Process of Economic Growth*, 6. Gayer, Rostow and Schwartz: *The Growth and Fluctuation of the British Economy*, Vol. II, Pt. I, Chs. IV, V.

⁵ Brinley Thomas, "Migration and the Rhythm of Economic Growth, 1830-1913," *The Manchester School*, September 1951; *Migration and Economic Growth* (National Institute of Economic and Social Research, 1954).

⁶ Rostow (*The Process of Economic Growth*, I, 6), gives the phases of the price level as 1793-1815, rising; 1815-48, falling; 1848-73, rising; 1873-96, falling; 1896-1920, rising; 1920-35, falling; 1935 to the present, rising. But all four series in our present Fig. 1 give reason to believe that the downward trend of 1873-96 actually set in from the end of the American Civil War, the boom following the war of 1870 being only an interruption of a process already well under way; cf. Pedersen and Petersen, *An Analysis of Price Behaviour during the period 1855-1913*, p. 136.

⁷ *The Banker's Magazine*, A. H. Gibson, January 1923; E. G. Peake, May 1928. Appendices to the *Report of the Committee on National Debt and Taxation*, 1927: W. H. Coates, Appendix XI, paras. 55, 56. J. M. Keynes, *A Treatise on Money*, Vol. II, Ch. 30 (viii).

⁸ W. Schlote, *British Overseas Trade from 1700 to the 1930's*, Table 26; A. H. Imlah, *Journal of Economic History*, X, 2, November 1950; Debenham's estimates, corrected for import contents of exports, at Table 44 of A. K. Cairncross, *Home and Foreign Investment, 1870-1913*.



much affected by the industrial improvements which raised the amount of manufactures which could be given for the unit of primary products, even at times when this unit could be obtained in exchange for less industrial effort, they do not directly display the terms on which primary products were available to the industrial population. We have therefore taken as our measure of the terms of trade here the rate of exchange between British wage-earners' labour and British imports. Fig. 1(b) shows that the quantity of imports obtainable in exchange for a unit of British labour usually rose when wholesale prices were falling, and fell when they were rising, throughout our 150 years.

1.4. The movements of British *real wages* (Fig. 1(b)) resemble those of the last series, in that they are generally in phase with those of wholesale prices, usually rising faster when prices were falling, and conversely.¹ The closeness of agreement between our terms of trade and real wages is in one sense only to be expected, in that both are derived from the index of money wage-rates, and the index of import prices which we use to get our terms of trade is highly correlated with the index of the cost of living which we use to get real wages. But in another sense the facts that the cost of living depended so much on the cost of imports, and that money wages did not move so as to offset the drifts of change in those costs, are findings about the actual behaviour of the economy.

1.5. The active British foreign investment of 1878-90 came in a time of markedly falling wholesale prices, and in general the movements of foreign investment were more intermittent than those of prices, and their turning-points did not coincide with those of the price level. None the less, it is significant that British foreign investment² was generally highest at times when the trend of wholesale prices was upwards.

1.6. The secondary secular movements are long enough to cover two, three or four trade cycles; but no systematic difference has been found between the cycles that fell within the different movements. In particular, it was not the case that the upward phase of the cycle was stronger, or investment more vigorous, when the secular movement of prices was upward; nor that expansion was cut off by any shortage of money when that movement was downward.³

1.7. Thus, in sum, we recognise the existence of secondary secular move-

¹ See also A. H. Hansen, "Factors Affecting the Trend of Real Wages," *A.E.R.*, March 1925, with note at p. 294, June 1925.

² Rostow, first and third works cited under para. (1.0) above; A. K. Cairncross, *Home and Foreign Investment, 1870-1913*, Table 40, p. 180.

³ Gayer, Rostow and Schwartz, *The Growth and Fluctuation of the British Economy 1790-1850*, Vol. II, Part I, Ch. II, para. 9, and Ch. IV, para. 5. Between 1850 and 1914, both the trade-union unemployment rate and Beveridge's index of construction and instruments (Beveridge, *Full Employment in a Free Society*, Appendix A) suggest a rather higher level of activity in the phase of rising prices down to 1873 than in the twenty years of generally falling prices which followed, but reveal practically no difference between these twenty years and the next phase of rising prices, here taken as running from 1894 to 1914. Burns and Mitchell, in *Measuring Business Cycles*, Ch. 11, look for differences between American business cycles according to their positions within the long waves of activity, as these have been variously defined, and find hardly any.

ments mainly because four important variables show alternating periods of change lasting twenty to thirty years, and these periods are roughly in phase in all four series. They are the wholesale price level, the long-term rate of interest, the terms of trade and real wages. In one phase wholesale prices will be rising, the long-term rate of interest rising, the terms of trade moving less favourably to the British worker, and real wages improving less rapidly; in the next phase the reverse, in all four respects. We noticed also that though British foreign investment was not regularly aligned with price changes, most of its more active years fell within periods of rising prices.

How can we account for these associated movements?

2.0. The traditional explanation of the movements of the price level was expressed by Marshall when he wrote, in his "Remedies for Fluctuations of General Prices,"¹ that "long-period fluctuations . . . are chiefly caused by changes in the amounts of the precious metals relatively to the business which has to be transacted by them, allowance being of course made for changes in the extent to which the precious metals are able at any time to delegate their functions to bank-notes, cheques, bills of exchange, and other substitutes." The movement of the price level, that is to say, depends on the rates of growth not only of (a) the quantity of specie, but also of (b) the business to be transacted, as measured by the flow of payments reckoned at constant prices, and (c) the specie-economising practices. Cassel and Kitchen² set out a striking simplification of this explanation. They calculated the constant rate of growth which would have produced the end-to-end change actually recorded in (a) over a span of years. They then showed a high correlation between the divergences of the actual growth of (a) from this constant rate, and the contemporary movements of the price level, which they treated as uniquely dependent on those divergences; though this could be so only on the implicit assumption that meanwhile all divergences of (b) from the same constant rate of growth were exactly offset by changes in (c). This procedure has been dealt with thoroughly by Phinney,³ and can now be regarded only as a statistical curiosity. But the more complex Marshallian formulation holds the field. For our present purpose its essential assumption is that the stock of gold acts on the price level but is not adjustable to it: hence Marshall's inference, in the paper just quoted, that long-period fluctuations in prices "would certainly be much mitigated if each decade's supply of the metallic basis of our currency could be made uniform—i.e., to grow proportionately to our commercial wants." We believe that this view is mistaken. We do not, of course, deny that a change in the metallic basis or in any other form of the medium of exchange could, and sometimes in the short run did, cause a movement of prices in the same direction; but the evidence obliges us to conclude that in the secondary secular movements of prices the quantity of money played a passive part,

¹ Reprinted in A. C. Pigou, *Memorials of Alfred Marshall*.

² Interim Report of the Gold Delegation of the Financial Committee, Annexes X and XI (*League of Nations, II Economic and Financial*, 1930, II, 26).

³ J. T. Phinney, "Gold Production and the Price Level," *Q.J.E.*, XLVII, 4, August 1933.

adapting itself to the requirements of changes in turnover which were independently initiated. The influence of the quantity of money on the price level, on this view, has for the most part been only secondary, and has been exerted only through the readiness or reluctance with which that quantity adapts itself to changes in turnover; and even here the evidence suggests that its effect was in fact small, that a greater stock of gold would have done little to check a secular fall in the price level, or a smaller to check a rise. The evidence is as follows.

2.1. The world's monetary stock of gold was only a part of the whole stock; in the first half of the nineteenth century it seems to have been about a third, by 1909 it had become a half.¹ Much of the non-monetary stock could have been buried deep, while leaving a substantial amount which could be induced to move from one use to the other; and the new output of each year could be and was divided between the two uses in proportions which varied from time to time.

2.2. The connection between the monetary stock of gold and the quantity of means of exchange in actual use was both indirect and flexible: it was liable to change, and was in fact changed, at many points within the inverted pyramid of the banking system. "Such data as are available show that little or no relation existed between the rate of growth of the gold supply and the rate of growth of either bank reserves or bank notes and deposits. . . . This absence of correlation is especially striking in the period from about 1875 to 1913, when so many of the statistics examined show a relatively constant rate of growth of bank reserves and of bank currency, quite unaffected by variations in gold production or by trends in prices."² Even, moreover, when we reach the quantity of the actual means of exchange, we find that only some of them were at any time held under the transactions motive; the rest, which were probably the greater part,³ were held under the precautionary and speculative motives, and were available to reinforce the circulating balances. It is, to say the least, very hard to believe that in these circumstances a change in the monetary stock of gold would have enforced a change in the flow of spending which would not have come about otherwise.

2.3. The belief that changes in the supply of gold took effect on the movements of the price level can appeal to the coincidence between each of the two big rises in gold output and a turning point in the trend of prices: the first coinciding with the end, about 1848, of the thirty years' fall in prices since Waterloo, and the second with the upturn of prices in the mid-1890s. There is no doubt that these spurts of gold output seemed very important to contemporaries, and that they made an immediate difference to the monetary ease of the City of London. But it is not clear that, even in

¹ Table A of Annex X, *League of Nations, II Economic and Financial*, 1930, II, 26.

² J. T. Phinney, "Gold Production and the Price Level," *Q.J.E.*, XLVII, 4, August 1933.

³ "In practice they (idle balances) are probably many times larger than those being used in income transactions." F. W. Paish, "Open and Repressed Inflation," *ECONOMIC JOURNAL*, September 1953, p. 536.

the short run, it was the change in the monetary stock of gold which caused the upturn of prices, rather than the increase in the demand for British exports: it was on this last that Newmarch¹ laid emphasis in 1857, in his Keynesian analysis of the expansion of "effective demand" (his own term) for the products of the whole world, which spread out from gold-digging as a form of investment.

Yet after the initial outburst of investment in the gold-fields had ended, the effect on prices persisted: uncertainly in the 1850s and 1860s, when we do not know how far some underlying tendency of wholesale prices to fall back was overpowered by the many wars, but clearly in the fifteen or twenty years down to 1914; and it is natural to ask whether this was not caused by the rise at these times in the world's monetary stock of gold, which doubled in the ten years after 1848, and again in the twenty years after 1890. But if it was these accumulating reserves that raised prices by way of easy money, why in each of these periods did the rate of interest rise? This is a vital point, to which we recur below. Nor is it necessary to suppose that the gold was brought to passive bankers, whose reaction to it was mechanical and according to fixed reserve ratios. We have noticed already the lack of a regular relation between the growth of gold reserves and of money held by the public; and we have Keynes's observation² that Central Banks "are all natural gold-hoarders, and are always keen to increase their stocks of it whenever they find themselves in a position to do so without inconveniencing the business world."

2.4. A change in prices brought about from the side of money must be expected to raise most product and factor prices, at any rate those which can be re-negotiated, in much the same degree, save only for such shifts in relative values as are always going on; but in fact the British terms of trade (para. (1.3) above) suggest strongly that the movements of wholesale prices were systematically connected with changes in the terms on which primary products were available to the industrial worker.

2.5. The secondary secular movements of wholesale prices persisted through two, three or four trade cycles, so that cyclical phases of tight money and falling prices occur in periods of rising price trends, and conversely. If in fact these price trends were themselves also due to changes in the supply of money, it is hard to see how they could exert themselves except, so to speak, by tilting the trade cycle, by making the phases of monetary ease and expansion rather longer or further-reaching when the price trend was rising than when it was falling, and correspondingly adjusting the phases of recession. But the evidence summarised in (1.6) above shows that there was no such systematic difference in the British trade cycles of 1790-1914.

2.6. If the price trends were caused by changes in the supply of money, we should expect rising prices to go with easy money and low interest rates, and falling prices with the contrary. In fact, the record shows it was the

¹ Tooke and Newmarch, *A History of Prices*, Vol. VI, Part VII, Sec. 11, p. 212, and Sec. 14, p. 226.

² *Treatise on Money*, Bk. VI, Ch. 30, p. 205.

exact opposite that happened: the rate of interest rose and fell with wholesale prices, not against them. This is "the Gibson paradox," but it is no paradox if we give up the assumption that the supply of money was exerting pressure on the flow of payments, and suppose it was the other way round.¹ When the movements of wholesale prices and the long-term rate of interest are compared in Fig. 1(a), the two post-war phases which we may call the Cunliffe and Dalton phases stand out as exceptional: in both (though in opposite directions) the initiative came from the supply of money, in both the price level and the rate of interest moved in contrary senses. This strengthens the inference that when they moved in the same sense, as they generally did elsewhere, the initiative came not from the supply of money but from the demand for it.

2.7. Thus there are three reasons which permit us, and three which induce us, to believe that the secular movements of prices were not due to changes in the supply of gold. The monetary stock of gold was not physically limited but was never more than half the whole stock; there seems to have been no systematic connection between changes in monetary stocks of gold and in the quantity of money in the hands of the public; an alternative explanation can be given of the coincidence between the two spurts of gold output and the changed direction of price movements. More than this, the price movements were not those of a *numéraire* but were regularly bound up with movements of the terms of trade; there was no systematic difference between the trade cycles in the different phases of price movement; and the long-term rate of interest moved not in the contrary direction to the price level but in the same.

If, then, the origin of the secular movements of prices does not lie in gold, where does it lie?

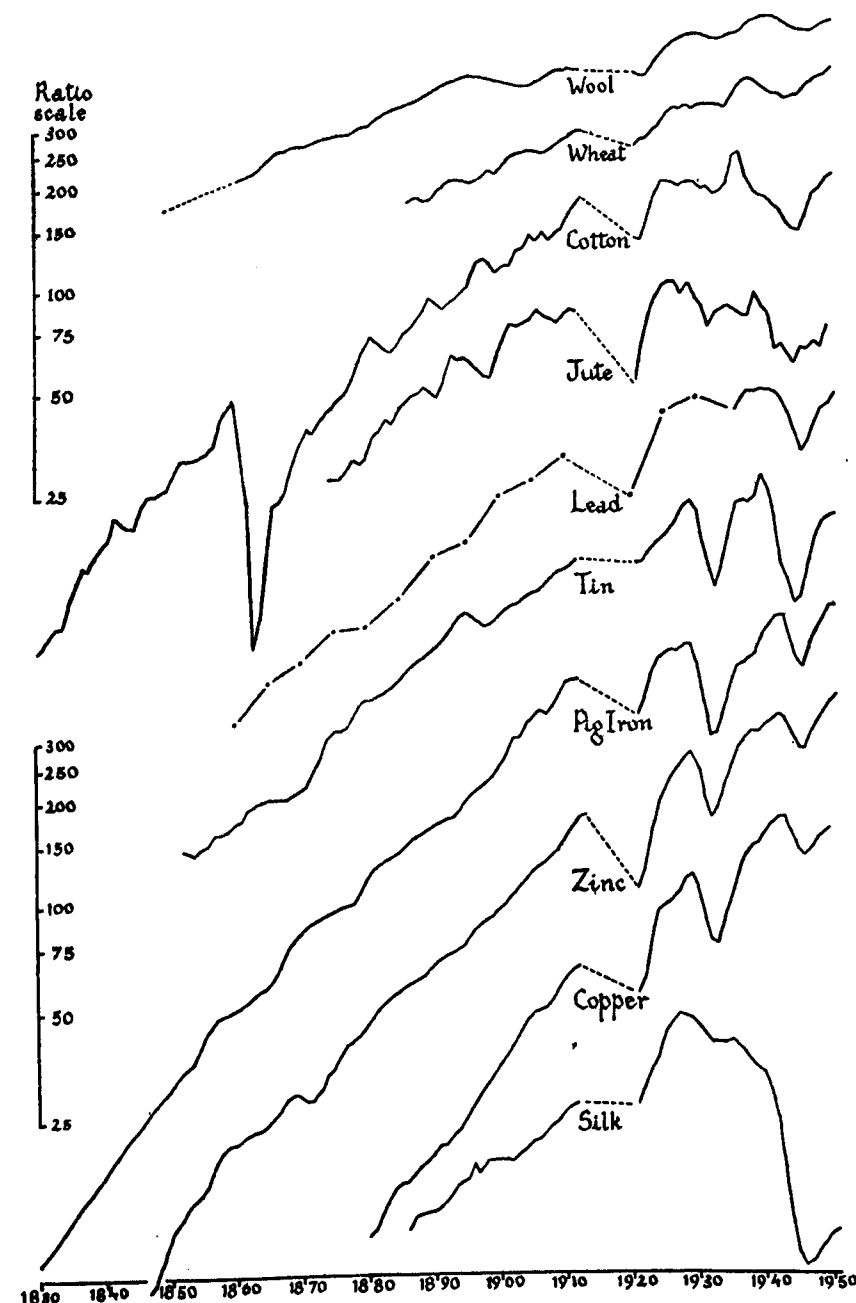
3.0. From his study of the annals of the British economy since 1790 Rostow has developed an explanation built on changes in the rate of growth of the output of final products,² or, latterly, of primary products,³ relatively to that of effective demand, the periods of rising prices being broadly those of a reduced rate of growth in the flow of products into the market, and conversely. Any explanation of this kind is exposed to the objection that what records we have of the growth of the outputs of primary products do not show the changes it supposes. These records, whose sources are described in the Appendix to this article, are illustrated in Fig. 2. What is required is a general check to rates of growth at the time of the great upturn of wholesale prices in the mid-nineties, and a generally higher rate of growth to accompany the weakness and decline of those prices in the inter-war years. But we do not find such changes. Of the ten products in Fig. 2

¹ Cf. para. 9 of Phelps Brown and Weber, "Accumulation, Productivity and Distribution in the British Economy, 1870-1938," *ECONOMIC JOURNAL*, June 1953, with the acknowledgment due to Dr. A. W. H. Phillips.

² W. W. Rostow, *British Economy of the Nineteenth Century*, Chs. I, III, IV, VII. A. D. Gay, W. W. Rostow and A. J. Schwartz, *The Growth and Fluctuation of the British Economy, 1790-1840*, Vol. II, Part I, Chs. IV, V.

³ W. W. Rostow, *The Process of Economic Growth*, Ch. 6.

Fig. 2: Total Output of some Primary Products.
[3-yr. av. of cyclically-cleared series]



only wool, and to a less extent jute, move conformably. The others are remarkably alike in showing no check to the rate of growth through the nineties and on to 1914; and, save for silk, their outputs in 1930 were all lower than they would have been if the pre-war rate of growth had been kept up. The inference is strong that the general movements of prices arose from changes in the rate of growth not of supply but of demand.

4.0. We can picture changes in the growth of real demand as coming about in the following way. With a given barter rate of exchange at which primary products are available, there will be at any one time a certain volume of primary products which the industrial world will demand, and another which the rest of the world will supply. As time passes both volumes are growing. If at our starting point they are about equal, and they grow at much the same pace, then the barter rate will change little; but if the demand begins to grow more rapidly while the supply rises no faster than before, then the barter rate will move in favour of the primary producer. What governs the rate of increase of the demand, and can we see, for instance, why it should have caused a spurt in the mid-nineties? The governing factor must be industrial capacity: in part directly, as the demand for leather grows with the capacity of the boot-and-shoe industry; and, more generally, because what the industrial world has to buy with is ultimately its own power to produce. But it is not at first apparent why the growth of industrial capacity should have quickened in the mid-nineties. On the contrary: the records of industrial output usually show a fairly constant rate of growth, and for some countries there is evidence that "the climacteric of the 1890s" went the other way, that the growth of output, if not of equipment, was checked about this time.¹ It is, however, possible for constant rates of growth of capacity in the separate economies to compose an aggregate demand whose rate of growth varies greatly; and it is this aggregate or world demand that governs the markets for primary products, and so concerns us here.

4.1. The explanation² is that if two series growing at different constant rates are added together, their sum grows at an increasing rate. This holds without regard to their relative sizes at the outset. Let us take the capacities of the cotton industries of two countries, which we will call America (A), and Britain (B). At our starting point the British industry has a capacity requiring 10 units of raw cotton (C) annually, and this capacity is growing at 2% per annum; the capacity of the younger American industry is as yet only for 1 unit, but is growing at 10% per annum. The capacities of the two industries will then be represented by the lines AA, BB in Fig. 3, and their sum (which we will take to represent the world demand for cotton) will grow as shown by WW. At first the British industry accounts for ten-elevenths of the world capacity, whose rate of growth is consequently close

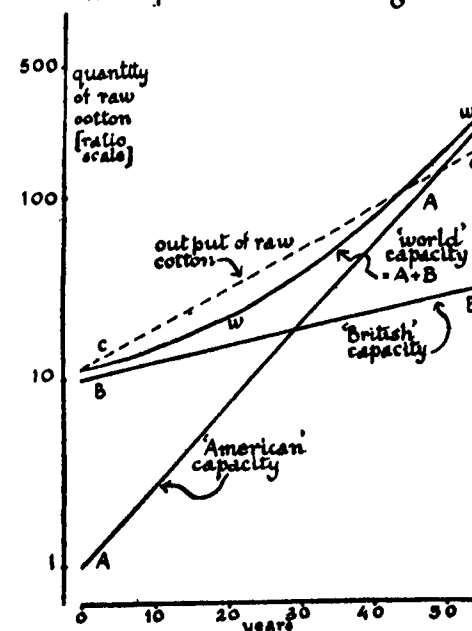
¹ Phelps Brown and Handfield-Jones, "The Climacteric of the 1890s," *Oxford Economic Papers*, October 1952.

² I claim the privilege of a senior partner to state that the argument of this paragraph is due wholly to S. A. Ozga. E.H.P.B.

to the British 2%; but as time passes the American industry forms an ever-greater part of the whole, whose rate of growth therefore comes nearer to the American 10%. Suppose that the supply of raw cotton was at the outset just the 11 units which the world industry required, and that this supply rose at 5% per annum: its movements are shown by CC. At first the supply rises faster than capacity, but after about twenty-five years the two rates are the same, and thereafter world capacity is overtaking the growth of supply.

But clearly the actual course of events could never be such as Fig. 3

Fig. 3: Illustration of changing effect on price of constant potential rates of growth



shows: the disparity of demand and supply would soon set up too much pressure. The rates of growth which the lines AA, BB, CC show are those potential rates which may be expected as part of the organic growth of the whole economy in population, capital and technique, but the actual growth can be speeded up or slowed down by changes in the rate of return to the particular activities concerned, and in this way potentially disparate rates of growth can be adjusted to one another. Suppose first, always for the sake of exposition, that the task of adjustment is borne wholly by supply. Then the output of raw cotton will have to follow not CC but WW. The tendency to grow along CC will have to be held back for some time by prices which must become successively lower as the extent of the divergence to be enforced increases. But then we reach a stage in which the slope of WW is as great as that of CC, the world capacity is rising as fast as the potential rate of growth of supply, and the price of raw cotton need no longer fall;

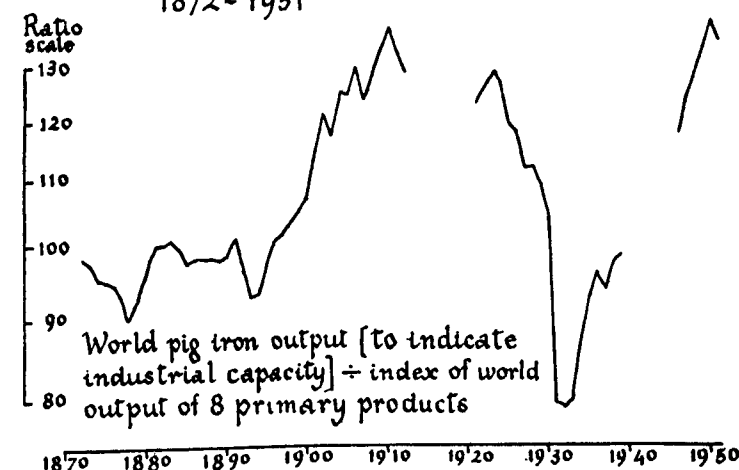
and after that capacity begins to grow faster than supply, and the price of raw cotton must rise progressively. So after a period of pressure to slow down the growth of the output of raw material, by falling prices, we have one of pressure to speed it up, by rising prices; and this without any increase in the potential rates of growth of industrial capacity, or check to that of raw material output. The same effect appears if, alternatively, we suppose that the task of adjustment is borne wholly by industrial capacity. The actual output of raw cotton now follows *CC*, and the two industrial capacities must follow curves which rise more steeply than *AA* and *BB* at first, but are concave downwards, and after a time turn back to *AA* and *BB*: for such are the curves which (if the adjustment is divided between the two industries proportionally to their sizes) will sum to the line *CC*. To stimulate a rate of industrial expansion greater than the potential, the price of the raw material must fall, and continue to fall so long as the extent of the divergence must widen; but then the need for stimulus ends, and the potential rate of growth of the industries is sufficient for the moment to absorb the increase in the output of raw materials, until the industries begin to try to grow too fast for their supplies, and the price of raw cotton must rise progressively to put the brake on them. In practice, we shall expect a combination of the two kinds of adjustment we have looked at separately: the movements of the price of raw cotton will react on the rate of growth both of raw cotton output and of industrial capacity, checking one while it stimulates the other. But however the adjustment is shared, the turning point will appear. Propensities to grow at constant rates generate fluctuations of prices.

4.2. This example shows how a turning point in economic history can be generated out of constant propensities to grow, and without the intervention of any of those unpredictable and irregular changes which are commonly called the historical as distinct from the analytic factors in an economic problem. In principle it is not unrealistic, and the relations it illustrates may have played a part in the climacteric of the 1890s. But it is far from providing a general explanation of secular fluctuations. It cannot generate a downturn of prices. Once capacity tends to grow faster than raw material output, prices rise without limit; if raw-material output grows faster than even the fastest component of capacity, they fall without limit. But, in the actual world, downturns of prices have occurred, and price trends have not risen or fallen without limit. The evident explanation is that the potential rates of growth, both of raw material output and of industrial capacity, are changed from time to time by the march of events. The first has been checked by the exhaustion of resources, and raised by the opening of new regions and by technical advances in transport, cultivation and extraction. The second has been checked by upheavals during and after wars, and raised when nations have bestirred themselves and entered upon a new course of industrialisation.

4.3. Can we then provide any indication of the tendencies of growth of industrial capacity, relatively to those of primary products? Some indication is available if we can assume that in the long run the production of pig

iron is roughly proportional to the size of industrial capacity, while its fluctuations in the short run indicate (though not proportionally) the extent to which that capacity is utilised. A comparison of this production with that of a composite index of some outputs of primary products will then suggest the extent to which these outputs were keeping pace with the demand: not of course that the *trend* of the ratio through any period is significant, because this is bound to be affected by divergences between pig-iron production and industrial capacity, and between this capacity as a whole and that part which uses the particular raw materials which our index covers; but that any marked *change* in the trend will suggest a corresponding change in the scarcity of primary products. The results of such a comparison, using the world output of pig iron less Russia, are shown in Fig. 4. We notice the successive contrasts between 1872-94, 1894-1912, 1921-39 and

Fig. 4: Scarcity of Primary Products
1872-1951



1946-51. These are not inconsistent with our account of the origin of the movements of the wholesale price level.

5.0. We can now offer our own explanation of the secondary secular movements.

5.1. The relation between the rates of growth of world industrial capacity and the output of primary products has passed since 1815 through alternating phases of some twenty or thirty years in length. When industrial capacity tends to grow more quickly than the output of primary products, a shortage of these products is felt, and their prices rise, in terms of money, and also relatively to the price of industrial effort. When industrial capacity tends to grow more slowly than the output of primary products, the opposite effects follow. We can at present regard the observed length of these phases only as a fact of their epoch of history, and not as a property of the processes of growth which is likely to persist as long as growth continues.

5.2. When a phase of shortage of primary products sets in, the industrial

economies experience a rise in wholesale prices. This spreads through the economy: rises in the cost of raw materials raise the prices fixed for final products; the rise in the cost of living moves wage-earners to press for rise in money wages; with more or less lag, other money incomes are raised to maintain customary differentials, and this causes further rises in costs and prices. Where sellers fix their prices, their decisions are affected not only directly, through the rise in prime costs, but also indirectly, through a change in their valuation of the risk they take when they put a price up. At a time when prices of raw materials, and wages, are known to be generally rising and when consequently such changes in price as other sellers announce are usually upward, the risk appears smaller that to raise one's own price will leave one isolated and exposed, out of line with one's competitors and with the expectations of one's customers. Decisions in this region of price-making are taken in uncertainty, and depend on expectations. The conspicuous movements of wholesale prices are a magnet which draws the expectations of many men into line with one another. A market environment¹ forms each now believes that the trend is if anything upwards, because he thinks that that is what the others believe; and the belief justifies itself.

It must not be thought that this process is necessarily inhibited by the supply of money. There is no doubt that a restricted supply of money can stop prices from rising, but the evidence shows that actual restrictions have not usually been severe enough to do so: the quantity of money in circulation has adapted itself to independently originated increases in the flow of payments. The resistance to adaptation has been sufficient only to raise the long-term rate of interest gradually as the upward trend goes on.

The rise in the prices of the imports of industrial communities will make their balances of payments more adverse than they would have been otherwise, but Paish² has pointed out that for Great Britain at least this did not impose much restraint on the flow of internal payments, because the primary producers kept much of their accruals in sterling, and did not hold much of this idle. At the same time the primary producers' banks, with higher reserves and more prosperous customers, expanded credit. So for the community of the industrial economy and the primary producers together, a rise in wholesale prices did not merely transfer money income from one sector to the other, but raised the sum of income in the two; and similarly a fall of wholesale prices lowered it. "When 'customer' countries are enjoying favourable balances of payments, incomes in the world as a whole tend to rise, while when their balances are unfavourable world incomes tend to fall."

All these reactions to a rise in wholesale prices appear in the opposite direction when wholesale prices fall.

¹ Phelps Brown and Hart, "The Share of Wages in National Income," *ECONOMIC JOURNAL*, June 1952, para. 17.

² F. W. Paish, "Open and Repressed Inflation," *ECONOMIC JOURNAL*, September, 1953, p. 543. The point was made previously in Section VI of the same author's "Banking Policy and the Balance of International Payments," *Economica*, November 1936; reprinted in his *The Post-war Financial Problem* (1950).

5.3. The argument has already suggested the connection between the secondary secular movements in wholesale prices, the terms of trade and the rate of interest; it remains to bring in those in the real wages of the industrial economy. When a phase of shortage of primary products sets in, the rise of real income must be checked, most of all for the wage-earners, whose 'basketful' contains the highest proportion of primary products. Rises in money wages might reduce this impact, and bring about some redistribution of income from other sectors, were it not that, in the soft market environment which is now developing, rises in money wages only raise costs and prices throughout the system, and there is no squeeze of other shares, save for some transfer from those whose money incomes lag. An insufficient rate of growth of raw-material supplies must check the growth of processing equipment: to entrepreneurs this check appears as a rise in costs keeping pace with rising prices, and it may be reinforced, as the rate of interest rises, by a worsening of the terms on which capital can be raised. Some home investment may none the less be diverted to house building, but investment in primary production will become attractive, and a larger part of the accumulation of the industrial economy will take place beyond its own bounds. Thus a period which superficially is one of prosperity, with ever-rising money totals of turnover and income, and a comfortable sense of the ability to bear some extra costs without embarrassment, is really one of comparative stagnation, because a community such as ours cannot raise its standard of living much faster than its intake of the basic materials.

When primary products become abundant, these features of the phase of shortage are all reversed: a time of downward pressure on prices, of a hard market environment and talk of depression is actually one of more rapid advance in the standard of living, in the wage-earners' standard of cost of all.

6.0. In sum, it appears that monetary changes have done little to cause or control the movements of prices. The long-period falls of prices were not due to shortage of money, and when the trend set the other way, our monetary institutions provided the needed means of payment. This was so before ever a moral obligation to maintain employment was accepted, and we cannot expect greater ruthlessness in the future. It remains true that a big enough change in the quantity of money can push the system over into inflation or deflation. It is also true that publicised changes in monetary policy, so long as the reactions to them continue to follow conventional lines, will influence expectations; and that changes in the rate of interest will affect some investment decisions. But the prospects of controlling price movements flexibly by monetary policy appear much poorer than would be inferred from the view which ascribes causal primacy to changes in the quantity of money; though not poorer, perhaps, than is really assumed in practice to-day, when "the struggle against inflation" would be needless if all that had to be done was to regulate the quantity of money.

This conclusion is of much importance to the United Kingdom, which is not only shares in any general contemporary tendency to a wage-price spiral,

but is specially exposed to that spiral being set off by a rise in the cost of its imports. It appears that we cannot rely on central controls to do just so much as is necessary to restrain such tendencies, because the source of these lies not in a monetary equation but in the consensus of opinion of thousands of free agents. In these conditions the possibility of control is bound to depend on the understanding and responsibility shown by business-men and trade unionists generally. Given this, we are not solely at the mercy of the terms of trade, but have two ways in which to meet an adverse movement. First, the terms of trade which matter are not the net barter terms, but the quantity of imports which can be gained per unit of British effort, and each rise in productivity which increases our output of goods per man hour makes it easier for us to meet a demand from the world market for more British goods per unit of our imports. Second, it can become generally recognised, and an axiom of the public interest, that a rise in the prices of our imports, with the consequent rises in the cost of raw materials and the cost of living, must be regarded for the purpose of price-fixing and wage-fixing decisions as distinct in kind from other rises in costs, and as constituting a burden to be fairly shouldered rather than a charge to be automatically passed on.

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APPENDIX

Statistical Sources and Methods

FIG. 1(a): WHOLESALE PRICE LEVEL.—1790–1850: Gayer, Rostow and Schwartz, *The Growth and Fluctuation of the British Economy*, 1790–1850, Vol. I, Pt. III, Ch. I, Table 39. 1850–1924: Jevons's index 1850–60, Sauerbeck's 1860 onwards, as given in Appendix A, Table II, in Layton and Crowther, *Introduction to the Study of Prices*. 1924–53: *Board of Trade Index*, old series, all items.

YIELD OF CONSOLS.—1790–1830: T. S. Ashton, "Some Statistics of the Industrial Revolution in Great Britain," Table I, in *The Manchester School*, XVI, 2, May 1948; supplemented by Gayer, Rostow and Schwartz, *op. cit.*, Vol. I, pp. 47, 54, 221. 1830–50: Gayer, Rostow and Schwartz, *op. cit.*, Vol. I, pp. 221, 259, 289, 320. 1851–59: W. Page (ed.), *Commerce and Industry*, Table 120. 1860–1939: Phelps Brown and Hopkins, "The Course of Wage-rates in Five Countries, 1860–1939," Tables Id, IID, in *Oxford Economic Papers*, June 1950. 1939–present: *Annual Abstract of Statistics*.

FIG. 1(b): VOLUME OF IMPORTS OBTAINABLE PER UNIT OF BRITISH LABOUR.—(a) Index of money wage-rates (earnings from 1939), divided by (b) index of prices of British imports. (a) 1790–1850: Index made from following series, gaps in which were filled by rough estimate to complete annual entries; series combined with following weights, chosen in light of weights proportional to numbers of employees given by Bowley for 1840 in Table II of Appendix to his *Wages in the 19th Century*: Total 20; Agricultural 7, Industrial 13; the Industrial

divided, 1790–1805, into Building 5, Engineering 6, Printing 2; 1806–50, Building 3, Engineering 4, Printing 1, Cotton 5. *Agriculture*.—Bowley, *J.R.S.S.*, September 1899, Table at p. 562; weighted av. of England and Wales (6) and Scotland (1). *Building*.—Bowley, *J.R.S.S.*, March 1901, p. 112, index for Great Britain 1830–50, carried back on basis of series for London only at p. 107. *Engineering and Ship-building*.—Bowley and Wood, *J.R.S.S.*, March 1906, p. 190; unreliable before 1824. *Printing, compositors*.—Bowley and Wood, *J.R.S.S.*, December 1899, p. 708, Table I. *Cotton, factory operatives*.—G. H. Wood, *J.R.S.S.*, June 1910, Table 41. 1850–60: G. H. Wood, index for workman of unchanged grade, *J.R.S.S.*, March 1909, p. 102. 1860–1939: Phelps Brown and Hopkins, *loc. cit.* 1939–53: Ministry of Labour six-monthly wage census, average weekly earnings, all workers (*Ministry of Labour Gazette*). (b) From 1801: Table 26 of W. Schlote, *British Overseas Trade from 1700 to the 1930s*; carried back to 1798 by splicing with import price index given by A. H. Imlah, *Journ. Econ. Hist.*, November 1950.

REAL WAGES.—(a) above, divided by (c), index of cost of living. This index obtained, 1790–1860, by calculating linear regression of Bowley's cost of living index (*Wages and Income in the U.K.*, Table VII, p. 30) through 1880–1913 on the Jevons-Sauerbeck index of wholesale prices (Layton and Crowther, *Introduction to the Study of Prices*, Appendix A, Table II), and applying this regression to the index of wholesale prices obtained as above. 1860–1939: Phelps Brown and Hopkins, *loc. cit.* 1939–53: R. G. D. Allen, *Bulletin of London and Cambridge Economic Service*, February 1949, and tables in later Bulletins.

FIG. 2.—General source for 1937–52, *Commodity Year Books (CYB)*, published by the Commodity Research Bureau, N.Y. Outputs are those of the whole world, so far as recorded, except where stated below. We removed cyclical fluctuations down to 1937 from those series in which they were evident, viz., copper, jute, pig iron, silk, by the following method. Each specific cycle was divided into nine equal periods, and where the boundary between two of these periods fell within a year the output of that year was distributed between them, so that a total output within each period could be estimated. The cyclical movement shown in the successive nine-period groups was then removed as if it were a season fluctuation. The corrected period entries were then regrouped by years. We smoothed the cyclically cleared series, and the other six series (except when they were five-yearly only), by taking a three-year moving average.

Sources for particular materials:

(1) COPPER.—1879–1930: E. L. Knight, *Secular and Cyclical Movements in the Production and Price of Copper*, University of Pennsylvania Press, 1936, p. 147. 1931–51: *CYB*, 1942, p. 57; 1950, p. 81; 1952, p. 94; 1953, p. 103.

(2) COTTON.—Output that of the United States alone through 1901; spliced at 1902 with index of world output. 1830–1902: *Historical Statistics of the U.S.A. 1789–1945* (Bureau of the Census, 1949), p. 108. 1902–32: J. A. Todd, *The Marketing of Cotton* (1934), p. 235. 1932–37: Imperial Economic Committee, *Industrial Fibres* (1939). 1937–51: *CYB*, 1950, p. 86; 1953, p. 118.

(3) JUTE.—From 1873 Indian exports only, spliced at 1892 with Indian crop, which in turn is spliced at 1922 with world output. 1873–92: *Review of the Trade of India* (Government of India, yearly). 1892–1922: *Area and Yield of Certain Principal Crops* (Government of India). 1922–37: *International Yearbook of Agriculture* (International Institute of Agriculture). 1937–51: *CYB*, 1950, p. 44; 1953, p. 58.

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(4) LEAD.—1860–1935 (five-yearly only): Berg, Friedensberg and Sommerlatte, *Blei und Zink* (Stuttgart, 1950), pp. 78–9. 1935–52: *CYB*, 1950, p. 174; 1952, p. 196; 1953, p. 199.

(5) PIG IRON.—1830–1913: Sum of outputs in five countries: (a) the United Kingdom.—*Commerce and Industry* (ed. W. Page, 1919), p. 180. (b) the United States.—*Historical Statistics of the U.S.A. 1789–1945* (Bureau of the Census, 1949), p. 4. (c) Belgium. S. S. Kuznets, *Secular Movements in Production and Prices* (N.Y., 1930), p. 450. (d) France. Kuznets, *op. cit.*, p. 501. (e) Germany. H. Marchand, *Säkularstatistik der deutschen Eisenindustrie* (Essen, 1939), pp. 115–19. 1913–37: *Statistical Yearbook* (League of Nations)—World, excl. U.S.S.R. 1937–51: *CYB*, 1950, p. 161; 1952, p. 184; 1953, p. 188.

(6) SILK.—World output of exportable silk, through 1936; thereafter total world output. 1873–83 (five-yearly): E. Flügge, *Rohseide* (Leipzig, 1936), p. 109. 1885–1937: Chabrier, Morel et Cie, *Silk Report* (Lyons). 1937–51: *Commonwealth Economic Committee Reports*, 1948, p. 68; 1953, p. 65.

(7) TIN.—1851–1937: International Tin Research Bureau, *Statistical Yearbook* (The Hague, 1939), p. 15. 1937–52: *CYB*, 1950, p. 272; 1952, p. 231; 1953, p. 319.

(8) WHEAT.—1885–1932: M. K. Bennett, "World Wheat Crops 1885–1932", *Stanford Wheat Studies*, Vol. IX, pp. 239–74. 1932–37: *League of Nations Statistical Yearbook*. 1937–51: *CYB*, 1950, p. 288; 1953, p. 339.

(9) WOOL.—1850, 1860–99: W. Senkel, *Wollproduktion und Wollhandel im 19^{ten} Jahrhundert* (Tübingen, 1901), p. 25. 1899–1900 (for link only): G. Blau, "Wool in the World Economy," *J.R.S.S.*, 1946, p. 228. 1900–36: T. A. Hamilton, *A Statistical Study of Wool Prices* (Texas, 1938), p. 56. 1936–37: Imperial Economic Committee, *Industrial Fibres* (1939), p. 41. 1937–52: *CYB*, 1950, p. 304; 1952, p. 359; 1953, p. 357.

(10) ZINC.—1845–1913: sum of outputs in Belgium, France, Germany and the United States, in S. S. Kuznets, *Secular Movements in Production and Prices* (N.Y., 1930), pp. 458, 509, 479, 382. 1913–37: *Yearbook of the American Bureau of Metal Statistics* (N.Y.). 1937–52: *CYB*, 1950, p. 311; 1953, p. 362.

FIG. 4.—(1) Output of pig iron, as under Fig. 2, cyclical pattern removed down to 1937, and smoothed by three-year moving average. This divided by (2) combined index (with equal weights) of outputs of some primary products, viz., all series of Fig. 2 except pig iron and lead; wheat included only from 1885.

INDUSTRIAL EUROPE'S TERMS OF TRADE ON CURRENT ACCOUNT, 1870–1953¹

Using existing series, it is possible to construct, after a fashion, an index of the terms of trade of Industrial Europe on current account. This is intended to cover the development of the unit values or prices of services which enter the balance of payments, as well as those of merchandise trade.

The argument for combining the terms of trade of a number of countries into a single index is self-evident. For lack of other data, the assumption is frequently made that British terms of trade are representative of those of Industrial Europe. The increased availability of other national indexes in Europe, however, makes it more and more possible to dispense with this dubious statistical crutch.

The justification for extending the concept of the terms of trade to include services along with merchandise trade is less immediately obvious. Just as for many countries the balance of trade is an adequate approximation of the balance of payments on current account, so the price basis for dealings with foreigners is usually taken as indicated by the terms of trade of merchandise exports and imports. In a country like Norway, which earns 40% of its income from abroad from shipping, however, the necessity to include services is clear. To the extent that the prices of services behave differently from other export prices, the merchandise terms of trade are not very meaningful.

Even in less exceptional cases, however, the usual terms of trade (exports, f.o.b.; imports, c.i.f.) are likely to be misleading. It has widely been recognised that the development of the terms of trade of the United Kingdom cannot be taken as the mirror image of those of Britain's customers. For the change in the price relationships at the British border will not be the same as at her customers' borders if transport costs have developed differently from f.o.b. prices of commodities. To be significant, the merchandise terms of trade should be measured at the point where the goods change hands: f.o.b. exports and c.i.f. imports for those countries which carry one of their exports or imports; and c.i.f. exports and f.o.b. imports for countries which deliver their exports and fetch their imports.² If it is impossible to eliminate the cost of freight and insurance paid to one's own nationals from the c.i.f. price of imports, an approximation of the position

¹ This paper represents a portion of a larger research undertaking into Europe's terms of trade financed by the Merrill Foundation for the Advancement of Financial Knowledge. The writer was assisted by H. G. van der Tak and J. Vanek.

² Only if a country delivers none of its exports and carries all its imports is it satisfactory to measure the merchandise terms of trade on the basis of f.o.b. values for exports and imports, as do Canada and the United States, and to neglect transport charges.

can be reached through adding gross freights and insurance paid to the country's own nationals as an offsetting credit.

The treatment of interest and dividends raises greater conceptual and statistical difficulties. Those authorities who have begun to calculate price indexes for goods and services in the current account, for the purpose of deflating national-income statistics from money to real terms,¹ have treated interest and dividends as a transfer payment, like interest on the national debt, which is not deflated by a current price. The guess may be offered that the basis of this omission is more practical than theoretical. Certainly to the limited extent that the terms of trade may be used to measure the gains from trade, the "price" ² of lending should be included among those of goods and services exported. Other things equal—as they must be if the terms of trade are to be used in this sense—a rise in an import price, say, of rubber, offset by an increase in earnings on rubber shares, involves no change in the terms of trade as distinct from a rise in the price of rubber reflected in increased wages and taxes abroad.

There are some purposes for which it is probably undesirable to include interest and dividends among export services, as when the terms of trade are studied as a guide to the distribution of savings between home and foreign investment. But for everyday use, assuming that the statistical difficulties can be overcome, there should be no distinction between the services of capital and the services of land, labor and capital in combination. It is, of course, possible to discuss *seriatim* the terms of trade on merchandise and shipping account and the change in income from foreign investment. The merit of combining the two into a single index is that one avoids the danger of regarding them as unrelated, and discussing the former without remembering to deal with the offsetting effects of the latter.

Statistical difficulties make it impractical to include other services, such as tourist expenditure, insurance, commissions, port charges, etc.³ Moreover, they limit the correction for shipping and return on foreign investment to a painful degree. The index for shipping is primarily one for British tramps; that for return on foreign investment is also derived almost entirely from British data, and represents interest and remitted earnings divided by nominal capital investment. Both are applied to each country of Industrial Europe. Unit-value indexes for credits and debits for each country and the Industrial European indexes on current account and for merchandise only

¹ See the British Blue Book, *National Income and Expenditure, 1946-52*, H.M.S.O., August 1953. The price series themselves are set out in A. A. Adams, "The Real Product of the United Kingdom," *Bulletin of the London and Cambridge Economic Service* (New Series), No. 6, September 1953; and Norwegian Central Bureau of Statistics, *National Accounts, 1930-39 and 1946-51* (Oslo, 1952), pp. 320-1.

² The "price" can only be approximated by the rate of earnings, which conceptually is very different from a price when changes in utilisation occur.

³ For a detailed study which includes these items, and the price of capital, see C. Carbonnelle and E. S. Kirschen, "Les Termes des Echanges," *Revue de l'Institut de Sociologie*, 1949, pp. 419-46. This index is for Belgium for the single year 1946, compared with 1936-38.

TABLE I
Unit-value Indexes of Industrial European Current-account Credits, 1870-1953,
Eight Countries and Combined

(Dollar relatives: 1913 = 100)

With Differences from Merchandise Export Unit-value Indexes

(+ current-account index exceeds export index)
(- export index exceeds current-account index)

Year.	United Kingdom.	Germany.	France.	Italy.	Netherlands.	Belgium.	Sweden.	Switzerland.	Industrial Europe un-adjusted.
1870	113 +9	—	128 -3	—	—	(110) 0	—	—	121 +2
1871	113 +9	—	129 -3	—	—	(114) 0	—	—	122 +2
1872	123 +6	—	131 -4	—	—	(117) -1	—	—	129 -1
1873	128 +7	—	128 -2	—	—	120 -1	—	—	132 +1
1874	121 +8	—	123 -1	—	—	(117) -1	—	—	125 +1
1875	114 +8	—	118 -1	—	—	(115) 0	—	—	119 +2
1876	105 +7	—	116 -3	—	—	(111) -2	—	—	113 +2
1877	102 +9	—	115 -3	—	—	(110) -1	—	—	110 +2
1878	97 +8	—	109 -2	—	—	108 -1	—	—	105 +2
1879	94 +9	—	111 -3	—	—	(106) -1	—	—	103 +2
1880	96 +8	—	112 -4	—	—	(104) -1	—	—	105 +2
1881	94 +9	117 -1	112 -3	—	—	(103) -1	—	—	103 +2
1882	94 +9	117 -2	111 -3	—	—	(101) -1	—	—	103 +2
1883	92 +8	115 -2	107 -1	—	—	100 0	—	—	101 +3
1884	89 +8	108 -1	102 0	—	—	(95) 0	—	—	96 +3
1885	84 +7	101 0	98 0	—	—	(91) -1	—	—	91 +3
1886	81 +7	98 -1	95 0	—	—	86 +1	—	—	88 +3
1887	80 +7	97 -1	93 0	—	—	(87) +1	—	—	87 +3
1888	83 +8	99 -1	97 -1	—	—	(87) +1	—	—	89 +2
1889	86 +8	102 -1	100 0	—	—	87 0	—	—	92 +2
1890	88 +6	101 -2	101 -2	—	—	(87) +1	—	—	93 +3
1891	87 +5	97 -1	95 0	—	—	(86) +1	—	—	91 +2
1892	83 +5	93 0	89 0	—	—	(84) +1	—	—	87 +2
1893	80 +3	90 -2	92 -2	—	—	82 0	85 0	—	85 0
1894	78 +4	85 -1	83 0	—	—	(84) 0	76 +1	—	81 +1
1895	76 +4	85 -1	84 0	—	—	(86) 0	74 0	—	80 +1
1896	77 +4	87 -1	83 0	—	—	(88) 0	75 +1	—	81 +1
1897	77 +5	87 -1	85 0	—	—	(89) -1	79 +1	—	82 +1
1898	77 +5	88 0	89 -1	—	—	(92) -1	81 +2	—	83 +1
1899	80 +3	91 -2	92 -3	—	—	95 -1	81 +1	—	87 0
1900	90 +1	96 -1	95 -2	—	—	(95) -1	88 +2	—	93 -1
1901	83 -2	89 -2	87 -2	—	—	(94) -1	82 0	—	86 -2
1902	80 -1	87 -2	88 -2	—	—	94 -1	81 -1	—	85 -2
1903	81 -1	88 -2	90 -3	—	—	(95) -1	82 -1	—	86 -2
1904	82 -1	89 -2	92 -3	—	—	(97) -1	81 0	—	87 -2
1905	86 +2	94 0	98 0	—	—	(100) 0	82 0	—	92 +1
1906	89 0	96 -1	101 -1	—	—	(102) 0	86 -1	—	94 -1
1907	93 -1	98 -1	100 -1	—	—	103 0	93 -2	—	97 -1
1908	89 -2	96 -1	95 0	—	—	(101) 0	92 -3	—	93 -2
1909	88 0	92 0	100 -1	—	—	99 0	88 -2	—	92 -1
1910	91 -1	93 0	101 -2	—	—	(99) 0	91 -2	—	94 -1
1911	94 0	95 0	102 -2	—	—	(99) 0	92 -1	—	96 -1
1912	99 +3	99 +1	104 0	—	—	(100) 0	100 +2	—	100 +1
1913	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0	100 0
1920	185 -85	—	161 -5	150 +11	—	—	282 +5	180 -55	168 -20
1921	145 -68	82 +1	127 -7	101 +2	126 -27	—	201 -15	152 -32	129 -17
1922	139 -43	65 +1	142 -11	(110) 0	123 -17	—	159 -8	149 -24	123 -11
1923	141 -39	114 0	130 -7	118 -1	122 -20	—	161 -10	141 -16	133 -14
1924	136 -37	125 -3	132 -8	109 -1	122 -21	—	154 -9	140 -17	131 -15
1925	141 -42	130 -3	128 -7	110 -1	131 -21	130 -2	158 -9	149 -16	134 -15
1926	141 -32	131 -2	108 0	119 -1	127 -13	(118) -1	163 -9	142 -11	130 -9
1927	138 -27	132 -2	109 -1	126 -1	126 -10	107 0	148 -11	138 -10	128 -10
1928	134 -28	131 -3	108 -1	118 -1	125 -10	110 -1	145 -12	141 -11	126 -10
1929	134 -25	130 -2	104 -1	109 -1	124 -9	114 -1	142 -12	141 -10	125 -8
1930	121 -30	119 -5	99 -2	91 -1	108 -13	108 -1	128 -15	133 -10	114 -11
1931	100 -26	105 -3	81 -3	76 0	89 -10	93 -2	106 -13	114 -14	98 -1
1932	73 -18	92 -3	67 -5	61 0	67 -11	76 -2	74 -7	98 -18	76 -5
1933	86 -24	106 -4	78 -6	68 0	77 -13	89 -3	86 -7	113 -21	87 -12
1934	104 -28	129 -7	97 -10	82 0	95 -17	109 -3	104 -8	139 -25	106 -16
1935	104 -26	129 -3	95 -10	80 0	94 -15	(91) -1	100 -8	138 -23	104 -16
1936	111 -24	132 -2	95 -6	79 0	97 -12	93 -1	107 -6	140 -18	108 -11
1937	125 -20	142 -1	95 +3	76 +4	112 -5	106 -1	123 -3	134 -12	118 -5
1938	119 -28	147 -3	82 +3	76 +2	104 -12	98 -1	127 -10	130 -13	113 -11
1948	245 -51	—	190 -18	173 +6	260 -58	248 -31	345 -16	302 -72	239 -30
1949	228 -65	237 0	176 -9	162 +4	221 -55	241 -26	291 -18	288 -75	219 -29
1950	182 -39	226 0	147 -6	140 +1	186 -31	202 -19	236 -15	274 -78	182 -22
1951	230 -30	276 +1	177 -2	179 +11	238 -17	277 -27	383 -6	304 -82	233 -18
1952 ¹	221 -52	291 -5	187 -7	169 +5	228 -31	274 -29	350 -34	299 -87	231 -27
1953 ¹	206 -58	267 -11	175 -7	160 -4	200 -30	228 -27	296 -43	264 -110	214 -30

¹ Based on preliminary figure for return on foreign investment.

Figures in parentheses interpolated.

TABLE II
Unit-value Indexes of Industrial European Current-account Debits, 1870-1953
Eight Countries and Combined

(Dollar relatives: 1913 = 100)
With Differences from Merchandise Import Unit-value Indexes
(+ current-account index exceeds import index)
(- import index exceeds current-account index)

Year.	United Kingdom.	Germany.	France.	Italy.	Netherlands.	Belgium.	Sweden.	Switzerland.	Industrial Europe unadjusted.
1870	120	0	—	115	0	(108)	0	—	118 -1
1871	115	0	—	120	-1	(110)	0	—	117 +1
1872	123	0	—	125	-1	(112)	0	—	123 0
1873	123	0	—	123	-1	114	0	—	122 -1
1874	120	0	—	116	0	(114)	0	—	118 -1
1875	116	0	—	112	0	(113)	0	—	115 0
1876	113	0	—	112	-1	(113)	0	—	113 -2
1877	113	0	—	109	-1	(112)	0	—	112 0
1878	106	0	—	103	0	112	0	—	106 0
1879	102	0	—	103	0	(110)	0	—	103 0
1880	107	0	—	106	-1	(107)	0	—	107 0
1881	106	0	106	0	104	0	—	—	105 -2
1882	105	0	106	0	101	0	—	—	104 -1
1883	103	0	104	0	95	0	—	—	101 -1
1884	98	0	99	0	91	0	—	—	96 -1
1885	92	0	91	0	88	0	—	—	91 +1
1886	86	0	90	0	87	0	—	—	87 0
1887	86	0	91	0	85	0	—	—	87 0
1888	88	0	90	0	85	0	—	—	88 0
1889	89	0	94	0	90	0	—	—	90 0
1890	88	0	93	0	91	0	—	—	90 0
1891	89	0	90	0	88	0	—	—	89 0
1892	86	0	85	0	83	0	—	—	85 0
1893	85	0	84	0	80	0	—	—	84 0
1894	78	0	78	0	77	0	—	—	78 0
1895	75	0	79	0	76	0	—	—	77 0
1896	77	0	78	0	77	0	—	—	78 0
1897	77	0	79	0	77	0	—	—	78 0
1898	77	0	80	0	79	0	—	—	78 0
1899	79	0	84	0	83	0	—	—	81 -1
1900	85	0	89	0	89	0	—	—	87 0
1901	82	0	84	0	80	0	—	—	83 0
1902	82	0	85	0	79	0	—	—	83 0
1903	84	0	85	0	82	0	—	—	85 0
1904	85	0	87	0	82	0	—	—	86 0
1905	86	0	91	0	84	+1	—	—	88 0
1906	90	0	93	0	90	+1	—	—	92 0
1907	94	0	96	0	94	0	—	—	96 +1
1908	90	0	89	0	86	+1	—	—	90 0
1909	92	0	92	0	90	0	—	—	92 0
1910	99	0	94	0	95	0	—	—	96 0
1911	97	0	96	0	97	0	—	—	97 0
1912	98	0	100	0	100	0	—	—	99 0
1913	100	0	100	0	100	0	100	0	100 0
1920	214	0	—	166	-24	201	0	—	189 -7
1921	151	0	105	0	118	-9	138	0	159 -5
1922	138	0	98	0	109	-4	(123)	0	137 -3
1923	140	0	128	0	111	-2	123	0	136 -2
1924	141	0	134	0	110	-2	120	0	141 -3
1925	154	0	136	-1	122	-1	129	0	141 -3
1926	142	0	124	-1	107	0	120	-1	137 0
1927	136	0	123	-1	115	0	128	-1	131 0
1928	137	0	125	-1	114	0	120	-1	125 0
1929	134	0	124	-2	108	0	117	-1	124 -1
1930	117	0	107	-2	92	0	102	0	123 -1
1931	88	0	81	-2	75	0	80	0	111 -1
1932	64	0	60	-2	64	0	62	0	99 -2
1933	74	0	71	-2	74	0	73	-1	92 -2
1934	93	0	91	-3	92	-1	89	-1	78 -1
1935	93	0	97	-3	90	0	90	-1	72 -1
1936	98	0	102	-3	93	0	96	-1	87 -1
1937	111	0	112	-3	94	0	108	-1	92 -1
1938	103	0	105	-3	83	0	103	-1	97 -1
1948	226	-19	—	196	-7	235	0	283	-19
1949	211	-18	179	0	185	-7	213	0	252 -16
1950	180	-14	221	0	168	-6	190	0	215 -12
1951	235	-23	281	0	213	-10	242	0	258 -18
1952 ¹	229	-23	267	0	207	-10	235	0	257 -19
1953 ¹	199	-24	231	-3	191	-5	215	-5	258 -18

¹ Based on preliminary figure for return on foreign investment.

have been combined on the basis of quantity weights, or more accurately, values expressed at constant prices.¹

The results of these calculations are set out in the accompanying tables and charts. Tables I and II present the national and combined series for

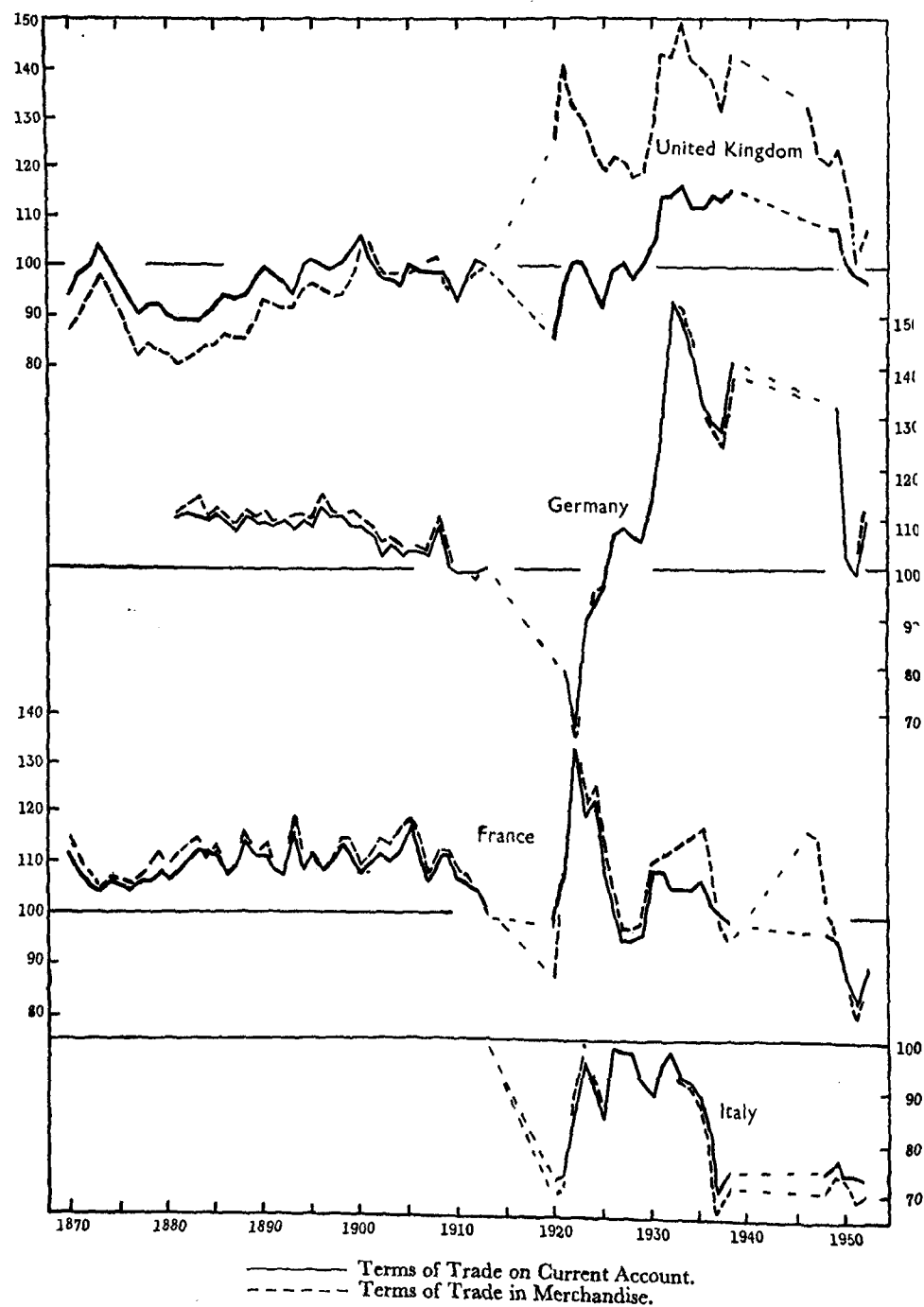
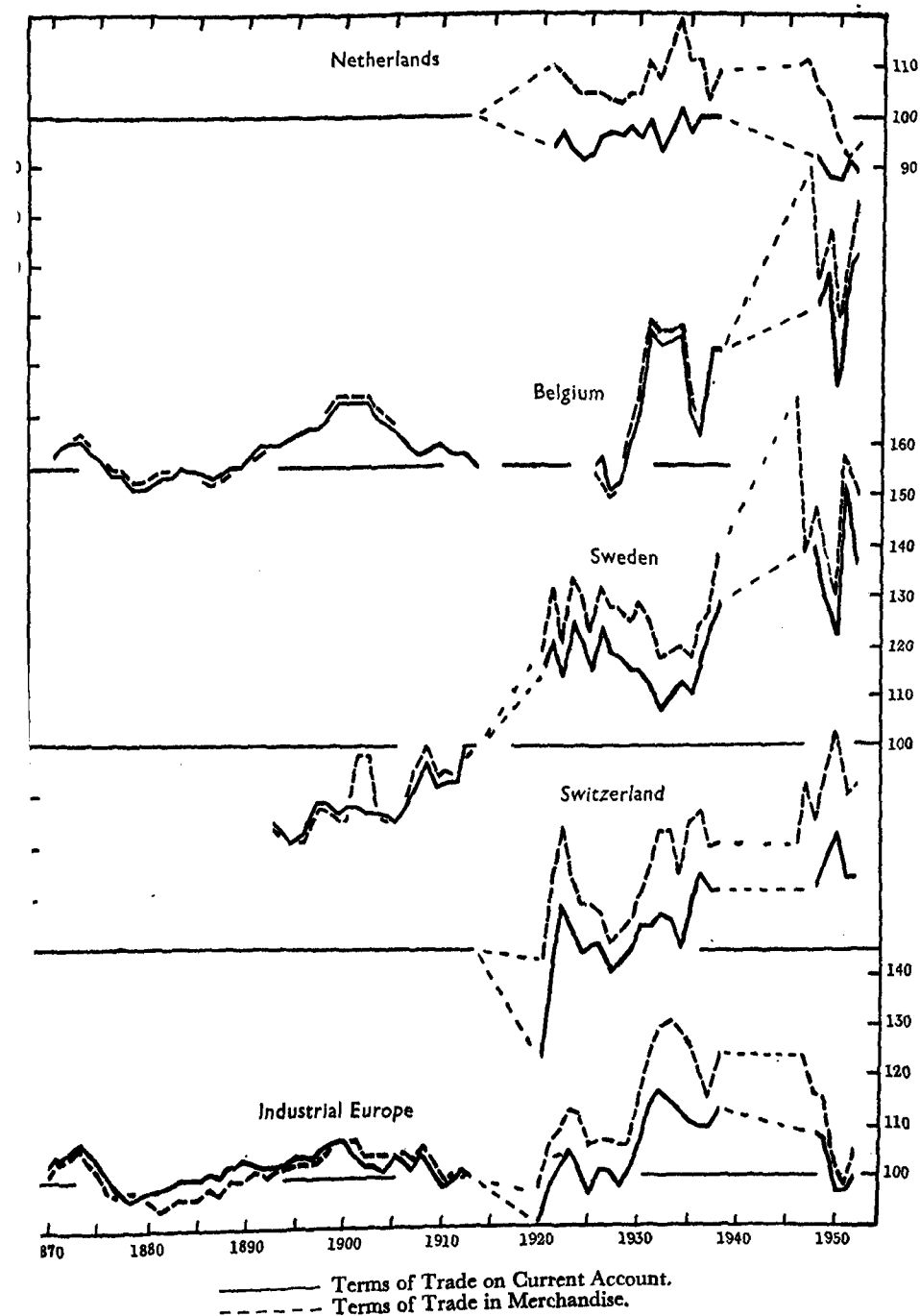
TABLE III
Industrial European Freight Rates and Rates of Return on Foreign Investment
(Dollar relatives: 1913 = 100)

Year.	Freights.	Investment returns.	Year.	Freights.	Investment returns.
1870	195	110	1906	77	100
1871	195	110	1907	78	100
1872	194	110	1908	67	100
1873	218	110	1909	71	100
1874	203	110	1910	74	100
1875	186	110	1911	84	100
1876	189	96	1912	113	100
1877	193	96	1913	100	100
1878	167	96	1920	330	80
1879	162	96	1921	124	72
1880	165	96	1922	111	83
1881	168	96	1923	105	90
1882	156	96	1924	101	87
1883	144	96	1925	102	95
1884	125	96	1926	110	101
1885	111	96	1927	110	101
1886	106	91	1928	99	101
1887	105	91	1929	97	104
1888	115	91	1930	79	94
1889	130	91	1931	74	72
1890	112	91	1932	55	52
1891	107	91	1933	64	60
1892	91	91	1934	76	74
1893	89	83	1935	76	77
1894	84	83	1936	86	84
1895	79	83	1937	129	90
1896	86	83	1938	98	84
1897	88	83	1948	268	93
1898	99	83	1949	205	85
1899	92	83	1950	154	77
1900	106	83	1951	320	88
1901	77	83	1952	203	83 prel. ¹
1902	73	83	1953	157	78 prel.
1903	75	83			
1904	76	83			
1905	77	100			

¹ Final figure 85, not included in Tables I and II.

the eight countries which make up Industrial Europe for this purpose—the United Kingdom, Germany, France, Italy, the Netherlands, Belgium-Luxembourg, Sweden and Switzerland—for credits and debits respectively, together with the differences between these series and those for merchandise trade alone. The terms of trade on merchandise and on current account

¹ The crudeness of this method is apparent in a case like Germany, when default on foreign loans, which should reduce the return on foreign investment at an unchanged weight, is reflected in an unchanged index (the Kindersley figures) and a very much reduced weight.

Terms of Trade of Industrial Europe—I*Terms of Trade of Industrial Europe—II*

are portrayed by countries and for Industrial Europe in the charts. Table III presents the dollar indexes of rates of shipping freight and return on foreign investment. Table IV sets out the terms of trade of Industrial Europe in several ways: on merchandise account, unadjusted; and

TABLE IV
Industrial Europe's Terms of Trade on Merchandise and on Current Account
(Dollar relatives: 1913 = 100)

Year.	Merchandise unadjusted.	Merchandise adjusted.	Current account.	Year.	Merchandise unadjusted.	Merchandise adjusted.	Current account.
1870	101	—	103	1906	104	107	103
1871	104	—	105	1907	103	104	101
1872	103	—	105	1908	106	107	104
1873	106	—	108	1909	101	103	100
1874	104	—	106	1910	99	100	98
1875	102	—	104				
1876	98	—	100	1911	100	101	99
1877	97	—	98	1912	100	101	101
1878	98	—	96	1913	100	100	100
1879	98	—	97				
1880	96	—	98	1920	96	96	89
				1921	107	108	97
1881	94	—	98	1922	109	110	101
1882	95	—	99	1923	113	114	105
1883	96	—	100	1924	112	113	101
1884	96	—	100	1925	106	108	96
1885	96	—	100	1926	107	109	101
1886	98	—	101	1927	107	109	101
1887	97	—	100	1928	106	108	98
1888	99	—	102	1929	106	109	101
1889	99	—	102	1930	115	119	106
1890	100	—	104				
				1931	124	129	114
1891	101	—	103	1932	130	136	117
1892	100	—	102	1933	131	138	115
1893	102	—	102	1934	129	137	113
1894	102	—	103	1935	127	135	111
1895	103	—	104	1936	121	130	110
1896	103	—	104	1937	115	124	110
1897	103	—	104	1938	124	134	113
1898	104	—	106				
1899	106	—	107	1947	123	125	—
1900	107	115	107	1948	116	118	109
				1949	115	118	107
1901	107	113	104	1950	103	106	97
1902	104	111	102				
1903	104	109	102	1951	98	102	97
1904	104	108	101	1952	105	109	100
1905	103	109	104	1953	110	115	103

adjusted, since 1900, to eliminate the effect of trade within Industrial Europe in which the terms of trade, in theory, are always unchanged at 100; and on current account, *i.e.*, covering merchandise, shipping and returns on foreign investment. The charts go only through 1952.

It is not intended to analyse these series in detail in the brief space of an article already burdened with numbers and statistical detail. A few points of interest may be noted, however, under all the normal reservations appropriate to the interpretation of indexes of net barter terms of trade.

1. Whether one uses the merchandise or the current-account series, the British terms of trade are not representative of those of Industrial Europe as a whole. This is true in practically every period. The improvement of the merchandise terms of trade of Europe from 1881¹ to 1900 is far smaller than that of Britain: this is the result of the fact that French and German export prices do not rise nearly so much as British.² The deterioration in the terms of trade from 1900 to 1913 is larger, especially when the index of Industrial Europe is adjusted to exclude the pull of the terms of trade within Industrial Europe toward 100. Again, the improvement in the terms of trade from 1913 to the twenties is less pronounced for Industrial Europe as a whole than for Britain.

On this showing, the use of Britain's terms of trade to represent those of Industrial Europe as a whole is not warranted.

2. On either merchandise or current account, the cumulative terms of trade of the various countries of Europe develop very differently. Compared with 1913, Belgium, Sweden and Switzerland find themselves in a most favored position; Italy in the luck. The actual figures for 1952 and 1953 are worth reproducing:

Terms of Trade of Countries of Industrial Europe

Price of exports ÷ price of imports; 1913 = 100

	Merchandise Account.		Current Account.	
	1952.	1953.	1952.	1953.
Belgium-Luxemburg	152	134	143	125
Sweden	149	142	136	124
Switzerland	132	138	114	109
Germany	111	119	109	116
United Kingdom	108	118	97	104
Netherlands	94	94	89	87
France	89	93	90	92
Italy	70	75	72	74
Combined Index	105	110	100	103
Combined Index—Adjusted	109	115	n.a.	n.a.

one were to move to earlier dates for those series which extend before the First World War, the dispersion would be increased, although an extension of the German series to the 1870s, as noted above, would considerably alter the cumulative picture in that country.

Comparison for the period 1870–80 is impossible because of the lack of a German index. It is far from a separate calculation for the single year 1872, however, that German export prices (not import) behaved very differently from French or British, standing at 193 in 1872, on the index of 1913 as 100, as compared with 121 for Britain and 135 for France. This was the consequence, of course, of the greater inflation in Germany than elsewhere in 1872–73.

Contrast A. K. Cairncross, *Home and Foreign Investment, 1870–1913* (Cambridge University Press, 1953), p. 190.

The gap between the leading countries and Britain and Germany narrowed sharply in 1953 from 1952, as iron and steel and timber product prices fell along with raw-materials unit values generally. On current account Germany with little or no income from foreign investments passed in rank the creditor country, Switzerland. The movement was not carried far into 1954, however, and the generalization appears to hold good, well after the peak of the Korean commodities boom, that the small highly developed countries of Europe have enjoyed more favorable terms of trade than the larger countries or the agricultural group.

The explanation of the leadership of Sweden, Switzerland and Belgium in terms of trade, and the unhappy estate of Italy and to a lesser degree France, would appear to be associated with the different states of development of the several countries. On occasion as a country develops, the long-run reduction in costs in existing commodities brings about a considerable decline in export unit values and a "deterioration" in the net barter terms of trade, however much the country may gain if measured by the double factorial terms of trade. Such an example is found in the considerable decline in Britain's terms of trade from 1815 to 1870, and in the decline in the shipping index from 1870 to 1890.

Opposed to this influence, however, and apparently dominant in the present cases, there would seem to be a distinct terms-of-trade effect connected with innovation and the introduction of new goods in fields of high income elasticity and widening acceptance (favorable taste change.)¹ Sweden and Switzerland in particular have benefited from their market development in ball-bearings, pulp and paper, refrigerators, watches, special machine tools. Italy has suffered setbacks in one market after another—silk, coral, sulphur, marble, marble and alabaster statues, wines. There is a considerable question whether the terms of trade help shape the rate of development, the speed of development the terms of trade, or whether both are responsive to deep-seated forces, such as capacity for invention and innovation, and adaptability of resources in following up on products which pass the market test. To the extent that a faster rate of development turns the terms of trade favorable, we have another manifestation of the truth that "to him that hath shall be given."

3. The practice of measuring Europe's terms of trade by the relation between raw-material and manufactured-goods prices, as does Schlote and many who follow him directly or by implication,² leaves out of account the

¹ For an important article which distinguishes between innovations which introduce new goods into international trade, and those which reduce costs in existing commodities, see Henry Tyszynski, "World Trade in Manufactured Commodities, 1899-1950," *Manchester School*, September 1951, pp. 272-304.

² W. Schlote, *British Overseas Trade from 1700 to the 1930s* (Oxford: Blackwell, 1952), pp. 154-5. These figures are accepted as an indication of the serious decline in the terms of trade of under-developed countries by United Nations, *Economic Development of Latin America and its Principal Problems* (New York, 1949); United Nations, *Relative Prices of Exports of Under-developed Countries* (New York, 1949); and H. W. Singer, "The Distribution of Gains between Investing and Borrowing Countries," *American Economic Review*, May 1950, pp. 473-85.

importance of primary products in European exports and ignores the very different behavior of shipping and return on foreign investment as compared with manufactured goods.

The difference between British and other Industrial European terms of trade in the period prior to 1913 is mainly attributable to the price of coal, an export commodity of growing importance in British trade up to the First World War.

The shipping index fluctuates as a caricature of a primary commodity, falling by two-thirds from 1873 to 1902, and reaching sharp cyclical peaks in 1889, 1900, 1920, 1939 and 1951.

Still a third offset is provided in the return on foreign investment, which fluctuates cyclically like a raw material after the First World War, but has a much more pronounced downward trend. While the index as a whole must be taken with a certain amount of scepticism, part of the downward trend appears to be due to the depreciation of sterling against dollars, and part to a change in the contractual relations between investors and countries where investment is made.

The use of a dollar index to measure the loss in terms of trade in the income on foreign bonds is appropriate, since on a rough purchasing-power-parity concept the greater inflation in sterling than in dollar countries represents a loss to holders of debt and a gain for debtors. In real terms, of course, the loss is still greater, since the present indexes do not take account of the depreciation of the dollar in goods. On the 1913 base, return on foreign investment stands at 80, commodity prices at 250.

The contractual relationship between investors and country of investment has been changed by default, blocking of returns, multiple-exchange devices, re-negotiation of concessions, discriminatory and increased non-discriminatory taxes, increased wage-rates, etc. Here is one area in which the underdeveloped countries have been able to affect their terms of trade and have done so on a wide scale. The consequences of these "favorable" developments in the terms of trade in the short run, however, may not redound to the benefit of these countries in the longer term.

4. For Industrial Europe as a whole, taking the terms of trade on current account instead of those for exports f.o.b. and imports c.i.f., the total movement of the terms of trade becomes very much narrowed. The merchandise terms of trade moved within a more confined range for Europe as a whole than for the United Kingdom. Apart from 1881-82, 1923-24 and 1930-49, they stay within the range from 96 to 110. (A considerably wider movement is found if one deals with the terms of trade of Industrial Europe with the outside world, since this eliminates the pull toward stability of trade within Industrial Europe on which the terms of trade by definition—at least on an f.o.b. basis—are 100.)

In changing to the terms of trade on current account, however, the exceptions are reduced to the single year 1924, and the period 1930-38. More significant, the magnitude of the exceptions is reduced. At their highest, in 1933, the terms of trade on merchandise account stand at 131

(138 eliminating the influence of intra-Industrial European trade). Those on current account for the same year are 115.¹ The 1923 merchandise peak of 113 becomes a current-account peak of 105.

In addition, the correction moderates short-run cyclical movements. The 1920-21 improvement in terms of trade is reduced from 12 percentage points to 8. The decline of 6 points from 1936 to 1937, and gain of 9 points the following year (on the unadjusted merchandise index) is smoothed to none and 3, respectively. The impact of the Korean crisis and the depreciation of sterling on the terms of trade remains large, however, and the current-account index shows a decline of 10 points from 1949 to 1951 for Industrial Europe, as compared with 12, unadjusted, for the merchandise index. For Britain alone, however, the decline in the two indexes is 23 points for merchandise and only 13 for current account.

On this showing, the terms of trade of Industrial Europe have remained practically unchanged over the seventy years from 1870 to 1950, despite wide variations in those of the separate countries within the total complex, and different behavior of the prices of merchandise exports, merchandise imports, freight rates and return on foreign investment. No matter how much the development of prices has redistributed income between countries in Industrial Europe and, within separate countries, between consumers on the one hand, and ship owners and foreign investors on the other, the change *vis-à-vis* outside countries has on balance been small.

For an industrial country with a merchant marine and foreign investments it may be, indeed, that the merchandise terms of trade have more significance in measuring the internal redistribution of income produced by foreign stimuli than in reflecting the international gains of trade. This would add a still further qualification with which it is necessary to surround the concept of the net barter terms of trade on merchandise exports and imports.

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STATISTICAL APPENDIX

1. Merchandise Unit-value Series

(a) *United Kingdom.* For the period 1870-1913, the Schlote series for export and import prices (not for primary products imports and manufactured exports) were used (W. Schlote, *British Overseas Trade from 1700 to the 1930s* (Oxford: Blackwell, 1952), pp. 175-8) in preference to the somewhat different figures of A. H. Imlah ("The Terms of Trade of the United Kingdom, 1798-1913,"

¹ It is impossible to adjust the current-account index to eliminate the effects of intra-European trade for lack of regional material on payments for services. There is some justification, however, for believing that a majority of the dampening effect of the inclusion of indexes for shipping and return on foreign investment would apply to trade outside the area. There would thus be no reason to expect the relationship between the terms of trade unadjusted and adjusted to narrow from that already calculated for merchandise (with its imperfections), if it were possible to adjust the series on current account.

Journal of Economic History, November 1950, pp. 170-94). This choice was made, despite the fact that the Schlote import series refers to general, rather than special, trade on the basis of independent calculations of changes in unit values in 1900 as compared with 1872, and 1913 as compared with 1900, which closely supported Schlote. It is believed that the difference in the behavior of unit-value indexes between general and special imports in the period since 1870 cannot exceed 1½%.

From 1913 to 1953 the indexes of the Board of Trade were used, taking advantage, down to 1947, of the linking of the several segments made by the Board of Trade itself (*Board of Trade Journal*, August 4, 1951, pp. 226 and 228).

(b) *Germany.* The Bowley, Beveridge and Molodowsky indexes have been discarded in favor of that of F. Soltau ("Statistische Untersuchungen über die Entwicklung und die Konjunkturschwankungen des Aussenhandels," *Vierteljahrshefte zur Konjunkturforschung*, 1926, *Ergänzungsheft* 2, p. 44), which covers the period 1881-1913. Unhappily, the omission of a German index for the 1870s lowers the starting level of export prices and gives an upward bias to the terms of trade, since the inflation of 1873 was more pronounced in Germany than in Britain.

For the inter-war years we have taken the Paasche index of the Statistische Reichsamt (not the chained index); for the post-war years the calculations of the Statistische Bundesamt. Some doubt attaches to the 1938-50 link, because of territorial changes. The 1949 figure, based on a dollar index, is also weak. These and similar official figures for other countries may be found in the League of Nations, *Memorandum on International Trade and Balances of Payments, 1912-1926*, Volume I, pp. 25, 206; *Review of World Trade, 1938*, Annex II, pp. 65-81; and United Nations *Monthly Bulletin of Statistics*, May 1953. The post-war indexes are described in the 1950 supplement to the *Monthly Bulletin of Statistics*, pp. 58-81.

(c) *France.* From 1871 to 1880 the figures are those of A. W. Flux, "Price Movements in the Foreign Trade of France," *Journal of the Royal Statistical Society*, 1900, pp. 480-4; from 1881 to 1913, the series of H. D. White (*The French International Accounts, 1880-1913* (Cambridge, Mass.: Harvard University Press, 1933), Chapter X) based on official values are preferred to those using market quotations, although White employs the latter. This is because the series on market quotations are limited in coverage and, for exports, unweighted.

For the inter-war and post-war years the official French series have been used. The 1913 links were computed by the use of value relatives and the volume indexes contained in *Bulletin de la Statistique Générale*, April 1929, p. 285.

(d) *Italy.* Index numbers are available only for the inter-war and post-war years, and from official sources. In the latter period the Fisher index was taken because of the wide disparity between the Laspeyres and Paasche calculations, amounting, in the direct comparison of 1952 on 1938, to 28% in the case of exports and 36% for imports.

(e) *Netherlands.* There is no series prior to 1921. An inter-war series beginning then (Centraal Bureau voor Statistiek, *Statistische en econometrische onderzoeken*, 2nd quarter, 1951, pp. 112-20) cannot be connected to 1913 because of the fact that current unit values are not available for that year. Prior to the First World War, Dutch trade figures were kept on the basis of official unit values, unchanged from year to year, the bulk of which went back to 1845. In addition, the distinction between general and special trade is blurred in this period, and much of the transit trade with Germany is actually reported as special;

F. Hilgerdt believes that as much as two-thirds of Netherlands "special" trade in 1913 may in fact be transit.

A link to 1913 was constructed by using relatives of market prices (*Jaarcijfers voor Nederland 1929*, pp. 113, 114) weighted in accordance with the Paasche formula and the inter-war trade pattern. It was necessary in this procedure to omit many items for which unit values are normally found but which are not quoted in wholesale markets. Support for the links was found, however, in the fact that the relative for imports came out within 1% of the relative of the other countries for the same year, except for France and Italy; for exports the difference was 8%.

(f) *Belgium-Luxemburg*. A poor pre-war series can be derived by dividing relatives of value by a volume index constructed by S. Capelle ("Le volume du commerce extérieur de la Belgique," *Bulletin des Recherches Economiques*, 1938-39, pp. 15-56) for selected years, and interpolating the results.

The inter-war series is that of F. Cracco of the Institut de Recherches Economiques et Sociales at Louvain, prepared for the National Bank of Belgium, which kindly has given permission for its publication. It is linked to 1913 by an independent calculation for 1928 against 1913 using the Paasche formula.

The post-war series is that of the Institut de Recherches Economiques et Sociales prepared by M. Woitrin and generously furnished by him. It is considered superior to that of the Institut National de Statistique published by the United Nations and in the O.E.E.C. publications, based upon an independent check for the year 1952 compared with 1938.

(g) *Sweden*. An official index of unit values for exports and imports is available beginning in 1895, and can be extended to 1893 by the use of official estimates of volume (Statistiske Meddelanden, Series A, Band III: 1, *Statistisk översikt av det svenska näringslivets utveckling åren 1870-1913*, p. 47). A direct comparison of 1913 on 1900, however, suggests some cumulative error in these series, which may overstate the rise in export prices by as much as 12%, and understate the import movement.

Official series for the inter-war and post-war years are available in the League of Nations and United Nations publications cited, except that the two series do not overlap. For a link, it is necessary to get a 1938 figure on the inter-war basis from Meddelanden från Konjunkturinstitutet, Series A: 10; *Konjunkturläget våren 1942*, pp. 54, 57.

(h) *Switzerland*. There are no pre-war data. The official inter-war series stopped in 1935 and was extended to 1937 by the League of Nations staff. A rough calculation along the same lines has been made for 1938, to which the post-war index is linked. The post-war index is badly weighted, using the average quantities traded from 1929 to 1938, despite the growth in watch exports.

2. Index of Shipping Freight

The index is primarily a tramp-freight index. This is fairly representative of the course of ocean freight rates in the early part of the period, but becomes progressively less so. In the absence of adequate material on liner or tanker rates, however, it is the best that can be done.

The period is divided into four parts: from 1870 to 1884, Hobson's index for outward cargoes (C. K. Hobson, *The Export of Capital* (London: Constable, 1914), pp. 179-82) and twice Cairncross' inward series (A. K. Cairncross, *Home*

and Foreign Investment, 1870-1915 (Cambridge University Press, 1953), p. 176) have been used. The Cairncross inward index appears to be more widely based than that of Hobson; doubling the weight of the inward series takes into account that earnings on inbound shipments exceeded those on outbound voyages when much coal was carried at freights so low as to suggest ballast.

For the period 1884-1903, the Board of Trade's index of freights (*Parliamentary Papers*, Cd. 2337, 1904, quoted by L. Isserlis, "Tramp Shipping, Cargoes and Freights," *Journal of the Royal Statistical Society*, 1938, pp. 55-7) has been used, again doubling the weight of the inward index to correct under-representation. This portion of the index includes liner as well as tramp rates.

From 1903 to 1938 the series is that of *The Economist*, taken from the issue of February 26, 1938, p. 484 (for a description of the series see "Trade Supplement," July 21, 1923, p. 3).

From 1938 to 1952, the index has been derived from the Chamber of Shipping of the United Kingdom (*Annual Report, 1952-53*, p. 154). This series was revised in 1953. The 1953 figure used here is the general freight index for the United Kingdom published in the *United Nations Monthly Bulletin of Statistics*.

3. Index of Return on Foreign Investment

Most calculations of return on foreign investment are based on "nominal" values, which overstate the amounts actually invested in the early part of the period, when loans were frequently issued at substantial discounts, and understate it in the later part by making no allowance for reinvested profits in equities. Returns on equity investments are likely to be profits remitted, rather than earned, which understates the rate in prosperity and overstates it in depression, dampening down the cyclical fluctuation. Because of these difficulties, the index must be viewed with considerable scepticism.

From 1870 to 1913 broad trends in the return on foreign capital in Britain and France have been drawn freehand from the evidence furnished by A. H. Imlah ("British Balance of Payments and Export of Capital, 1816-1913," *Economic History Review*, 1952, pp. 208-39); R. A. Lehfeldt ("The Rate of Interest on British and Foreign Investments," *Journal of the Royal Statistical Society*, March 1913); Sir George Paish ("Great Britain's Capital Investments in Other Lands," *Journal of the Royal Statistical Society*, September 1909, pp. 465-80); Cairncross (*op. cit.*, pp. 229-30); and White (*op. cit.*, pp. 105-12).

For the inter-war and post-war years there are the studies of Lord Kindersley and the Bank of England, respectively; contained in annual articles on "British Overseas Investment" by the former in the *ECONOMIC JOURNAL* from 1929 to 1939 and in *United Kingdom Overseas Investment* by the latter (1938-48; 1948 and 1949; 1949 and 1950; 1950 and 1951). Unfortunately, the two series are not consistent for the one overlapping year. The Bank of England series must be taken as superior to that of Lord Kindersley, since they were based upon an enumeration rather than a sample: in particular, the Kindersley figures were found to have been overstated as a result of domination of the sample by some of the more profitable concerns for which the data were readily available. On this account, the Kindersley figures have been reduced to conform with the Bank of England data.

For 1926 and 1927, the rough Kindersley estimates are not comparable to the more broadly based ones starting in 1929. The figures for the 1920s have

therefore been roughed in freehand. The 1952 and 1953 figures, filled in on separate occasions, prior to the publication of the Bank of England *Annual Report* are also guesses based on indications of investment returns in many countries furnished in the *United Nations Monthly Bulletin of Statistics*. The 1952 figure should be revised from 83 to 85, but the preliminary figure was used in 1952 calculations.

4. Exchange Rates

Conversion to dollar basis of all series was made on the exchange rates published by the League of Nations (*Balance of Payments, 1913-27*, and subsequent annual volumes, and the United Nations (*Direction of International Trade*, July 1, 1953) supplemented by the *Federal Reserve Bulletin*. The official rate of 40·2 U.S. cents to the Reichsmark has been used for 1934-38. It is believed that this does less violence to the data than any other imputed rates, such as 30 cents; while the internal value of the mark was nearer 25 than 40 cents, its value in external trade was kept near the official value, at least on imports. Conversion at a single rate of exchange is inappropriate for a multiple-exchange-rate system, and each transaction should be converted at the rate appropriate to it. It is likely that the average rate for exports was close to 30 cents and that for imports close to 40. Using a single rate of exchange distorts the terms of trade, but lacking knowledge of the terms of trade, it is impossible to calculate the appropriate exchange rates. The rate of 40 cents was used anyhow.

5. Balance-of-payments Estimates

The indexes were combined on the basis of volume weights derived from converting balance-of-payments estimates to 1913 prices.

For the pre-war period, the balance-of-payments data for Great Britain, France, Germany and Sweden have been drawn from estimates of Imlah (*op. cit.*), White (*op. cit.*), H. G. Moulton and C. E. McGuire (*Germany's Capacity to Pay*

Industrial European Freights and Returns on Foreign Investment

(In millions of dollars, and as a percentage of current account)¹

	1913.				1928.				1938.				1952.			
	Credit.		Debit.		Credit.		Debit.		Credit.		Debit.		Credit.		Debit.	
	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%
	mn.		mn.		mn.		mn.		mn.		mn.		mn.		mn.	
United Kingdom	1500	37	—	0	2100	34	—	0	1470	38	—	0	2410	23	520	5
Germany . . .	420	15	—	0	230	7	210	6	60	5	150	12	210	5	—	0
France . . .	460	25	50	3	350	17	60	3	410	37	30	3	300	7	140	3
Italy . . .	30	5	—	0	50	6	60	5	50	9	30	5	250	15	—	0
Netherlands . .	—	—	—	—	240	23	80	7	360	38	60	7	410	16	70	3
Belgium . . .	80	10	—	0	80	9	50	5	60	8	25	3	100	4	80	3
Sweden . . .	20	10	10	6	70	14	—	0	90	16	—	0	200	11	—	0
Switzerland . .	80	22	20	5	75	15	25	5	80	15	30	5	100	8	60	5

¹ Current account as approximated by the sum of merchandise trade, freights and returns on foreign investments.

(New York: McGraw-Hill, 1923), pp. 27, 268), and E. Lindahl, E. Dahlgren and K. Koch (*The National Income of Sweden, 1861-1930*, Part II (London: P. S. King, 1937), p. 584).

For the inter-war and post-war years use has been made of the balance-of-payments studies of the League of Nations and International Monetary Fund, adjusted, where possible, on a comparable basis.

The remaining gaps, mainly for Belgium pre-war, for Belgium and Italy in the 1930s and for Switzerland, have been filled with scattered information from a variety of sources and from rough approximations. Amounts smaller than 3% of the total have been ignored.

An impression of the weights may be gained from the table on page 34 of balance-of-payments data for selected years. This also gives an indication of the extent to which the services have been covered on a net basis.

6. Adjustment of Merchandise Terms of Trade to Eliminate Intra-Industrial European Trade

An ingenious formula for eliminating the effect of trade within a group of countries in attempting to ascertain their terms of trade with the outside world is presented in "A Note on Index Numbers of Terms of Trade," United Nations, *Economic Bulletin for Europe*, Second Quarter, 1953, pp. 21-6. This uses knowledge of the relative shares of Industrial Europe and the rest of the world in the trade of Industrial Europe, the assumption that from year to year export unit values within Industrial Europe do develop differently from those with the rest of the world by no more than 10%, and the truism that the terms of trade of Industrial Europe in Trade with Industrial Europe are 100, to calculate the terms of trade of Industrial Europe against the outside world within a narrow range.

This method, however, is unsatisfactory over an extended period of time, because the range becomes increasingly wider from year to year. The assumption of a 10% rate for longer periods than a year is perhaps appropriate over the business cycle as a whole; in periods of depression, such as that from 1929 to 1933, however, it is inappropriate on anything more than an annual basis.

The present method of adjustment relies upon direct estimation of the terms of trade of Industrial Europe with outside countries over certain long spans of years, beginning, however, only in 1900. These fix the terms of trade in 1913, 1928, 1938 and 1952. Intervening figures are estimated by straight-line interpolation, a method which is unsatisfactory because of the likelihood of systematic changes between the calculated points. No better method has been found, however.

There is no basis for adjusting the terms of trade of Industrial Europe on current account to eliminate the effect of trade within Europe, since there is no information on the geographic breakdown of payments on service account.

CYCLICAL FLUCTUATIONS AND THE GROWTH OF DISCRIMINATORY ALIGNMENTS IN INTERNATIONAL TRADE

I. INTRODUCTORY

1. SUPPOSE that all currencies were convertible at the intergovernmental level and that no special bilateral or inter-regional payments systems existed. Suppose that such international financial institutions as the I.M.F. were either non-existent or of negligible importance. Suppose again that governments were free to operate quantitative restrictions on imports, or to manipulate tariffs, in a discriminatory or non-discriminatory fashion. Suppose, then, that there exists considerable cyclical instability in world trade, instability derived in the main from internal fluctuations in one dominant country. Leaving out for the moment what can be meant by "dominant," what pattern of intergovernmental trading alignments, discriminatory or non-discriminatory, bilateral or inter-regional, would show itself? Can one discover any principles governing such a pattern, or determining its formation. This paper seeks to produce some very tentative answers to these questions. What is needed, in order to answer them, is an analysis of the impact of instability upon countries, the essential characteristics of whose balance of external payments differs very widely, and who differ one from another in various other relevant respects. From such an analysis one may be able to understand better the kind of trading world in which we live and to make better judgments regarding the growth and durability of this or that bilateral alignment, regional grouping or international code of trading rules.

2. Such an analysis already partly exists in the familiar historical descriptions of the growth of discriminatory blocs. Such description starts with the breakdown of the gold standard. It goes on to observe the rise of the United States, the decline of the United Kingdom and the behaviour of the United States in its role as a dominant creditor nation. The impact of an unusually severe depression is described along with political change, the breakdown of intergovernmental disciplines in international trade and the growing importance of traditional trading relationships established by geographical alignment, colonisation and financial penetration. Finally, one comes to the Second World War and the post-war dollar problem, and thereafter one usually begins to say what ought to be done. One familiar prescriptive argument, related to circumstances of a certain type, is the scarce-currency doctrine, and I must digress upon this in order to describe more fully, and less baldly than in paragraph 1, the background to which the ensuing analysis is meant to be applicable.

3. The war-time plans for post-war international trade, in their most idealist form, sought to create, via the route of international co-operation and wisdom, a trading world which would approximately conform to the basic

assumptions of established economic theory and doctrine. In this world deflations would be fenced off at source by the use of appropriate financial mechanisms and an array of international commodity stabilisation schemes, while imperfections and inequalities would be mitigated by international lending institutions, by the uprooting of international cartels and by a stern code of behaviour regarding the foreign exchanges, quantitative restrictions, subsidies and tariffs. But it was found that general enthusiasm to join such a system was in many cases subject to various qualifications and reservations—which often expressed themselves as important escape clauses in international articles of agreement and sometimes resulted in no agreement being possible. Countries did desire to reap the gains of non-discriminatory multilateral trade at the same time as acquiring internationally-assured protection from foreign slumps, but such aims conflicted with others—their desire not to be forced into financing another country's extravagance, their desire not to upset established home industry, their desire to trade on the best possible terms, their desire to develop and diversify their economies according to their own ideas and priorities, their desire to retain preferential treatment in certain markets, their desire to support politically congenial regimes in other countries and so on. In going so far, and no further, towards the full ideals of the plan, countries were also influenced by a desire to adopt a set of Queensberry rules which would make life in the far-from-ideal world less complicated. Some kind of "Geneva Convention" was required to govern the use of new techniques of international economic warfare discovered in the previous two decades. Thus, when the United States refused to accept the full-liquidity device for preventing the international transmission of depressions, she found herself unable to gain acceptance of a general commitment to non-discrimination, and was driven to accept, in its place, the scarce-currency clause of the I.M.F., and its associated permissive discrimination via currency inconvertibility and quantitative restriction. The dominant country thus undertook, in certain circumstances, not to retaliate when other countries discriminated against her.

4. Discrimination may be defined as any governmental arrangement, temporary or permanent, which is designed to have the effect in certain circumstances of increasing at least one country's share of the market in certain products at the expense of a country or countries outside the arrangement. Some discriminatory arrangements may be permanent in intention (*e.g.*, Imperial Preference, the European Coal and Steel Community, possibly the Soviet bloc), some may be temporary and highly variable in intensity (*e.g.*, the E.P.U., various bilateralisms, etc.). Discrimination of the latter kind is usually a matter of administrative decree and only occasionally a matter of legislative action. Decisions to discriminate or to impose temporary non-discriminatory restrictions by decree usually arise in response to the situation of a payments crisis, and they are taken by Ministers advised by officials. Such governmental action is economic action undertaken in what is usually a highly oligopolistic "market" by people who are not entrepreneurs in the usual sense but who are attempting to maximise, in

some platitudinous sense, their country's economic welfare over some period or other. But they may not always be conscious of precisely what they are trying to maximise, nor will they always try to maximise the same thing—either in every country or in successive cases in one country. Different societies and different politicians may have widely differing scales of values regarding economic welfare. A more rapid rate of material advance may in some cases be sacrificed to greater security (strategic or economic) or to greater financial stability, for example.

5. If intergovernmental oligopoly is to be the background of our analysis, it may be as well to remind ourselves of the essential features of such a field of operations—extreme uncertainty, unequal and fluctuating bargaining strengths, the great importance of goodwill, conflicts between long- and short-run interests, internal pressures and dissensions, and crooked and indeterminate demand and supply curves in many cases. One might perhaps add that the economic expectations, in the international field, of Ministers and officials, expectations that are of considerable causal significance, are probably scarcely less volatile than those of business-men and that the psychological strains to which Ministers and officials are exposed are probably greater than those felt by Boards of Directors. Such strains are not made less by the sometimes apparent, and often real, conflict between doctrine and practice.¹ However, there is no doubt that governments have acquired, during the past two decades, very great oligopolist skills. An immense amount has been learnt about the advantages and disadvantages of particular courses of action in modern circumstances.

6. Thus it need no longer, I think, be *assumed*, in any discussion of the problems of instability, that the supposed slump would fall upon a largely *laissez-faire* world that is likely, unless special payments arrangements and stringent rules are provided, to be stampeded, out of ignorance, into a general intergovernmental *sauf qui peut*. This means that although our analysis disregards the currency aspect of discrimination—simply because it is desired to concentrate on certain aspects of the trade side—it does not thereby become entirely unreal. If the present progress towards general convertibility continues, the analysis may become highly realistic.

7. To end this lengthy introduction, let us assume the experienced oligopolist world we have asserted to exist, let us assume general knowledge of the scarce-currency principle, let us forget special payments arrangements and inconvertibilities, and attempt to assess how governments might act in the circumstances of an American slump by examining one important

¹ For instance, I think it would be fair to say that the British case for freer trade and payments, the case that is crucial and decisive for the formulation of *British* policy, is neither the general welfare argument nor the arguments of certain vested interests. On the contrary, the case rests rightly or wrongly upon a hard-headed examination of British interest, that of a maritime trading nation with a given dependence on foreign trade and a given type of export trade, in an essentially oligopolist world—i.e., it is correct United Kingdom strategy in a world game. British attitudes towards Commodity Agreements, or towards closer association with the European Coal and Steel community (with its implicit oligopolist threats), are similar examples. General argument has its place but it is not dominant, especially when concrete action is required.

aspect of the oligopoly process. This aspect is the incentive upon governments to adopt discriminatory practices of some kind, or, one might even say, the incentive to maintain at least the formal apparatus of discrimination against the possibility of an American slump. My analysis is mainly confined to visible trade: the invisible side is regrettably left largely invisible, and only cursory attention is paid to capital account.

II

1. In order to examine an incentive that is held to be operative in a certain oligopoly situation, the United States recession, one has, I think, to do two things at once. One has, first, to examine the major differences between the impact of the recession upon the balance of trade and national incomes of different types of country. Secondly, one has to examine various other considerations of an economic or politico-economic character which are of the greatest importance where the incentive to discriminate is concerned. Thus the timing, magnitude and directional distribution of derived cyclical changes in a country's balance of trade, cyclical changes attributable (it is assumed) to fluctuations originating in a dominant¹ country, are determined by the direction and commodity composition of that country's trade. But the determination of whether or not a country is able and willing to engage in dollar-substitute trade induced by discriminatory controls will be affected not only by the direction and composition of its trade but also by the internal structure of its economy, by its institutional framework and by what its leaders may consider to be its longer-run interests.

2. For purposes of examination we may therefore enumerate a collection of boxes into which countries other than the United States might be sorted. In practice, any one country is not likely to belong exclusively to any one box in every period of instability, or indeed in any one period; but in order to derive some "principles of discrimination" from this tangle one must, for the present, suppose that each individual country is so preponderantly influenced by a particular aspect of its situation, when free to take action, that it chooses to jump into one appropriate box rather than try to keep footholds in several.

3. The "boxes" to be considered are:

- (a) crisis primary-producing countries with all-round severe deficits;
- (b) countries to be described as satellites of the United States;
- (c) crisis primary-producing countries with marked variations in the severity of their deficits as between important customers;

¹ What is meant by dominant country? Such a country is:

- (a) Of sufficient size, as an international trader, and of sufficient volatility as an importer, for fluctuations in her imports to cause, by themselves or jointly with induced fluctuations in countries importing similar commodities, large changes in the incomes of people producing them; i.e., large enough to provoke crisis and government action.
- (b) Also a country of whose competitive power, in the widest sense, many other countries are *afraid* and against whom, therefore, such countries welcome any reputable excuse for organised discrimination.

- (d) crisis primary-producing countries with substantial home industry;
- (e) manufacturing countries trading manufactures with each other;
- (f) countries that buy and sell commodities that the United States exports;
- (g) countries that buy and sell commodities which the United States does not export (but does probably import);
- (h) countries to be described as satellites of some other non-United States country.

How, then, are the occupants of each box likely to react to the stimulus of a recession in a dominant country that is, as a matter of fact, *an importer and exporter of both primary products and manufactures on a scale that ensures for it a major position both as buyer and seller in each category?*

(a) *Crisis Primary-producing Countries with All-round Severe Foreign Deficits*

In so far as much of the foreign trade of such countries consists of the exchange of primary produce for manufactures, shipping services and currency used for debt payments and dividends, they will normally experience a sharp worsening of their terms of trade concurrent with a falling volume of sales to, in the first instance, the United States. Abnormally this may not occur; certain primary products may not fall in price relative to that of manufactured imports, due, for example, to national or international schemes to maintain their world prices; the volume of trade in certain basic foods may be maintained or increase; certain manufactures or semi-manufactures (*e.g.*, steel, jute goods) may show great price flexibility; the declining cost of invisible items may offset falling export prices. But one may accept the proposition as descriptive of a common phenomenon in the international trade cycle.

Unless foreign-exchange reserves are large, the effect of falling home incomes upon import volume both heavy and quick and the degree of deliberate anti-deflationary government action small, a severe foreign deficit will arise and an exchange crisis ensue within nine months or so of the onset of the recession. It is a moot point whether the deficit with the United States is likely either to be proportionately larger or quantitatively more important than the deficit with other countries in whose favour the terms of trade have moved. The fall in both volume and price of the primary imports of the United States, and falls in the price of American primary exports, both generated by internal American changes, will probably generate downward inventory cycles in such materials in hitherto "non-slump" importer countries.¹ This short-circuit effect, whereby an "auto-

¹ One says "will probably generate." Abnormally this may not be so. It may depend upon the rate of industrial advance in non-slump countries and the amount of inventory carried at the time. It may also depend upon the after-effects of import cuts imposed governmentally in some previous crisis, upon expectation of renewed cuts or upon expectations of currency revaluation. But one would usually expect such factors to operate only in one or two countries, the general international effect being one of attempted inventory reduction. A "cyclical" movement in United

nomous" inventory slump occurs elsewhere, means that to the country exporting badly-hit primary products, "the American slump" is in fact worldwide, and the fall in its exports to America proportionately hardly more severe than with other countries that buy its primary produce. In certain cases the short-circuit effect may be so combined with directional complications that a country's derived dollar deficit may be a quite minor affair relative to its deficits elsewhere. In the extreme case, a country might have no trade at all with the United States in the products concerned, but yet incur a balance-of-payments crisis directly derived from an American recession—a crisis caused by worsening terms of trade and aggravated by inventory reduction on the part of the country's customers. The government of a country in this position must primarily be concerned to stop the drain on its external reserves and save the exchange rate. It will be anxious to do nothing which might in the short run maintain any out-flow of reserves for the sake of uncertain gains later on. Neither will it be anxious, in any case, to worsen its already very adverse terms of trade by purchasing in dearer markets. The incentive to slash imports on an essentiality basis (whose discriminatory effects will be haphazard), blame the instability of manufacturing countries and retreat into as autarkic a life as possible will be very strong. In spite of the general "scarce currency" argument for discriminatory action against the United States, to a particular country in this box such argument will appear hardly applicable, owing to the necessity of curing a deficit which yawns just as large on the non-dollar as on the dollar balance, in certain cases larger. Such a country *might* decide, at this or at a later stage, to discriminate in favour of some particular country or group of them, but it would do so because of certain factors which really place it in another category (or box), for example:

(b) *Satellites of the United States*

Such countries are satellites for a number of reasons—geographical alignment, colonisation, financial and commercial penetration, and so forth—and a very large proportion of their total trade is with the United States (*e.g.*, Central American Countries, Caribbean States, Philippines, parts of northern South America).

Certain consequences arising directly from the satellite status have already been set out by Sir Donald MacDougall in his article "Notes on Non-discrimination,"¹ in which he was, *inter-alia*, concerned to point out certain difficulties that might arise in the organisation of collective discrimination against a slumping United States. His point was, briefly, that "keeping up non-dollar trade"² is not so attractive a proposition if you have very little of it in any case: a country whose trade with the United States is

Kingdom inventories, traceable to government action, may be observed running inversely to the American cycle in 1949–52, but one would not expect this to continue in present circumstances now that the biennial procession of crises has been broken, unless, for other reasons, commodity prices proved sufficiently insensitive to an American recession for absolute falls to be avoided.

¹ *Bulletin of the Oxford University Institute of Statistics*, 1947.

² My quotation marks.

a very large proportion of its total trade (say, over two-thirds) has relatively little to gain from discrimination against the United States—even supposing its exports to the rest of the world *are* initially unaffected by the American slump. Such a country might, moreover, have a great deal to lose through loss of American goodwill. It is the latter point that I wish to enlarge here, mainly because of its particular importance in hesitant cases. Such countries normally enjoy, we may suppose, favourable imperfections for their exports in the United States market and rely upon the United States government and private industry for a supply of long-term capital and short-term credits. Equally, United States exporters enjoy favourable imperfections in these countries, which they would be especially anxious to retain at a time when markets generally are poor. Thus one can presume that a satellite forced to cut imports from all sources would do so in a way least calculated to damage its relations with the United States—for such damage might restrict the flow of long-term capital even more than would occur automatically and divert it elsewhere, with longer-run damage to the country's economic development, it might prejudice the granting of short-term governmental assistance by the United States, it might encourage the eventual abrogation of existing long-term preferential tariffs accorded by the United States, and, scarce-currency notwithstanding, there is at least some risk of increased (theoretically non-discriminatory) protection of United States domestic industry competing with the satellite's exports. These are all serious *risks* to be weighed against small short-run gains in a temporarily bad situation of unknown but relatively short duration. The result of such considerations, plus assessment of the influence of interested parties upon United States action, could easily be a policy of discrimination in favour of the United States and at least only a nominally non-discriminatory policy—the licensing of imports of manufactured goods carries a multitude of opportunities for concealed discrimination, the more so in countries prone to irregularities of administration. The sanctions that can be applied by other non-dollar countries against such behaviour are probably small compared to the short- and long-run gains of maintaining good relations with the United States. And in any case such sanctions are unlikely, for many reasons, to be applied in concert.

Even a completely “fair” policy of non-discriminatory cuts may, in the satellite case, have some of the effects of an avowedly discriminatory policy. For although such restrictions usually allow the supplying countries to compete among each other for the reduced volume of business permitted,¹ the sharp reduction in the size of the market is itself likely to favour the dominant supplier, whose exporters possess superior local marketing organisation and a strong hold on local tastes—unless the smaller competitors indulge in substantial price-cutting which does not meet with retaliation. For in an expanding market the chances of successfully winning a share away

¹ *I.e.*, by global quota systems. Some countries restrict imports, however, on a percentage-of-base-period basis applied to each supplying country—thus freezing each country's share of the market and more obviously protecting a dominant supplier against encroachment.

from the dominant supplier may be worth the selling costs involved, while in a sharply restricted market even a small remaining foothold may not be worth its maintenance and all effort be concentrated on the retention of much more important positions elsewhere. Discrimination in favour of smaller competitors may be necessary if their position is to be held at such a time. It would, I think, be thus generally agreed that the satellite system would either intensify itself during a recession or else ward off attempts to weaken it. Only if a given satellite found itself so affected by other quite different considerations as to choose another box, or if the slump was so severe as to enhance the gains of detachment from the United States, would the system suffer defections.

(c) *Crisis Primary-producing Countries with Marked Variations in the Severity of their Deficits as between Important Customers*

Fluctuations in the price and volume of trade in primary products vary considerably commodity by commodity, both in amplitude and in timing. A country exporting several primary products in such a way that it exports proportionately more of Commodity A to Country A than to Country B is likely to find that its trade with one important customer, or group of them, remains relatively stable compared to its trade with others—either in the initial stages of a slump or right the way through. A country exporting coffee, and say cotton (*e.g.*, Brazil), might find that its trade with the United States behaved in a less volatile fashion than its other trade. Australia and New Zealand, whose trade in foodstuffs with the United Kingdom is likely to be more stable than their wool trade with the world in general, are likely to find on this account that a derived bilateral deficit with the United Kingdom is relatively not so severe as that with the United States or with other wool-importing countries from whom manufactures are purchased.

Although, under conditions of currency convertibility, there is no necessary direct monetary incentive to discriminate in favour of a country with whom one's trade happens to be relatively stable, or not to discriminate against it, there may nevertheless be other strong reasons for doing so. To begin with, such a policy looks fair and reasonable—one cuts imports only from countries that have “cut” their imports from you, rather than cutting them all-round and forcing a surplus out of one's “good” customer in order to finance a (reduced) deficit with one's bad customers. Such a policy looks even more equitable if the good customer's virtue can in part be attributed to that customer's conscious policy and not entirely to the basic cyclical behaviour of the commodities concerned. But besides being fair, and least provocative of complaint, such a policy may be in the long-run interests of the country concerned. For whereas in the short-run the danger of the “good” customer deliberately retaliating against non-discrimination may be small, retention of goodwill may be important if in the longer-run the customer can develop its trade with other, competing primary-producers who are more willing to discriminate in its favour in times of cyclical difficulty. This point would be accentuated if the primary-producer looked

forward to a price-stable and expanding market in, say, meat exports to the United Kingdom while the outlook for price-volatile wool was poor and uncertain.

Such long-term considerations, added to those considerations of "good-will" more applicable to satellite countries (*q.v.*), may be expected to reinforce short-run convenience and lead the country concerned to discriminate in favour of its pronouncedly more stable markets when forced, by external circumstances, to cut imports.¹ But such a policy might run into difficulties if the country really belonged to:

(d) *Crisis Primary-producing Countries with Substantial Home Industry*

Exporters of primary products who supplement home production of manufactures by imports of such goods may be expected to bring their trade into balance, in response to a fall in export receipts, by protecting their own industry—*i.e.*, by doing without those supplements to home output which can be afforded only in more prosperous times. This action is partly justifiable on socio-economic grounds—governments cannot permit avoidable secondary deflations to occur in the very industries that have been set up to reduce the country's dependence on unstable export earnings. But short-run protection can be justified on terms-of-trade grounds.² This protectionist urge also exists in countries that are predominantly exporters of manufactures, but, except in response to dumping, fears of retaliation will be a strong deterrent; short-run retaliation against primary-producers, however, may be very difficult to operate, and such countries are reasonably safe, provided they do not immediately encourage, by their protectionist policy, the development of synthetic substitutes for their exports.

It is clear that protection of this sort may radically affect the ability of a country to impose discriminatory import cuts of the "scarce-currency" type, since the structure of its home industry and its requirements of raw materials will dictate an import programme which it may be difficult to reconcile with a policy of discriminating against one part of the world.

¹ Yet Australia and New Zealand imposed restrictions in 1952 which were allegedly non-discriminatory between sterling and E.P.U. sources of supply. These restrictions were, however, designed both to stop all drain on those countries' external reserves (sterling balances) and to get them into balance with the non-sterling world. This could evidently be done in the way it was without obviously being unfair to the United Kingdom (*i.e.*, without using a surplus with the United Kingdom to offset a deficit with other E.P.U. countries). This suggests that owing to the delayed recovery of Germany, and the restrictions on dollar goods, the great demand for imported consumer goods (subsequent to the "Korean" commodity boom) had led to a greater flow of United Kingdom exports into Australia and New Zealand than one would "normally" expect in a boom (*i.e.*, if one started from a "normal" situation of no prior discrimination and no early post-war complications). Such a greater flow would result in the Australians' deficit with the United Kingdom being just as severe as their deficit with E.P.U. although their exports to E.P.U. fluctuated more violently. Cyclical variations in the share of manufacturing countries in the primary-producers import trade, attributable to variations in pattern of demand, could occur "normally," but I have not dealt with this point.

² *I.e.*, that at the slump terms of trade it would pay to use more home resources to manufacture goods usually imported rather than to use such resources to export. Or that if these terms of trade continued a devaluation would be necessary which would probably not worsen the actual terms of trade further but would lead to a reduction in imports of manufactures.

(e) *Manufacturing Countries Trading Manufactures with Each Other*

These countries have temporary derived surpluses with primary producers and quantitatively small dollar deficits (*i.e.*, small in relation to their external reserves). Such countries are not under violent pressure to take action until time-lags of appreciable length have elapsed and the drying-up of their derived surpluses compels them sooner or later to plug their dollar deficits and to relieve their internal employment situations. They may welcome the improvement in their terms of trade, and will tend to optimism regarding the duration of the United States recession and of their own inventory movements. Nevertheless, if the recession continues, they may make discriminatory arrangements between each other in substitution (if that is possible) for their dollar trade in manufactures, and are unlikely actually to cut their mutual trade. Here the general scarce-currency argument for discrimination comes into its own—there are no complications, the dollar deficit is the only deficit, and the futility of mutual import-cutting obvious. But, of course, the trade of such countries (typically West European countries) with each other is by no means the only field in which they can operate discrimination and, when faced with shrinking markets in primary-producing countries, they may find themselves in the more general category:

(f) *Countries that Buy and Sell American Export Goods*

Many countries compete with the United States in the export market for certain products while at the same time importing other products, either from the United States or from competing sources. These countries that supply almost perfect short-run substitutes for American goods can engage in direct mutual discrimination against the United States. Such discrimination obtains for each partner a larger share in the (reduced) world market for dollar export goods; *e.g.*, by discriminating against the United States, Brazil and Germany can respectively increase their shares of the market in raw cotton and engineering goods at the "expense" of the Americans—their most feared competitors. America does not necessarily sell any less of these goods than she might if no discrimination took place, but her share of the market is smaller, since the total trade in these commodities is probably larger with discrimination than with non-discrimination.

The point being made here is that the gains from discrimination against a slumping United States are of two kinds. One may be called the "income effect" and the other the "substitution effect."¹ Thus any one country exporting American-type primary products or manufactures is guaranteed the benefits of discrimination on two counts:

(i) Because of the contribution such discrimination makes to the general maintenance of non-American business activity and trade.

(ii) Because the foregoing of American goods by other non-dollar countries creates additional demand for *particular* non-dollar goods—*i.e.*, substitutes for American ones. Such additional demand may be offset against any general decline in non-dollar demand for American—

¹ See R. Mikesell, "Discrimination and International Trade Policy" (*R.E. & S.*, 1950).

type goods that may occur as a result of inventory reduction, etc., in the non-dollar world.

The country that does not export American-type goods benefits from the "income effect" but not from the "substitution effect." The importance of the distinction, for present purposes, lies in the fact that if general co-operative discrimination is not guaranteed, then the incentive upon an individual country to adopt discrimination if it has to rely upon the income effect may, in many cases, be very small, whereas for a country able to rely on the substitution effect, co-operation between itself and only one or two other countries can yield very substantial and immediate results.

In the case, above, of countries exchanging manufactures, the process seemed free of complications. This may be attributed to the fact that in such countries, over a wide but heterogeneous field of so-called "inessential" manufactures, deprivation (whole or partial) of American supplies is unlikely to lead to serious hardship or to inequality of the "burden" of discrimination as between the countries concerned. Such hardship and inequalities would occur, first, if American manufactures were marginally much more essential to the countries concerned, or to one country, than were internationally traded non-dollar manufactures, and secondly, if discrimination were to be accompanied by such significant local premia on the prices of the non-dollar manufactures concerned as to have serious effects upon certain industrial costs or upon costs-of-living—either equally in each country or disproportionately severe in one country. The first difficulty mentioned is perhaps a real one for an individual country, but the second is not very probable—significant premia may occur, especially if American manufacturers choose to dump in export markets, but their effects will be small. In the discriminatory exchange of primary products for manufactures, however, the situation can be very different. Premium prices for the non-dollar primary products which are normally obtainable in the United States can affect industrial costs in manufacturing countries at a time when many export markets are highly price-sensitive, when American manufacturers in particular are buying in the cheapest market and when small changes in costs may seriously affect competitive power and will certainly be thought to do so at the time. Such difficulties are, of course, increased if discrimination is to be applied to the whole dollar area and not only to the United States. Likewise, to the non-dollar primary producers of dollar commodities, whose imports of manufactures are essential, the paying of substantial premia over American prices (perhaps being reduced by aggressive American selling policies) is a much more serious matter, and the proportion of total imports concerned likely to be much larger, than in the case of manufacturing countries trading with each other. This complication is intensified if, as is perhaps, however, unlikely,¹ the primary producer is in any case experiencing a severe worsening of his terms of trade. To these difficulties may be added a further complication. A decision to discriminate as regards primary products usually involves a considerable forward commitment, *i.e.*, it is not

¹ See footnote to p. 48.

xible or easily reversible. This is particularly the case if controls are erected over private traders. Discrimination in, say, cotton probably requires allocation of licences in advance of a crop year. To act in the middle of a crop year may be useless or impossible, unless existing contracts are broken—a very distasteful action. Allocation of licences in advance means estimating likely requirements, size of harvest in various parts of the world, possible levels of premium prices, etc., all of which is very hazardous—

more so if monopoly selling agencies exist in the primary producing country concerned. Merely forbidding the import of certain dollar manufactures is a much more simple matter. The effect of this complication, in combination with optimistic uncertainty, is to make such commitments attractive—particularly if the administrative measures required are politically obnoxious and involve the closing of commodity exchanges whose existence is thought to be of long-run benefit to the country.

The consequences of all these complications seem to be two-fold. First, though they may not cause less discrimination to take place than would occur under some theoretically perfect system of equal discrimination all round, they will strongly influence the channels into which discriminatory trading will flow (*i.e.*, who discriminates with whom). Secondly, since the discrimination takes place in a particular market in which the governments concerned may well be unlikely to allow the adjustment of supply and demand in the non-dollar sector to be left to ordinary market forces (as might be allowed in the discriminatory exchange of manufactures), we must expect intensive bilateral bargaining to take place. Without such bargaining (on prices and quantities), countries would be unwilling to undertake forward commitments unilaterally which carry excessive risks on the price side without any necessary guarantee of reciprocity. Both sides are in a position to exploit the dollar scarcity of the other, and must resort to bargaining in order to get a solution. If, therefore, a country is at one and the same time relatively more anxious to buy a particular industrial raw material (*e.g.*, cotton) in the cheapest market, owing to the relatively greater importance of the industry concerned in the country's export trade, and is also institutionally hostile¹ to bilateralism, one would not expect it to discriminate unilaterally in the material concerned unless it were especially anxious to improve its long-run relationship with the potential bilateral partner.

Thus, although mutual discriminatory exchange of this type is obviously likely, the complications we have considered point to:

(a) Discrimination against United States manufactures occurring, without complication, between non-dollar manufacturing countries as a resultant of unilateral restrictions, of varying intensity, being placed on such American goods in accordance with accepted scarce-currency doctrine.

(b) Certain non-dollar manufacturing countries being more inclined, *i.e.*, because of, for example, the existence of organised free commodity exchanges in the country—which are not administratively a suitable discriminatory instrument. The degree of localisation in domestic industry is also important.

clined to discriminate against American primary products than American manufactures, owing to their relative indifference to premium prices of such products, their relative aptitude for bilateralism and, perhaps most important of all, their relatively greater desire to develop longer-run favourable imperfections in the primary-producing countries concerned.

(c) Bilateralism between the non-dollar manufacturers and primary producers of dollar-substitutes, quite possibly only emerging at a late stage when bargaining power on either side has been seriously weakened by loss of reserves and markets.

(g) *Countries that Sell Commodities that Are not Direct or Near Substitutes for United States Exports*

I.e., typically, countries selling primary products of which the United States is an importer and who are damaged both by the decline in American demand and by associated declines elsewhere. Being unable to obtain

¹ The whole analysis here is, of course, affected by what might be called "unco-ordinated stabilisation of dollar primary-commodity prices—notably the international effects of American farm-price legislation. In circumstances where there is world excess supply of, for example, American-type cotton, the world price of cotton can be held at or near the American internal support-price if all cotton-exporting countries operate government stock-holding agencies in the requisite manner and no one country attempts to dispose of its crop by quoting such lower prices as would induce inter-governmental price warfare. In cases where the American internal support price is so high as to have adverse long-run effects on all cotton exporters—by encouraging synthetics and so forth—the price leadership may pass to another country (*e.g.*, as it may perhaps to Canada in wheat). But provided each exporter country is concerned only to retain what it considers to be its fair share of the market, the system of stockpiling plus price leadership could hold together for some time. How does this affect discrimination?

Genuine international commodity agreements are essentially anti-discriminatory—attempts to write a dual- or multi-price system into an agreement being unlikely to succeed—and would, if sufficiently widespread, make discrimination scarcely necessary. "Unco-ordinated" stabilisation schemes which look more respectable than, but are hardly distinguishable from, exporters' cartels, are a different matter. It is possible for importing countries to bargain their higher-priced manufactures for larger quantities of American-priced "Brazilian" cotton than their ordinary trade connections, etc., would otherwise have bought. America cannot retaliate in like manner (because she cannot undertake the reciprocal imports), but she can retaliate either by price-reduction (which has serious external and internal disadvantages for her) or by accepting payment for support-price "cotton" in the local currency of the importer. This latter method in fact means, at least in the short-run, giving away the cotton without actually changing its world price, and passes the responsibility of starting a price-war back to her competitors. The net result of such a process is very indeterminate, and depends upon such factors as the distribution of the surplus stocks between producing countries, the timing of American decisions to give away cotton, the policy of individual non-dollar producing countries concerning their long-run aims and the eagerness shown by certain consumer countries to collar certain markets (Egyptian, for example) by bilateral trade agreement of a barter character. The process could produce the most drastic shifts in trade patterns, or it could produce no change at all.

Perhaps the most likely outcome is for the Americans to avoid discrimination in cotton by the gift method, but to discover that by doing so they increase their share in those countries which, for institutional reasons, are not prone to bilateralism (but which probably discriminate hard against American manufactures) and lose their share elsewhere. The net result would be less discrimination against America but a more drastic change in intra-non-dollar trade direction—*particularly* if the countries unsuited to bilateralism could look to other sources of favourable treatment or, in the longer-run, to growing markets in the dollar area itself.

Thus the removal of the "premium price" factor leads one to fall back on that of "institutional suitability for bilateral barter" as the main factor, plus the presence of other discriminatory practices.

larger share in the reduced world market for such goods, save at each other's expense, the most they can do is to rely upon the "income effect" and help limit the contraction in world trade by themselves discriminating against the United States—even though their customers are unable directly to discriminate in their favour in return.¹ But this group exists only as a logical corollary to the previous one. Countries in it in fact either belong to box A, B or D, and are unlikely to discriminate against the United States, or else find themselves in box C and may discriminate accordingly.

(h) *Countries that Can be Described as Satellites of Some Non-United States Country*

These countries, for the usual satellite reasons, may choose to discriminate in favour of their dominant partner and against the rest of the world.

4. The principles outlined in the above paragraphs may be summarised as follows:

(a) Discrimination against the United States is unlikely to be undertaken, owing to serious practical short- or long-run difficulties, if a country is either a satellite of the United States, an exporter of primary products whose difficulties on its non-dollar balance are habitually as severe as, or more severe than, those on its dollar balance or whose protectionist requirements are both non-discriminatory in effect and uninhibited by possible retaliation from non-dollar countries.

(b) Mutual discrimination against United States primary products or manufactures is *prima facie* probable between countries not prevented by considerations in (a) above and between whom trade in dollar-substitutes is possible, such that the mutual discriminatory action relieves the immediate drain on external reserves without either causing acute shortages of essential goods or giving rise to serious imbalances between the countries concerned. In so far as unilateral discriminatory actions produce important price premia and do not automatically stimulate reciprocal treatment, bilateralist arrangements will arise between countries best suited to them.

(c) Discrimination in favour of a particular non-dollar country, who may not be able, in the short-run, to accord reciprocal treatment² (for lack of dollar-substitution), is likely to be undertaken, out of short- and long-run considerations, either by a satellite country or by a primary producer whose trade with the particular country happens to be stable relative to its trade with other countries.

(d) Notwithstanding any of the above considerations, the process of the spreading of the recession, and the time-lags involved, will delay the mutual discrimination of type (b) above, while action of type (a) and (c) will occur early on. The fact of discrimination of type (c)

¹ *I.e.*, they cannot, by government action, maintain their imports of the materials concerned simply by cutting dollar imports. It is possible that, by government action, they might retaliate by cutting imports of the materials even more than occurs automatically and by not retaliating claim that they are discriminating in favour of the producing country. Such retaliation seems extremely unlikely, as it would only make matters even worse for both parties.

² Save on capital account, a vital consideration.

being in force when type (b) comes up for consideration means that the "suitability" of countries for bilateral arrangements, etc., will be affected by the degree to which they are already benefiting from discrimination of type (c).

5. If we did now add some currency inconvertibility to the scene, *i.e.* absence of central bank full net convertibility into dollars, then further difficulties would arise in the case of countries dependent on multi-lateral dollar earning¹ at the same time as certain other problems are made easier

III

1. We have attempted, above, to analyse in a suggestive fashion the operation of an incentive to take discriminatory action—an incentive presumed to be present in an oligopolistic intergovernmental market at a especially action-stimulating conjuncture of circumstances. The conjuncture was that of an American recession accompanied by pronounced difficulties in commodity markets. It does not matter whether or not national recessions are solely an indulgence of the United States, nor whether or not they always give rise to difficulties in commodity markets. What does matter is that America is dominant, that commodity markets are unstable and that the conjuncture required to stimulate discrimination of the type here considered—*i.e.*, induced by instability in world trade—is that of the American recession plus commodity surpluses. The analysis was conducted in terms of crude economic geography, a rough sketch of the cyclical process and crude oligopolist reasoning. One cannot pretend it has got very far nor been at all precise. Much further research, for which there is no space here, needs to be done, with particular reference to the currency rather than the trade side of the problem. The currency aspects of the sterling discriminatory system, or of the O.E.E.C. system, are of vital importance. Even on the trade side alone, it is not to be imagined that practical investigation would reveal countries falling neatly into the categories I have used, nor that my list is in any way exhaustive—important discriminatory offers, made at a time of cyclical dollar scarcity, may, for example, be motivated purely by political factors of a non-economic character. However, even without the detailed supporting evidence, it is possible to point at certain provisional conclusions.

2. The first conclusion is that given a recognition of American dominance—long- and short-run fear of American competitive power—and international knowledge of the principles of scarce-currency doctrine, then instability in international trade could produce a considerable amount of discrimination against the United States, even though no very effective payments arrangements are set up to facilitate it.² Such discrimination may be accompanied by various other discriminations within the non-dollar world. The result

¹ See again Sir Donald MacDougall, "Notes on Non-discrimination."

² The early post-war situation, with its disruption of supplies, disorganisation of trading practices, acute inflationary pressures and intense temporary demand for dollar goods, is a poor guide to the circumstances here considered.

may appear to be very far from the collective and co-operative discrimination against the United States sometimes advocated, and the world have a distinctly "jungly" appearance, but there may be a key to understanding of the jungle which reveals it as something approaching the most that is practicable in the way of defence against the worst consequences of instability. Furthermore, the analysis suggests that regional payments arrangements which are set up—perhaps in different circumstances—that ignore all these complications on the trade side and attempt to force discrimination along "unnatural" financially-induced channels could find themselves beset with severe "structural" difficulties in consequence of periodic imbalances arising between members which cannot feasibly be overcome via more discrimination. Inappropriate payments arrangements will always bear the scars of the last cyclical crisis. If it really is the case that certain standards of behaviour on the part of America and other countries, taken in the context of a given pattern of trade with given cyclical characteristics, will produce a fairly probable network of discriminatory alignments of variable intensity, then the most successful of any special financial arrangements would be those most consistent with that pattern. One must, however, qualify this conclusion by remarking that the growing prevalence of governmental dominance over nominally free commodity markets makes it increasingly difficult to ascribe any special cyclical characteristics to any one major primary commodity.

3. The second conclusion is that the development of long-run trading relationships between pairs or groups of countries, the enlargement or diminution of shares of markets in particular countries, is greatly influenced by the cyclical behaviour of their mutual trade and the consequential behaviour of their governments in the context of American domination. Temporary discrimination intensifies existing imperfections or sets up new ones. In certain cases temporary restrictions, even of a non-discriminatory character, can preserve and intensify existing imperfections. A cyclical crisis in international trade is at one and the same time a challenge to one's defences and an opportunity to strengthen one's grip on certain markets or acquire a decisive lead in new ones. The type of analysis attempted in this paper, if developed, should provide additional material for assessing which markets are appropriate ones for an individual country to cultivate—or which are the markets where one's long-run competitive power (including, here, one's relative immunity from sudden governmental ousting) is greatest.

4. Finally, it must be emphasised that this paper is not meant to be prescriptive. Rather is it meant to draw attention to certain features of that trading world for whose improvement so many prescriptions abound. A generalised prescriptive argument acquires practical meaning when it is related more closely to that specific conjuncture, with all its pressure and alarm, at which it is supposed to become an implemented policy.

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THE RATE OF INTEREST AND GENERAL EQUILIBRIUM ANALYSIS¹

IN spite of the fact that the theory of interest has been exhaustively discussed in the last twenty years, no general agreement seems to have been reached. On the contrary, the area of disagreement seems to have widened in recent times. The dispute between Loanable Funds and Liquidity Preference theorists has flared up again,² a number of economists led by Mr. Modigliani have sought to re-establish the older classical propositions,³ while Mr. Patinkin has drawn attention to the very special character of some of the Keynesian assumptions.⁴ Most of the disputants have this in common: they seek to find one particular supply-and-demand relation (excess demand equation) out of all the supply-and-demand relations which go to make up a general equilibrium system, which can be said to "determine" the rate of interest. The dispute turns on which out of a number of such relations to choose.

The purpose of this paper is two-fold. First, we shall show that Mr. Modigliani's classical revival comes up against certain logical objections to which Mr. Patinkin has drawn attention, and must therefore be rejected. The excuse for doing so is partly that Mr. Modigliani's model, in spite of Patinkin's criticisms, seems to enjoy a considerable following, and partly because we shall criticise the model in a slightly different way from that followed by Patinkin. Secondly, we shall draw attention to the divergence which exists between Keynes' definition of liquidity preference (L.P.) and the present custom of identifying the excess-demand equation for money as representing the forces of liquidity preference. We shall choose a different way of stating the L.P. theory which seems more in accord with Keynes' definition. Having done so, we shall show that the dispute between L.P.

¹ I have had valuable comments on a first draft by Mr. R. F. Harrod, Mrs. Joan Robinson and Mr. H. G. Johnson. I have also benefited from correspondence with Mr. D. Patinkin, although we have been unable to reach agreement on a number of points. All errors, of course, are my own.

² E.g., W. Fellner and H. M. Somers, "Alternative Monetary Approaches to Interest Theory," *Review of Economic Statistics*, XXIII, 1941, pp. 43-8; and the same authors, "Note on 'Stocks' and 'Flows' in Monetary Interest Theory," *Review of Economic Statistics*, XXXI, 1949; L. R. Klein, "Stock and Flow analysis in Economics," *Econometrica*, July 1950, pp. 236-41; Karl Brunner on the same topic, *ibid.*, pp. 247-51, and replies by Messrs. Fellner and Somers, *ibid.*, pp. 242-5 and 252. See also H. G. Johnson, "Some Cambridge Controversies in Monetary Theory," *Review of Economic Studies*, XIX (2), pp. 90-105, and D. H. Robertson, "Comments on Mr. Johnson's Note," *ibid.*, pp. 105-11.

³ F. Modigliani, "Liquidity Preference and the Theory of Interest and Money," *Econometrica*, XII, 1944, pp. 45-88. (This has been reprinted in *Readings in Monetary Theory*, and subsequent page references will refer to this book.)

⁴ See Don Patinkin's three articles on classical equilibrium systems in *Econometrica*, April 1948, January 1949 and April 1951. Also by the same author, "A Reconsideration of the Equilibrium Theory of Money" and "Further Considerations of the General Equilibrium Theory of Money" in *Review of Economic Studies*, No. 45 (1949-50) and No. 50 (1952-53) respectively.

and loanable funds (L.F.) turns only on the period which is chosen for consideration.

Before embarking on this task a few words on methodology may not be out of place. In the main we shall conduct our analysis on the basis of static Walrasian Equilibrium systems. These are unsatisfactory in many respects, and in particular are fairly unrealistic as a description of an expanding capitalist economy. But for the most part all recent discussions in our field, not excluding the General Theory, are conducted in this framework. In particular, it must be emphasised that the "Keynesian Revolution" was a revolution because it purported to demonstrate certain propositions concerning comparative statics systems which it had been thought could not be demonstrated. (Probably even those most deeply steeped in classicism could have admitted the possibility of "dynamic" unemployment.) For all these reasons a comparative statics analysis in this paper is the appropriate one.

We begin the paper by a general discussion of what is implied by the statement that one particular supply-and-demand relation "determines" the particular price.

I

From the theory of consumer's behaviour we know that the demand for any commodity or service he consumes or supplies will depend not only on the price of that commodity, but also on the prices of all other commodities he consumes and supplies. It will also depend on his wealth, that is on the assets he holds. If all consumers consume and supply something of every good and service and hold certain amounts of all assets, then the aggregate demand for any good will depend on all prices and on the quantity of all assets. If, then, we define the equilibrium price of a commodity as the price at which the excess demand (demand minus supply) for that commodity is zero, we can "determine" that price only from the demand and supply equations for the commodity if we know the prices of all other commodities and the total quantity of various assets. This is, of course, a well-known Marshallian procedure. If, however, the prices of other goods and services and the quantity of assets held are not known, we need in general at least as many further demand-and-supply relations (excess demand equations) as there are other prices and assets affecting the demand for that particular good. In a general equilibrium analysis therefore all prices are "determined" by all supply-and-demand relations simultaneously, in the sense that we need all of these to find the equilibrium price.

Now it may happen that certain groups of individuals consume only a limited set of goods and that no other group consumes these goods at all. In that case the general equilibrium system could be decomposed into a number of quite independent sub-systems, since by assumption the demand for a certain group of goods is quite independent of the prices of goods falling outside that group. Again, decomposition could arise, if we decide on empirical grounds, that certain prices can be assumed fairly constant, or to

have a negligible effect on the demand for the commodities we are considering. These are all possible ways of cutting down the number of demand-supply relations we need in solving for any particular equilibrium price. In the discussions of interest-rate theory, for instance, the frequently met assumption that savings and investment are highly interest-inelastic is an obvious way of decomposing the system.

In making such assumptions, however, one very important point must be borne in mind: the price of any one good or service must generally affect at least the demand for one other good or service.¹ For we know that a change in the price of any one good will be associated with a substitution effect. This clearly involves a change in the demand for at least one other good, unless we assume that the income effect of the change in price is equal and opposite in sign to the substitution effect, and this would be a very heroic assumption indeed. For similar reasons, the quantity of any asset held must influence the demand for some other good and service unless we assume all income effects to be zero. Thus unless some very special assumptions, not usually found in the literature, are made, we shall normally require at least two excess-demand equations to determine any one price, or the equilibrium quantity of any asset. If this is correct, it will be impossible for us to find one particular market relation (excess-demand equation) which will be sufficient to determine the equilibrium rate of interest. It is the attempt to do this, nonetheless, which may be responsible for the continued controversy in this field, especially the L.P. versus L.F. dispute. By seeing in advance that such an attempt is usually doomed to failure we may save ourselves a lot of trouble.

Up to now we have interpreted the phrase "the price of a good (say i) is determined by the demand and supply for i " as meaning that we can find this price from one supply-demand relation (excess-demand equation) only. There is, however, an alternative interpretation. We could mean the phrase to imply that the price of i changes only if the excess demand for the i th good is different from zero. This interpretation we shall call the Klein interpretation.² The meaning of the phrase quoted is now made far more general. For while the assertion that one excess-demand equation is sufficient to determine the equilibrium price implies the Klein interpretation, the latter does not imply the former. Indeed, no assumptions leading to a decomposition of a general equilibrium system need be made in order to allow us to use the Klein interpretation of the phrase. This is of considerable advantage, especially since using this interpretation the assertion of the phrase can be subjected more easily to empirical tests. If then, we employ the Klein interpretation in analysing the two statements "the rate of interest is determined by liquidity preference" and "the rate of interest is determined by the demand and supply of loanable funds," our main task will be to see whether these two statements imply different behaviour of the rate of interest when there is disequilibrium. If they do, then they are two

distinct theories, and the choice between them must be made on empirical and not on theoretical grounds.

So much by way of general introduction. We will now turn to an examination of the classical revival led by Mr. Modigliani, which is based on a particular kind of decomposition of a general equilibrium system.

II

Mr. Modigliani's model, henceforth referred to as the M -model, is set out below. The notation is as follows: X = total real output, N = amount of labour employed, W/P = the real wage of labour and W its money wage, S = real savings and I = real investment, i is the rate of interest and M the (nominal) quantity of cash. The model consists of the following seven equations:

$$X = F(N) \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (M.1)$$

$$W/P = F'(N) \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (M.2)$$

$$N = N(W/P) \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (M.3)$$

$$S = S(i, W/P, X) \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (M.4)$$

$$I = I(i, W/P, X) \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (M.5)$$

$$S = I \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (M.6)$$

$$M = L(i, W.P/W, X) \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (M.7)$$

Since the model is well known, we give only a brief statement of the meaning of the equations. (M.1) is the production function on the assumption of a constant stock of capital, (M.2) states that the real wage of labour is equal to labour's marginal (physical) product, (M.3) is the supply function of labour, which is homogeneous of zero degree in money wages and prices. (M.4) is the savings function and I the investment function, and (M.6) is self-explanatory. (M.7) is the equation of the demand for cash as a function of the interest rate, absolute prices and real income. Equations (M.1), (M.2) and (M.3) determine X , N and W/P , equations (M.4), (M.5) and (M.6) determine S , I and i , and equation (M.7) determines P .

It is on the basis of this model that Modigliani derives the following two "classical" propositions:

If the supply function of labour is homogeneous of zero degree in all prices (including money wages) then—

- (i) the rate of interest is determined by investment and savings, and
- (ii) liquidity preference determines the level of prices and *not* the rate of interest.

Both the M -model and its conclusions have been criticised by Patinkin. His criticism, however, has apparently not convinced Mr. Modigliani and others.¹ We shall therefore devote this section to showing that both the M -model and its conclusions are incorrect.

¹ That it has not convinced Mr. Modigliani must be deduced from the reprinting of his article in *Readings in Monetary Theory* without either alteration or comment. That it has not convinced others can be deduced from Mr. Johnson's article, *op. cit.*, p. 104.

¹ See, e.g., J. L. Mosak, *General Equilibrium Theory in International Trade*, Principia Press, 1944, p. 25.

² See L. R. Klein, *op. cit.*, *Econometrica*, July 1950.

That this is so can be shown quite simply. It will be seen that equations (M.1)–(M.6) determine relative prices, the rate of interest and the output of all goods without involving the absolute level of prices. The latter is determined by (M.7). Money, therefore, in Mr. Modigliani's phrase, is "neutral." Now, neglecting bonds (as does Mr. Modigliani) we know from Walras' Law that the total demand for goods and money taken together must be identically equal to the total supply of goods and money taken together. It is therefore of considerable importance to the *M*-model to make certain that it is not also true that the total demand for everything excluding money is identically equal to the total supply of everything excluding money. For if this (Say's Law) were also implied, the demand for money would be identically equal to the supply of money, and we would have no equation (as distinct from an identity) to determine the absolute level of prices. It will therefore be sufficient for our purposes if we show that the following statement of Modigliani's is incorrect: "Under 'static' assumptions money is neutral even without assuming Say's Law, if only people are assumed to behave 'rationally'; this is all the classical theory assumes or needs to assume."¹

Let us assume that relative prices and the interest rate are such that the total demand for goods and services exceeds their total supply—a situation perfectly possible as long as we do not assume Say's law. If Mr. Modigliani is right, we can now find some level of absolute prices which will make the demand for money equal to its supply. Choosing such an absolute price has, by assumption, no effect on the total demand or supply of goods and services. But we have now arrived at a position where the total demand for goods and services exceeds their supply, but the demand for money is equal to the stock of money, and this clearly contradicts Walras' identity described in the previous paragraph. But in any case, on Modigliani's assumption, any change in the level of prices must change the demand and supply for money in the same proportion, since the demand for, and supply of goods is unaffected by such a change in prices. The level of prices therefore cannot equate the demand and supply of money and the only way of ensuring this equality is to assume Say's Law. Hence the *M*-model must leave the level of absolute prices indeterminate and Mr. Modigliani's conclusion II must be rejected.²

The intuitive reasons for rejecting the *M*-model are fairly obvious, and have been extensively discussed by Patinkin in another context. Rational behaviour presumably also refers to the holding of cash. If cash, then, is allowed into the utility function we easily see that the demand for at least one good must depend on absolute prices if the demand for money depends on

¹ *Op. cit.*, p. 217.

² It may be helpful to restate the argument in symbols. Let X_g and X_m be the excess demand for goods and money respectively. Let P be the absolute price level of goods. By Walras' Law $PX_g + X_m = 0$. Choose relative prices such that $X_g \neq 0$. We can now find a level of absolute prices P^* such that $X_m = 0$. But whatever the value of P , X_g remains unaffected by assumption. We have now come to the contradiction mentioned in the text, since at $P = P^*$ Walras' Law does not hold. But Walras' Law is an identity and must hold for any value of P . This contradiction can be resolved only by assuming Say's Law: $X = 0$.

absolute prices. For, as was pointed out in Section I, we cannot hope to decompose a system into two parts from restrictions on the utility functions without running into difficulties. Thus money must be a substitute for all other goods entering into the utility function taken together. If, then, a change in the price level leaves all demands for goods and services unaffected it must mean that the amount of money people hold is always the equilibrium amount, whatever the price level, and hence the money equation cannot be used to determine the price level.

We have seen that conclusion (ii) of Mr. Modigliani is incorrect. What about conclusion (i)? One way of avoiding Say's Law in the *M*-model would be to allow absolute prices to enter into the equations relating to savings and investment. In that case we would need both (M.6) and (M.7) to be able to solve for the equilibrium rate of interest. In any case, we will need at least two equations, and on Mr. Modigliani's interpretation of the word "determine," conclusion (i) must also be rejected.

But suppose we used the Klein interpretation in our understanding of conclusion (i), could we then not, on the basis of a corrected *M*-model, say that the rate of interest is determined by savings and investment? To answer this question we must take note of the special interpretation Mr. Modigliani places on (M.4)–(M.6). He warns us that (M.4) and (M.5) "should in no way be confused with the schedules of supply of and demand for savings (or supply of and demand for securities)." In particular, (M.4) tells us "what part of their income people wish to devote to increasing their assets rather than to consumption at different levels of the rate of interest," while (M.5) is the "marginal-efficiency-of-investment function." Since securities, that is lending and borrowing, do not enter into the model, it is clear that the rate of interest is not determined by any market mechanism. Indeed, only those who save, invest, and never more than they save. This not only suggests that the model is rather unrealistic, but also that the Klein interpretation of the word "determine" is inappropriate. For the latter hinges on the possibility of *ex ante* excess demand, which is clearly impossible here on Mr. Modigliani's interpretation of (M.4) and (M.5). If we then wish to say that the rate of interest is determined (in the Klein sense) by savings and investment, we will not be able to do so on the basis of the *M*-model.

Before leaving this whole topic, and the only excuse for dwelling on it at some length is the influence the *M*-model appears to have gained, I would like to draw attention to the interpretation Mr. Modigliani places on (M.6) (the equality of savings and investment). After saying that (M.1)–(M.3) determine the level of real income he writes: "The saving schedule, equation (3.3), tells us what part of this income the community desires to save. The technical conditions (inventions, quantity of capital already in existence, etc.) expressed by the marginal-efficiency-of-investment function (3.2), determine the marginal efficiency of the amount of investment that the giving up of consumption permits undertaking: this is the equilibrium rate of interest."¹ This suggests two things: (a) it appears that savings, in spite

¹ *Op. cit.*, p. 219.

of the earlier quotation, are to be taken as independent of the rate of interest, and (b) that savings are always *identically* equal to investment. This makes it quite clear that the Klein interpretation cannot be applied to Mr. Modigliani's conclusion (i), and hence that the latter must be rejected on both interpretations of the word "determine" in that conclusion.

III

We have seen that the classical revival, at least as exemplified by Mr. Modigliani, suffers from serious logical defects. Indeed, Mr. Patinkin has shown that all models based on the assumption of "neutral" money are open to similar objections. Quite apart from this, however, a realistic theory of interest, in which the latter varies whenever investment is not equal to saving, must allow for lending and borrowing. This of course, leads us straight into problems connected with liquidity preference and loanable funds. It is the intention of this section to compare the three theories, L.P., L.F. and I.S. of the rate of interest, in the setting of a Keynesian model.

We shall assume that there are only three kinds of assets: a capital (or producers') good (K), irredeemable bonds (B) and money (M). The stock of money is assumed constant. A debtor is regarded as holding negative bonds. All other goods are consumption goods and are perishable, so that no stocks of these can be held.

A plan to invest is a plan to increase the holding of K . In so far as investors plan to add to K the same amount as they plan to save out of current income, no market transaction is involved, and no *ex ante* gap between savings and investment can arise. Since this sort of situation is clearly of no interest to us, we shall now assume that investors plan to save nothing. (This is simpler than the assumption that they plan to save less than they invest, and does not affect my argument.) A plan to invest must now be accompanied by a plan to change the holdings of the remaining assets money and bonds. (Investors will plan to supply bonds and/or money). On the other hand, the plan to save is a plan to add to the holdings of bonds and/or money on the part of savers. Hence if investment and saving plans are fulfilled, the increase in the physical assets (K) of the community are equal to the increase in the stock of money and bonds held by savers. Hence if we write D_a for the demand for more assets and S_a the supply of more assets, and S and I for saving and investment (*ex ante*), respectively, we have

$$(D_a - S_a) = X_a = (S - I) \quad \text{. (III.1)}$$

and we can refer to this difference as the excess demand for assets (X_a).

We now state the I.S. theory of the rate of interest: the rate of interest will change if, and only if, the excess demand for assets is different from zero. X_a is made up of the excess demand for bonds (X_b) and the excess demand for money (X_m). The L.F. theory of the rate of interest now is: the rate of interest will change if, and only if, the excess demand for one asset, bonds, is different from zero. Before stating the L.F. theory, let us

all what Keynes meant by a decision due to liquidity preference. He writes:

"The psychological time-preferences of an individual require two distinct sets of decisions to carry them out completely. The first is concerned with that aspect of time-preference which I have called the *propensity to consume*, which operating under the influence of the various motives set forth in Book III, determines for each individual how much of his income he will consume and how much he will reserve in *some* form of command over future consumption. . . . But this decision having been made, there is a further decision which awaits him, namely, in *what form* he will hold the command over future consumption which he has reserved, whether out of his current income or from previous savings. . . . In other words, what is the degree of his *liquidity-preference*—where an individual's liquidity-preference is given by a schedule of the amounts of his resources, valued in terms of money or of wage-units, which he will wish to retain in the form of money in different sets of circumstances?"¹

On the basis of this extract we could phrase the L.P. theory as follows: the rate of interest will change if, and only if, there is an attempt to substitute money for some other *asset*. I would like to draw particular attention to the word *asset* in italics in this quotation. L.P. is *not* intended to explain why people hold money rather than consumers' goods, but rather why they hold money instead of some other asset. If this is granted, then we are in some difficulty in identifying one particular excess demand as representing L.P., as we identified X_a and X_b as representing I.S. and L.F. Let us rewrite (III.1) as

$$X_a = X_m + X_b = (S - I) \quad \text{. (III.1a)}$$

Suppose we restate the L.P. theory as: the rate of interest will change if, and only if, $X_m \neq 0$. Then it is clear that the rate of interest would change if $X_b = 0$ and

$$X_m = (S - I) = X_a \neq 0 \quad \text{. (III.2)}$$

Now the excess demand for money does not represent an attempt to substitute money for other assets or vice versa, but money for consumption goods or vice versa. Thus, for instance, in the case of $(S - I) > 0$, we would have to say that people as a whole are attempting to become more liquid by supplying more goods and services than they are demanding. But this is, as the quotation shows, what Keynes understood by the forces of liquidity preference.

Yet in spite of this, the custom of identifying X_m with the liquidity-preference equation is well established. The reason for this is not far to seek. The Keynesian model of the General Theory has the following characteristics: (a) money wages are fixed and given from outside, (b) there are constant returns to scale (unemployed resources) so that all prices are wage-determined, (c) there are no lags of any sort. Since all prices are wage-determined, the only unknowns are income (Y) and the rate of interest. (P_b = the price of bonds = inverse of the rate of interest.) Since

J. M. Keynes, *The General Theory of Employment, Interest and Money*, Macmillan, 1936, p. 166.

(III.1a) is an identity, we can always deduce one of the excess demands (X_a , X_m , X_b) from the remaining two. We thus have two (excess-demand) equations to determine our two unknowns. Now, according to Keynes, incomes change if, and only if, $X_a \neq 0$. In the General Theory and later in controversies with Professor Robertson, he seemed to envisage the following sequence. Suppose $X_a < 0$, then incomes change instantaneously to make $X_a = 0$. When that has happened $X_m \equiv -X_b$. If $X_m \neq 0$ the rate of interest changes to make $X_m = 0$. This may again lead to $X_a \neq 0$, which causes a further change in income, which in turn affects X_m and the rate of interest. The point about this sequence of events is that the excess demand for money is always identically equal to the excess supply of bonds, so that there is never an attempt to substitute money for consumption goods or services. In effect, this kind of sequence is equivalent to conducting a partial analysis, by first fixing interest and finding the equilibrium level of income, and then holding the latter as given and determining the equilibrium rate of interest and so on.

Since, however, there is no reason to expect this sequence of events, and since most of the controversies are due to an attempt to fit interest-rate theory into a general rather than a partial analysis, we must, when restating the L.P. theory in a general model, be careful not to incorporate into it elements which derive from the special procedure of Keynes. In particular, liquidity preference must be taken as determining the *ratio* ("form") in which assets are demanded, and *not* the total quantity of assets demanded or supplied. Once the sequence procedure is dropped, a zero excess demand for money no longer implies that people are holding assets in the "form" in which they desire and that liquidity preference is satisfied, nor does an excess demand for money different from zero imply that people are attempting to change the "form" in which they hold assets and that liquidity preference is not satisfied. Since this is a point of some importance to our argument, we will restate it in slightly different terms.

From the quotation of the General Theory given above, it is clear, I think, that if Keynes had written out a utility function he would have included in the latter a term (A) for total assets held and some terms to describe the composition of those assets. Suppose there are only two such assets a_1 and a_2 . Let x stand for all other goods and services consumed or supplied. Then if we wrote the utility function as

$$U = U\left(x, A, \frac{a_1}{a_2}\right) \quad . \quad . \quad . \quad . \quad . \quad (III.3)$$

the two decisions (the decision to save and the decision concerning the form in which to hold assets) are clearly brought out. This is not the case if we write

$$U = U(x, a_1, a_2) \quad . \quad . \quad . \quad . \quad . \quad (III.4)$$

Formally, of course, these two ways of writing the utility function should make no difference to the analysis. There is, however, a difference in inter-

pretation. For if a_1 represents money, then on the basis of (III.3) we would say that L.P. is satisfied when the individual holds assets in the desired ratio $\frac{a_1}{a_2}$, while on the basis of (III.4) we would say that L.P. is satisfied when the individual holds all of a_1 he desires. It is the latter interpretation which is customary. But liquidity preference, as the phrase vividly denotes, describes the *preference* of money over other assets. This preference cannot be described by the total demand for money, but only by the demand for money relative to the demand for other assets.

If this interpretation of L.P. is accepted, we could state the L.P. theory of interest as follows: the rate of interest changes if, and only if, the ratio in which assets are demanded is different from the ratio in which they are supplied.¹ Let us now see to what sort of model this proposition leads us.

It will be remembered that we assumed there to be three kinds of assets: a capital good (K), money and bonds. Investors decide to substitute more of the capital good for money and bonds. They therefore supply money and bonds in a certain ratio and demand more of the capital good from the producers of that good. If there are no production lags their demand for more K will always be satisfied. Savers, on the other hand, decide to increase their total assets held, by demanding more bonds and money in a certain ratio. Let us now also assume a Robertsonian consumption lag so that the total demand for goods and services plus the total demand for money and bonds is identically equal to the income of the previous period plus the stock of money, K and bonds available at the beginning of the period. Since there are no production lags, the total supply of goods and services will always be equal to the total of these demanded. We therefore obtain the following identity:

$$X_a \equiv Y^0 - Y^1 \quad . \quad . \quad . \quad . \quad . \quad (III.5)$$

where Y^0 is the income of the previous period and Y^1 is the income of the current period.

The first condition of equilibrium is that

$$X_a \equiv Y^0 - Y^1 = 0 \quad . \quad . \quad . \quad . \quad . \quad (III.6)$$

Now X_a depends on the rate of interest (i), Y^0 and the total volume of assets held (A). It also depends, of course, on prices, but since these are assumed fixed we can ignore them. Following Keynes, we can assume that in the short period the total volume of assets is fixed, *i.e.*, that the addition made to assets by investment is negligible in the short period. We thus have two unknowns: i and Y^0 , and at the moment only one equation. Let us now, instead of using either the excess demand for money or for bonds for the missing equation, use the condition that L.P. must be satisfied, that is: the

¹ There is no difficulty of fitting the "transaction" demand for money into this formulation. "Planned," or if we like, *ex ante* L.P. refers to the form in which people plan to hold assets at the end of the period. This, using the Robertsonian consumption lag, then includes provision for transaction purposes in the subsequent period.

continuously variable (as we have done in our example) we can state the two theories as follows:

L.P.: The rate of interest ruling at the end of one income period will be different from that ruling at the beginning only if people plan to hold money and bonds at the end of the period in a different ratio from that which will be available.

L.F.: The rate of interest at the end of one sub-transaction period will be different from that ruling at the beginning only if people plan to demand more bonds than they supply for that period. This can be restated in the equivalent form: the rate of interest at the end of a sub-transaction period will differ from the value it had at the beginning of the period only if the ratio in which money and bonds are demanded for the end of that period is different from the ratio in which it will be available.

The predictions of the two theories differ because they concern the value the rate of interest will have at different times.

We must now note two difficulties:

First, it must be admitted that the period analysis is highly artificial, since while people may take decisions discontinuously, not all people take decisions at the same time. This probably means that L.F. as here formulated is more useful than L.P., since we will never be able to find a time when the rate of interest is independent of the demand for "finance."

Secondly, we have allowed only three assets: money, bonds and capital goods. Increasing the number of monetary assets, *i.e.*, having different kinds of claims to debt, will not greatly affect our analysis, since we get as many new equations as unknowns. That is for each interest rate we have the condition that the ratio in which money and that particular claim are planned to be supplied is equal to the ratio in which they are planned to be held. If we introduce further non-monetary assets, in particular what Mr. Kaldor has called "Verbrauch's Güter,"¹ then the analysis becomes far more complicated. We would now have to introduce *expected prices* as unknowns, and would almost certainly have to abandon the assumption that all current prices are fixed and given. A complicated stock and flow model would result. I have constructed a number of such models, but do not feel that they are at a stage where I can say anything that is useful.

To sum up: L.P. refers to the composition of assets people desire to hold. In a monetary economy, however, there is a difference between the composition of assets people desire in the course of the income period and that which they desire to hold at the end. Liquidity preference refers to the composition of assets people desire to hold when all market transactions necessary for achieving that composition are completed. Loanable funds, on the other hand, is concerned with the flow of assets on to the market during the income period. It therefore takes account of the intermediate

¹ N. Kaldor, "Speculation and Economic Stability," *Review of Economic Studies*, Vol. VII, 1939-40, p. 3.

composition of assets people desire when they are still in the process of completing their transactions. Thus investors, desiring to hold at the end of the income period a higher ratio of capital goods to money and bonds, first desire an increased ratio of money to bonds in order to be able to make the desired substitution for capital goods. This desire is not neglected in the loanable-fund theory. The predictions of the two theories, however, are not mutually exclusive, for the simple reason that the predictions refer to different time periods. When Professor Robertson refers to the excess demand for bonds it must be understood as holding for any one moment of time; in the L.P. theory the excess demand for bonds must be interpreted as the excess demand (the incompatibility of plans remaining) after all intermediate transactions have been completed.

Let us now examine the claims of the I.S. theory. We first note an interesting, formal property of our model. The I.S. theory states that the rate of interest will change only if $X_a \neq 0$. Suppose, then, that $X_a = 0$ but $X_r \neq 0$. Since by definition incomes change only if $X_a \neq 0$, it follows that neither interest rates nor incomes will change. But, then, there is no means by which plans to hold money and bonds can be made consistent, *i.e.*, there is no mechanism for bringing about an equilibrium in asset holdings. It would therefore appear that on purely formal grounds the I.S. theory would have to be rejected, although this, of course, does *not* mean that savings and investment decisions have no influence on the rate of interest.

We can now put the reasons for rejecting the I.S. theory less formally. A discrepancy in plans can only affect market variables in so far as this discrepancy is in some way manifested in the market by the things people actually do or *actively* attempt to do. From our present (Keynesian) assumptions, we know that whatever volume of investment goods investors actually demand will be supplied at constant price. As far as the price of investment goods is concerned, a discrepancy in the plans to save and invest can have no importance. The same is true of the price of consumption goods. We know however that a discrepancy in the plans to invest and save will be reflected in discrepancies in the plans to supply and demand money and/or bonds.

To say then that the rate of interest varies only if planned investment and savings differ is the same as to say that it varies only if the sum of the excess demands of money and bonds is different from zero. But this in turn implies that when planned investment equals planned saving, the rate of interest will not change even though there is an excess demand for money and a corresponding excess supply of bonds. That is, the rate of interest will not vary even when there is an attempt to substitute money for bonds or *vice versa* and when both the "markets" for money and bonds are out of equilibrium. But then we are left with no market variable, a change of which could bring the two markets into equilibrium.

If these interpretations of L.P., L.F. and I.S. in a Keynesian model are accepted, then we can sum up our conclusions as follows. People take two decisions: what volume of assets and what composition of those assets to hold at the end of the income period. If plans are incompatible, certain of

those plans will not materialise. But the planning period for the composition of assets, in particular the ratio of money to bonds, is much shorter than that for the volume of assets. It is therefore assumed that at the end of the income period the rate of interest is such, that on the basis of the previous period income, people are willing to hold assets in the form in which they are available. On the other hand, it is not possible for consumption, investment and volume of assets plans to be fulfilled simultaneously. The Keynesian assumption is that it is undesired accretions or depletions in the total volume of assets which reflect the incompatibility of plans. Thus the rate of interest varies during the period to make plans concerning the composition of assets compatible, but it does not affect the plans concerning the volume of assets people desire during the income period. The rate of interest therefore affected only after undesired changes in the volume of assets (changes in income) have affected the composition of assets people desire. The loanable funds theory, as we have interpreted it, differs from this only in so far as it is concerned with the value of the rate of interest at any one moment of time during the income period.

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THE PRODUCTION FUNCTION

A PRODUCTION function purports to exhibit the technical relations between factors of production and output, and to derive from them the relation between their prices and the relative quantities employed in conditions of long-run equilibrium. Thus a production function may purport to show how output per man and the rate of real wages rises, while the rate of interest falls, as the amount of capital per man employed is increased. The idea on which it is based is that the relative prices of the factors of production, given the quantities in existence, are determined by their technical productive power.

It is possible to draw up a purely technical production function for a robin. The number of robin-minutes worked per day on his territory rises from a minimum when the cock is alone to a maximum when the pair are feeding the fledglings. Assuming that technical conditions remain constant over the period, we can draw up a schedule showing how output (of grubs caught) per robin-minute varies with robin-minutes worked per day. The advantage to a robin of having a more fertile territory (in terms of grubs per square yard, allowing for infestation by birds of other species who do not recognise the robin's territorial rights) shows itself in a shorter working day (for total needs are rigid) and more time for singing.¹

For human production, even of the simplest kind, the function cannot be expressed in work alone. To produce an output to-day, work has to be combined with pre-existing goods, and the valuation of these goods affects the technique of production. From a purely engineering point of view, a steam-hammer is a powerful instrument for cracking nuts and gold the best material for lining drain-pipes.

In any given situation in an industrial economy there is, so to speak, a technical frontier. A more highly mechanised technique than that in use would increase output per man-hour of current employment, and so save labour cost, but it is not being used because the additional expense of equipment would make it less profitable than the technique actually in operation. Where two techniques lie close to each other on either side of the frontier or intermingle across it, the profitability of using them is more or less equal, for if the higher technique—say, Alpha—were much more profitable than the lower one, Beta, the frontier would have already moved beyond Beta, and if it were much less profitable, Alpha would lie right outside the frontier.

When a switch takes place from Beta to Alpha technique, the amount of labour currently employed remaining the same, output is increased. The increment of output may be called the Alpha-Beta marginal product of investment.

¹ See David Lack, *The Life of the Robin* (Pelican edition), p. 62.

To make the switch involves investment. An outfit of capital goods required for Alpha technique costs more than an outfit for Beta technique (otherwise Beta, with its lower productivity, would not be an economic proposition). Thus we can regard the investment required to make the switch (in equilibrium conditions) as the cost of an Alpha plant (using plant to mean the whole outfit of capital goods required to operate the technique, including the pipe-line of work in progress) *minus* the cost of a Beta plant.

To an individual capitalist the cost of the increment of capital is a certain amount of new finance, that has to be added to the amortisation fund of a used-up Beta plant in order to procure an Alpha plant. Its marginal prospective return to him is the addition to the future stream of quasi-rent that will be made by having it rather than not having it. He compares the rate of return over cost with the rate of interest which represents the hire-price of the finance, and makes the investment if the excess of the one over the other appears an adequate inducement to take the risk involved.

Does this marginal return on of investment finance correspond to technical relations in the economy?

The cost of the investment to society can be regarded as the man-hours of work and the pre-existing goods (themselves the product of earlier work and goods) required to construct an Alpha plant *minus* the cost formerly embodied in a Beta plant) which has been released from it by using it for production and accumulating an amortisation fund from the proceeds. We are therefore faced with the problem of expressing as a total sum costs which consist of miscellaneous items—labour time of different kinds and goods (or the services of long-lived goods) of great variety. If we sum them simply at their market prices, we are back at the calculation in terms of finance. But we are trying to penetrate the veil of financial values to find the real productivity of real investment.

The goods (or services of long-lived goods) can be expressed as quantities of labour time performed at various dates in the past when the goods were produced. But we can no more sum this labour time in terms of man-hours than we can sum apples and bilberries in terms of fruit. To sum the cost of expenditures of labour time at various dates it is necessary to accumulate them from the time when they were performed till to-day at some rate of interest, subtracting from this cost the yield with which they must be credited for value that they have produced meanwhile.

The only way to make any sense of such a calculation is to apply it to an economy which is, and has long been, in a state of *tranquillity* in which the rate of profit realised at any present moment has always turned out to be what it was expected to be when the relevant investment decisions were taken.¹ In such a situation we can specify the rate of interest (corresponding to the rate of profit) which is and has been ruling.

Taking a rate of interest arrived at this way, we can specify the cost of

¹ A state of tranquillity is a necessary but not a sufficient condition for stationary equilibrium as it is ordinarily understood.

the investment in terms of man-hours. The calculation involved is extremely complicated,¹ but there is no difficulty of principle involved.

The return on the investment can also be expressed in man-hours—as a saving in the labour time required to produce a given output, due to using Alpha rather than Beta technique. The return over cost can then be exhibited as a rate per cent.

This rate, however, has no operative force. It has a certain affinity with the concept of the return to investment in a socialist economy. Some rate of interest is necessary to make sense of the concept of the real cost of investment, for, until Bliss is reached (when all possible useful investments have already been made), a man-hour of labour that will yield a product to-day (that is, work performed some time ago) is more useful than a man-hour to-day, which will yield a product at some future date, or over a long period of future time. But the rate of interest derived from the rate of profit in a capitalist economy in an imaginary state of tranquillity has no particular relevance for the socialist economy.

In a capitalist economy, even if it is actually in a state of tranquillity, the prospect of a return of future man-hours has no influence on anyone's conduct. It is not open to a worker to decide to save his future labour by building an Alpha plant, and to a capitalist the saving in cost due to an investment does not consist in labour time but in the wage he has to pay for labour time.

In a competitive economy the purchasing power of money alters with the technique of production. If money wage-rates remain constant, prices fall as output per man-hour rises, unless monopolists are powerful enough to hold them up while costs are falling; or if prices are constant, money wage-rates must rise to keep them so. The cost of investment in terms of money, therefore, is quite arbitrary. But a given rate of profit, with a given technique, specifies a given wage-rate in terms of product.² We can, therefore, reckon the cost of investment in terms of product, and regard the process of investment as an expenditure of product which causes labour and capital goods to be employed in constructing plant. The amount of the investment, then, is a number of man-hours, reckoned as above, multiplied by the product wage-rate, while the return is a flow of future product. Thus the marginal productivity of the investment can be expressed as the percentage ratio of the latter to the former.

At the technical frontier this marginal rate of return is equal to the rate of profit, for the position of the frontier is settled by the action of capitalists carrying out investment (and reinvestment of amortisation funds) up to the point where a switch to Alpha technique would yield no more than can be got by carrying on with Beta technique.

¹ See "The Value of Invested Capital," D. G. Champernowne and R. F. Kahn, *Review of Economic Studies*, Vol. XXI (2), No. 55, 1953-54.

² This, of course, is not the same thing as the real wage-rate, for it is reckoned in terms of output in general, including luxuries and capital goods, while the real wage-rate consists only of those goods which the workers consume.

But now it is clear that there is a flaw in the calculation. At each technical frontier there is a different rate of profit ruling, and so, to compare the cost of investment at different frontiers, we have to use different rates of interest. Even if two outfits of capital goods would look very much alike if we walked round the factories, or weigh the same if we reckoned up their steel content, indeed, even if they are identical in every physical respect, yet they represent two different amounts of capital if they have been produced at different rates of interest. The relation between the real costs of the sets of capital goods, corresponding to different techniques, depends partly upon how their respective costs (in terms of man-hours) are affected by differences in the interest rate. In general, a given difference in the interest rate will have a large effect where the capital goods have taken a long time to construct and have a long period of useful life. All sorts of peculiar and paradoxical seeming relationships are possible between pairs of costs. We can, for instance, construct a case in which a lower technique, at a higher product wage-rate, yields a lower rate of profit than a higher technique.¹

Given the cost of an investment in man-hours, we can reckon its cost in terms of product by multiplying by the product wage-rate that corresponds to the rate of interest at which the calculation was made. A lower rate of interest corresponds to a higher product wage; thus, in general, physically similar capital goods represent a smaller investment in terms of man-hours and a larger investment in terms of product, at a lower interest rate.

If we had all the data, we could set up a scheme showing the output per product wage-rate, product value of capital goods and rate of profit at each technical frontier. Then, if we rule out the cranky cases, we can draw a curve which, on paper, would look like a production function, showing the product wage-rate rising, and the rate of profit falling, as capital per man-hour increases in terms of product.

But this scheme is totally devoid of significance, for each point on the curve implies a particular past history in which the rate of interest has been that which corresponds to the rate of profit ruling at that point. To move from one point to another—say to push out the technical frontier by increasing the amount of capital per man—requires us to go back into the past and start again.

In reality accumulation does take place, and it seems safe to say that accumulation of capital relatively to labour does tend (provided monopoly power is not too strong) to raise real wages. In reality the advance from one technique to another is accompanied by a gain of know-how (even if major inventions are not being made while the accumulation is taking place), so that it is by no means necessarily accompanied by a fall in the rate of profit.

We may, however, rule out technical progress and suppose that all possible techniques co-exist in the form of blue-prints (each specifying the capital goods required for the technique and the time-pattern of costs incurred

¹ See Joan Robinson, "The Production Function and the Theory of Capital"; and D. Champernowne, "The Production Function and the Theory of Capital: A Comment," *Review of Economic Studies*, Vol. XXI (2), No. 55, 1953-54.

making them). Then, if accumulation is pushing out the technical frontier, it must be accompanied by a fall in the rate of profit. We have to make up our minds how to proceed with the analysis (which, of course, applies only to an imaginary world in which accumulation of capital takes place without accumulation of technical knowledge). Either the fall in the rate of profit is assumed to be foreseen (perhaps the capitalists are supposed to have read the neo-classical economic text-books and to believe in the production function) so that accumulation takes place in a state of tranquillity, or the fall in the rate of profit is assumed to be a disappointment.

In the first case, we have to assume that the rate of profit is expected to move in just the way that in fact it does move, taking into account the effect upon their conduct of the fact that the capitalists expect it to move in that way. When the rate of profit is expected to alter, the rate of interest consists of a spectrum of rates corresponding to loans for different lengths of time. The rate of interest falls with the rate of profit (if it did not, tranquillity would be rudely shattered by a slump), and the rate on a shorter loan must exceed the rate on a longer loan sufficiently to compensate for the rise in capital value of the longer bond that is expected to take place during the currency of the shorter loan. These rates have to be taken into account in calculating the cost of capital goods. An economist who can work out this analysis is a clever man, and it seems a pity for him to spend his time on what is in its very nature a purely artificial problem.

Alternatively, if expectations are liable to be disappointed, we must assume that capitalists have learned not to be cocksure. We are in a world of uncertainty, where the fluctuations of effective demand bedevil economic life, and accumulation takes place in fits and starts. The expected rate of return on investment is then a vague and emotional idea in the heads of capitalists, and, since present values are jumping about relatively to past costs, there is no precise and unambiguous meaning for the realised rate of profit.

The fallacy at the root of the production function is the idea that it is possible to specify purely technical relations, not involving prices, in a human economy. Even Robinson Crusoe does not provide an example of an economy for which this idea is valid. He looks before and after and plans productive processes that take time to carry through. He cannot build himself a hut unless he has food to eat while he is unable to go fishing, and the price, from his point of view, of future shelter in terms of stocks of food comes into his calculation (along with his evaluation of the trouble involved) of whether it is worth his while to build the hut. Only the robins, living in a timeless present, satisfy the conditions required for the neo-classical analysis of production to make sense.

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NUMBERS OF SHOPS AND PRODUCTIVITY IN RETAIL DISTRIBUTION IN GREAT BRITAIN, THE UNITED STATES AND CANADA¹

1. THE publication, at this time, of the first official census of the British retail and service trades² at last provides sufficiently comprehensive statistics to enable us to make a systematic comparison of the structure and productivity of the British distributive trades with those in North America. The results of making a comparison of numbers of shops seem to us sufficiently striking to warrant separate publication in the present article.

Our first task in comparing the structure of the distributive trades in Britain, the United States and Canada was to secure reasonable comparability of the basic census data.³ We found first, that Britain, "the nation of shopkeepers," has, in fact, roughly the same number of shops⁴ relative to population as there are in the United States and Canada. Secondly, an analysis by particular trades shows that in Great Britain there are relatively many more shops retailing staple products or necessities, while in North America there are relatively many more shops selling luxuries. We attribute this pattern to the joint influence on numbers of shops of higher North American incomes and of higher productivity in retail distribution there. We find that similar patterns are also in evidence in other inter-regional and historical comparisons. Thirdly, an examination of the volume of merchandise sold at retail establishments a very strong presumption that North American labour-productivity⁵ is higher than British in almost all branches of the distributive trades. This higher productivity is closely associated with the larger scale of retail outlets in the U.S.A., but we find, fourthly, that the extent of chain store operation and, thus, the importance of large-scale organisation in retailing is greater in Great Britain than in North America.

¹ We are indebted to the authorities in charge of the Conditional Aid Programme for making finance available for carrying out our research project. One of the authors is also indebted to the Rockefeller Foundation for financing two visits to North America which enabled her to study retailing there at first hand. We have had much assistance from the Statistics Division of the Board of Trade, London, the United States Bureau of the Census and the Dominion Bureau of Statistics, Canada, and from Mr. Milton Gilbert, Organisation for European Economic Co-operation. We are also much indebted to the Oxford University Institute of Statistics for providing us with research facilities and to its members for their criticisms of our paper.

Mrs. Naomi Connolly has been responsible for preparing our tables for publication.

² Board of Trade, *Census of Distribution and Other Services*, 1950. Vols. I and II. (London: HMSO, 1953 and 1954).

³ As our reconciliations have been vetted by the British, United States and Canadian census authorities, other research workers may wish to make use of them. We shall be glad to make them available for this purpose.

⁴ The definition of shops used in this article covers all retail and service establishments within the scope of the British *Census of Distribution and Other Services*, 1950, Vols. I and II.

⁵ For a discussion of the measure of productivity used in this article and its limitations, see footnote 1, p. 76 and footnote 4, p. 79.

2. The scope of the latest United States and Canadian censuses is a good deal wider than that of the British census of 1950, particularly in the service trades. Moreover, while the kind of business classifications employed in the United States and Canadian censuses are similar, the British classification differs from them to a considerable extent. The necessity of securing com-

TABLE I
*Great Britain, the United States and Canada: Retail and Service Trades—Numbers of Shops*¹

Kind of business by major groups of the British <i>Census of Distribution</i> (1950).	Number of shops, Great Britain (1950).	% of total.	Number of shops, U.S.A. (1948).	% of total.	Number of shops, Canada (1951).	% of total.
I. Grocery group	129,345	19.5	387,405	19.6	34,596	20.1
II. Other food retailers . .	126,701	19.1	139,137	7.0	16,348	9.5
III. Confectioners, tobacconists and newsagents	66,312	10.0	54,203	2.7	11,564	6.7
IV. Clothing group ²	89,269	13.5	149,241	7.6	20,166	11.7
V. Hardware group	30,223	4.6	76,319	3.9	7,656	4.4
VI. Booksellers and stationers .	9,528	1.4	7,312	0.4	643	0.4
VII. Chemists' goods and photographic goods group . .	16,733	2.5	58,826	2.9	4,719	2.7
VIII. Furniture group	16,086	2.4	59,639	3.0	3,076	1.8
IX. Jewellery, leather and sports goods group	13,944	2.1	41,832	2.1	4,050	2.3
X. General group ³	1,442	0.2	22,790	1.1	2,053	1.2
XI. Coal, builders' materials and corn group	20,137	3.0	76,727	3.9	3,933	2.3
XII. Other non-food retailers . .	11,423	1.7	51,583	2.6	3,403	2.0
XIII. Catering group ⁴	45,195	6.8	194,123	9.8	13,987	8.1
XIV. Hairdressers	29,827	4.5	169,081	8.6	12,737	7.4
XV. Funeral furnisiers	3,404	0.5	18,675	0.9	1,091	0.6
XVI. Portrait photographers . .	2,320	0.3	11,549	0.6	1,057	0.6
XVII. Repairers group	22,527	3.4	92,356	4.7	7,608	4.4
XVIII. Motor vehicle dealers and repairers, cycles, accessories and garages group	28,981	4.4	363,277	18.4	23,738	13.8
XIX.						
TOTAL	663,397	100	1,974,075	100	172,425	100

Sources: Great Britain: *Census of Distribution and Other Services*, 1950, Vol. II, Table 1.

U.S.A.: *Census of Business*, 1948, Vol. I, Table 1c, and Vol. VI, Table 1a.

Canada: *Ninth Census of Canada, 1951; Distribution (Retail Trade)*, Bulletin 7-2; and data communicated by the Dominion Bureau of Statistics, Ottawa.

¹ Provisional data. The adjustments required for securing exact statistical comparability of numbers of shops are of three kinds: those relating to (i) the unequal scope of the censuses, in terms of the kinds of business covered, (ii) the unequal scope of the censuses in other respects (e.g., in respect of the treatment of establishments also carrying on manufacturing, wholesaling, etc. and in respect of the types of establishments covered) and (iii) the unequal coverage by the censuses of the total number of establishments proper to them. The figures shown in the table are fully adjusted in respect of (i), partially in respect of (ii), and not at all in respect of (iii). The errors due to this may be assumed to be small. It is known that an important part of the error in respect of (ii) results in the British figures being overstated, but that the error in respect of (iii) results in the British figures being understated. The foregoing also applies to all data in subsequent tables.

² Including "other general stores."

³ Department and variety stores only.

⁴ Excluding canteens.

parability of the individual kinds of business derives from the need for regarding the distributive industry as being composed of a number of distinct trades, the structure and behaviour of which differ a good deal.

The results of reconciling the classifications are shown in Table I.¹

¹ It should be noted that, apart from the statistical limitations on the accuracy of our reconciliations which are referred to in note 1 of Table I, there are also some kind of business groups in which the reconciliations cannot, in the nature of the case, secure exact comparability. Thus, North American drug stores, which mostly sell a very wide range of goods and operate soda fountains, are classed against British chemists' shops. A less obvious difficulty arises in the confectioners and tobacconists group, where American shops are now mostly specialist establishments catering for a luxury demand. In the general group, the popularity and relative ubiquitousness of this

When the census figures are adjusted to obtain a statistically valid comparison, it appears that the total number of shops in relation to the population was practically the same in Great Britain in 1950, in the United States in 1948 and in Canada in 1951.¹

TABLE II

Great Britain, the United States and Canada: Retail and Service Trades—Population in Relation to Total Number of Shops¹

	Number of people per shop.
Great Britain (1950)	74
United States (1948)	74
Canada (1951)	81

Sources: Numbers of shops: Same as Table I.
Population: British *Census of Distribution and Other Services*, 1950, Vol. I, Table 1.
Statistical Abstract of the United States, 1953, Table 9.
Canadian Statistical Review, July 1952, p. v.

¹ See Table I, note 1.

The first impression of a high degree of similarity of conditions in the three countries disappears as soon as attention is shifted from consideration of the total number of shops to the numbers in individual trade groups. These show marked variations.

It can be seen from Table III that in four out of the five trades in which Great Britain has relatively more shops than the United States the average number of shops in Great Britain is some two or three times as great as it is in the United States, and that in six out of the twelve trades in which Great Britain has relatively fewer shops than the United States the difference in numbers is of the same order of magnitude.

3. In the absence of census data, numbers of shops are sometimes the main source of information accessible to the serious investigator of efficiency in the marketing structure, and public discussion seems often to be concentrated on the matter of numbers of shops. For these reasons, it is worth considering

kind of business in America complicates comparability with corresponding establishments in Great Britain in some respects. In the grocery group, American shops now handle the great bulk of sales of meat, fish, poultry, fruit and vegetables, which, in this country, is mostly retailed by specialised shops enumerated in the "other food retailers" group. The consequences of complications of this kind are noted in what follows, as the context requires. In the food trades the difficulty can be overcome by grouping.

¹ If the definition of shops adopted were restricted to retail shops in the narrower sense, excluding service establishments, the figures would be as follows:

	Number of people per retail shop.	
	British definition.	United States definition.
Great Britain (1950)	92	82
U.S.A. (1948)	130	92
Canada (1951)	125	99

what use can be made of our data on numbers of shops taken by themselves.

A comparison of the numerical relationship of shops to the size of the population cannot, in itself, tell us anything about efficiency in distribution. But numbers of shops can legitimately be used as rough indicators of comparative productivity in distribution when there is reason to believe that the

TABLE III

Great Britain, the United States and Canada: Retail and Service Trades—Numbers of Shops in Relation to Population by Major Kind of Business Groups¹

Kind of business by major groups of the British <i>Census of Distribution</i> (1950).	Number of shops per 10,000 population.			Quotient of relative numerosness of shops.			General characteristics of goods retailed. ²
	Great Britain (1950).	U.S.A. (1948).	Canada (1951).	U.S.A./Great Britain.	Canada/ Great Britain.	U.S.A./ Canada.	
I-II. Grocery group and other food retailers	52.2	36.1	36.4	0.69	0.70	0.99	Necessaries
III. Confectioners, tobacconists and newsagents	13.5	3.7	8.3	0.27	0.61	0.45	Necessaries ³
IV. Clothing group ⁴	18.2	10.2	14.4	0.56	0.79	0.71	Intermediate
V. Hardware group	6.2	5.2	5.5	0.85	0.89	0.95	Luxuries
VI. Booksellers and stationers	1.9	0.5	0.5	0.26	0.26	1.00	Luxuries
VII. Chemists' goods and photographic goods group	3.4	4.0	3.4	1.18	1.00	1.18	Intermediate
VIII. Furniture group	3.3	4.1	2.2	1.24	0.67	1.86	Luxuries
IX. Jewellery, leather and sports goods group	2.8	2.9	2.9	1.04	1.04	1.00	Luxuries
X. General group ⁵	0.3	1.6	1.5	5.33	5.00	1.07	Intermediate
XI. Coal, builders' materials and corn group	4.1	5.3	2.8	1.29	0.68	1.89	(Not consumers' goods)
XII. Other non-food retailers	2.3	3.5	2.4	1.52	1.04	1.46	Luxuries
XIII. Catering group ⁶	9.2	13.3	10.0	1.45	1.09	1.33	Luxuries
XIV. Hairdressers	6.1	11.6	9.1	1.90	1.49	1.27	Luxuries
XV. Funeral furnisiers	0.7	1.3	0.8	1.86	1.14	1.63	Intermediate
XVI. Portrait photographers	0.5	0.8	0.8	1.60	1.60	1.00	Luxuries
XVII. Repairers group	4.6	6.3	5.4	1.37	1.17	1.17	Luxuries
XVIII. Motor vehicle dealers and repairers, cycles, accessories and garages group	5.9	24.9	16.9	4.22	2.86	1.47	Luxuries ⁷
XIX.							
TOTAL	135.4 ⁸	135.2 ⁸	123.1 ⁸	1.00	0.91	1.10	

Sources: Same as Tables I and II.

¹ See Table I, note 1.

² Based on data of expenditure elasticities of demand, given in H. S. Houthakker, "The Econometrics of Family Budgets," *Journal of the Royal Statistical Society*, 1952, Pt. I; and on data of "income sensitivity of consumption expenditures," given in C. Winston and M. A. Smith, "Income Sensitivity of Consumption Expenditures," *Survey of Current Business*, January 1950.

³ Luxuries in the United States. See text, footnote 1, p. 73.

⁴ Including "other general stores."

⁵ Department and variety stores only.

⁶ Excluding canteens.

⁷ Intermediate in the United States and Canada.

⁸ Total not equal to sum of detail because of rounding.

relative number of shops provides some indication of the comparative inputs employed in performing comparable volumes of distributive outputs. Thus, Table III shows that there are more shops per head in Great Britain than in the United States in the food trades, the confectioners, tobacconists and newsagents group, the clothing group, hardware group, and in bookselling and stationery. Three conditions must be fulfilled before we can conclude from this that productivity in distribution is higher in these trades in the United States. The first is that the quantity and quality of distributive

output¹ in these trades must be at least as large, on a *per capita* basis, in the United States as in Great Britain. If this is so, it will then follow that the average size of shops as measured by their output, is larger in the United States. This, in turn, will imply that productivity is higher in the United States if, and only if, the two further conditions are also fulfilled that there are economies of scale by size of outlet in distribution, and that the influence of these economies outweighs the influence of all other forces which might lower United States productivity relatively to British.

Real *per capita* income and consumption are known to be about twice as large in North America as in Great Britain, and the aggregate output of the distributive trades in the United States and Canada may be expected to exceed that of Great Britain in roughly the same proportion. Moreover, as the scope of the seventeen trades distinguished in Table III is in each case wide enough to exclude the possibility of their sales being dominated by "inferior goods," it also seems likely that the *per capita* output of each major kind of business will be larger in North America than in Great Britain. This would immediately imply that in the five trade groups where Great Britain has relatively more shops, the corresponding American shops are larger.² We cannot, however, infer that British shops are likely to be larger in the fourteen trades for which Table III shows relatively fewer shops in this country. For it is a striking feature of Table III that the trades in which Great Britain has relatively fewer shops are mostly the trades selling luxuries. It may be expected that higher North American incomes will result in the output of these trades, as measured by the volume of their sales, exceeding that of their British counterparts by a particularly large margin.

¹ The choice of a suitable measure of the output of retail trade is difficult. We would like, in principle, to measure the real quantity of the services performed by the retail trade where all distributive functions performed in retail and service enterprises are included in the term "retail service." In fact, we measure retail output by real value of retail sales. The quantity of retail services rendered in the sale of a given value of merchandise is variable, particularly in regard to some types of service, e.g., credit, delivery, display, variety of stock held, quality of premises and personnel services rendered. Furthermore, some functions normally associated with retailing may be taken over by wholesalers and manufacturers at one end and by consumers at the other end and conversely, e.g., packaging, breaking bulk, stockholding. Our measures of comparative real sales volumes will not reflect the comparative output of retail distribution, in so far as there are important differences in these respects. In addition, there is no reason to suppose that the real quantity of retail services performed varies proportionally with the real value of merchandise sold. Consequently, we regard our measure as being of limited accuracy as an indicator of comparative output in distribution. This should be borne in mind when considering the absolute magnitudes shown in our tables. It should be noted that any attempt to measure the comparative output of retail trade by means of real net value added, apart from being of greater statistical difficulty, would inevitably also suffer from both the first and the third of the difficulties listed above, and would also fail to reflect differences in the extent to which consumers performed retailing functions. It would, however, reflect differences in the extent to which retailing functions were carried out at stages of the productive process earlier than retailing, or conversely.

² It is important to note that this inference will only be valid where tastes, and also the outlet-structure for different commodities, are broadly similar in Great Britain and North America.

Thus the relatively very low number of bookshops in the United States can be accounted for partly by geographical and demographic conditions which favour methods of book-distribution other than specialised bookshops, and partly by tastes: fewer people buy and read books in the United States than in Great Britain.

Cf. the *Times Literary Supplement*, September 17, 1954, p. lvi.

Thus, column 4 of Table III shows that there are over four times as many American shops as British engaged in some branch of automotive retailing. It may obviously be the case that the volume of American sales in these trades exceeds the British by an equivalent or greater margin. If so, American shops will be larger in this branch of distribution also, and the same may be true in the other luxury trades in which Great Britain has relatively fewer shops.

The fulfilment, in practice, of our second condition relating to economies of scale may be taken for granted,¹ at any rate over a wide range of sizes. We may, correspondingly, expect productivity in North American retail distribution to be superior in trades where their shops are significantly larger, other things being equal.

That other things should in fact be equal, or, if they are not, that the influence of other factors should not cancel the influence of economies of scale on comparative productivity, is our third condition. Empirical studies show that this is generally so within individual countries.² In the absence of any differences in Anglo-North-American conditions sufficient to raise relative British productivity so much as to counteract the American advantage associated with economies of scale, our third condition will be fulfilled.

We may conclude that our data on relative numbers of shops are suggestive in themselves, in that they provide *prima facie* support for the view that productivity is likely to be higher in North American than in British retail distribution, at least in the trades selling necessities.

4. It is fortunate for the purposes of this inquiry that shortly after the publication of the first British census, a pioneer study of the comparative purchasing power of currencies was completed by Mr. Milton Gilbert and his associates at O.E.E.C. This makes it possible to use census data on sales to estimate the real volume of goods retailed in comparable branches of retail distribution in Britain and the United States.³ The results are given below.

Table IV shows American real *per capita* sales to be higher than British in each trade group for which data are available, except one.⁴ It can also

¹ See R. Bellamy, "Size and Success in Retail Distribution," *Bulletin of the Oxford University Institute of Statistics*, 1946, pp. 324 *et seq.*, and Colin Clark, *The Conditions of Economic Progress* (1st edition), pp. 334 *et seq.*

² R. Bellamy, *op. cit.*, *passim*. Also: "It is a generally accepted principle that expenses in relation to sales decrease as the size of business increases" (*Eighth Census of Canada*, 1941, Vol. X, p. xl).

³ See Milton Gilbert and Irving B. Kravis, *An International Comparison of National Products and the Purchasing Power of Currencies* (Paris: O.E.E.C.). The O.E.E.C. study did not embrace Canadian price data, but there is every reason to suppose that the results of an Anglo-Canadian comparison of real sales volumes would be very similar to those of our Anglo-United States comparison.

⁴ This is the confectioners, tobacconists and newsagents group, where the specialist shop has been largely superseded in the United States (see footnote 1, page 73).

The comparative value of U.S. retail sales is understated in Table IV to the extent that the sales figures do not include the amount of local and States sales taxes or Federal excise taxes which are collected by the store for a local, State or Federal taxing agency. Gasoline, liquor, tobacco and other excise taxes which are paid by the manufacturer or wholesaler and passed along to the retailer are included. The British sales figures include Purchase Tax. The purchasing power equivalents relate to market prices.

TABLE IV
Great Britain and the United States: Retail and Service Trades—Estimated Volume of Sales by Major Kind of Business Groups¹

Kind of business by major groups of the British Census of Distribution (1950).	Sales.		Purchasing-power equivalents (£ per \$).		Estimated volume of U.S. sales (£ mn.).		Quotient of per capita sales volume, U.S.A./Great Britain.		Quotient of relative number of shops, U.S.A./Great Britain.
	Great Britain (1950) £ mn.	U.S.A. (1948) \$ mn.	U.S. quantity weights.	British quantity weights.	U.S. quantity weights.	British quantity weights.	British price weights. ²	U.S. price weights. ²	
I-II. Grocery group and other food retailers	2,088	34,055	0.243	0.189	8,275	6,436	1.33	1.03	0.69
III. Confectioners, tobacconists and newsagents	455	1,401	0.487	0.487	682	682	0.50	0.50	0.27
IV. Clothing group ³	942	12,675	0.330	0.313	4,183	3,967	1.49	1.41	0.56
V. Hardware group	218	5,283	0.395	0.350	2,087	1,849	3.21	2.85	0.85
VI. Booksellers and stationers	68	555	0.547	0.387	304	215	1.50	1.06	0.26
VII. Chemists' goods and photographic goods group	159	4,215	— ⁴	— ⁴	— ⁴	— ⁴	— ⁴	— ⁴	1.18
VIII. Furniture group	259	4,666	0.340	0.308	1,586	1,437	2.05	1.86	1.24
IX. Jewellery, leather and sports goods group	80	1,799	— ⁴	— ⁴	— ⁴	— ⁴	— ⁴	— ⁴	1.04
X. General group	415	13,151	0.357	0.319	4,695	4,195	3.80	3.39	5.33
XI. Coal, builders' materials and corn group	186	10,541	0.260	0.288	2,741	3,036	4.94	5.48	1.29
XII. Other non-food retailers	53	2,322	— ⁴	— ⁴	— ⁴	— ⁴	— ⁴	— ⁴	1.52
XIII. Catering group	193	6,468	— ⁴	— ⁴	— ⁴	— ⁴	— ⁴	— ⁴	1.45
XIV. Hairdressers	34	845	— ⁴	— ⁴	— ⁴	— ⁴	— ⁴	— ⁴	1.90
XV. Funeral furnishers	13	572	0.157	0.189	133	160	1.31	1.58	1.86
XVI. Portrait photographers	4	147	— ⁴	— ⁴	— ⁴	— ⁴	— ⁴	— ⁴	1.60
XVII. Repairers group	25	731	— ⁴	— ⁴	— ⁴	— ⁴	— ⁴	— ⁴	1.37
XVIII. Motor vehicle dealers and repairers, cycles, accessories and garages group	546	27,878	0.576	0.464	16,058	12,935	9.87	7.95	4.22
TOTAL	5,738	127,306 ⁷	0.359	0.294	45,703	37,428	2.67	2.19	1.00

Sources: Sales and Population: Same as Tables I and II.
Purchasing-power equivalents: Basic data from O.E.E.C. Adjustment factors 1950/1948 from Bureau of Labor Statistics, Washington, D.C.
Weights for commodity composition of sales: United States Census of Business, 1948, Vol. II, Chapters 16-24 and Census of Distribution and Other Services, 1950, Vol. II, Tables 4 and 23.

¹ See Table I, note 1.

² Column (7) is based on British weights, since $P_1 Q_1 \cdot \frac{1}{P_2 Q_2} = \frac{P_1 Q_1}{P_2 Q_2}$ (per capita), and column (8) on U.S. weights, since $P_2 Q_2 \cdot \frac{1}{P_1 Q_1} = \frac{P_2 Q_2}{P_1 Q_1}$ (per capita), where u stands for United States and b stands for Great Britain.

³ $P_1 Q_1 \cdot \frac{1}{P_2 Q_2} \cdot \frac{P_2 Q_2}{P_1 Q_1} = \frac{P_2 Q_2}{P_1 Q_1}$ (per capita), where u stands for United States and b stands for Great Britain.

⁴ $P_1 Q_1 \cdot \frac{1}{P_2 Q_2} \cdot \frac{P_2 Q_2}{P_1 Q_1} = \frac{P_2 Q_2}{P_1 Q_1}$ (per capita), where u stands for United States and b stands for Great Britain.

⁵ Department and variety stores only.

be seen from columns 7-9 of this table that, in those trade groups where shops are relatively more numerous in the United States, the *per capita* volume of goods distributed is, with two exceptions, greater in an even higher proportion. This implies that shops in the United States are larger, on average, than in Great Britain in every major kind of business group except two, namely, the general group and hairdressing.¹ Moreover, one of these exceptions is merely statistical, and only goes to confirm the rule that shops are larger in the United States, as can be demonstrated by appropriate grouping of the data.²

Table V shows the actual values of real sales per store³ and Table VI the volume of real sales per person engaged⁴ by the major trade groups of the British census classification.

Taken in conjunction with each other, these tables show that the larger size of shops in the United States is in fact associated with higher productivity there, as measured by the partial index of real sales per person engaged. Moreover, the idea that the association is not merely an accidental one is strongly suggested by the fact that, as between the various trades, productivity in the United States is relatively higher where the difference in size of outlet is greater. The correlation coefficient in respect of the quotients of relative sales per shop and of relative sales per person engaged in the different major groups is 0.9.

If we adopt the assumption that higher labour productivity is associated with higher productivity in general, we can interpret the pattern of figures shown in Table III in the following general way: the influence of higher productivity in North American retailing has the effect of depressing the

¹ Examination of comparative *per capita* sales volumes in the seven trade groups in which estimated purchasing power equivalents were not accurate enough to be shown explicitly in Table IV makes it quite clear that shops are, on average, larger in the United States than in Great Britain in each of the trade groups concerned.

In the confectioners, tobacconists and newsagents group, while United States *per capita* consumption is lower, the relative number of shops is lower still than in Great Britain.

² There is a traditional inconsistency, in all three countries, in the principles of classification underlying the division of distributive establishments into major groups. Whereas the principle of classification in the case of all groups other than the general group relates to the kind of merchandise sold, the general group is shown separately by virtue of its distinctive principle of departmentalisation. It is possible to remove this inconsistency by grouping together all the trade groups which sell merchandise of the types retailed by department and variety stores. A calculation of relative real sales per shop for the specialist groups IV, V, VI, VIII and IX taken together shows these shops in the United States to be larger than the British in the ratio of 2.69 (British price weights). If the general group X is added, the ratio rises to 3.07, in spite of the fact that the average size of shop in the general group is smaller in the United States than in Great Britain. This apparently paradoxical result reflects the wider prevalence of department and variety stores in the United States, together with the fact that department and variety stores are typically much larger, in both countries, than the specialist shops selling similar merchandise. It also implies that a larger proportion of these goods is channelled through the larger type of outlet in the United States than in Great Britain.

³ Examination of the frequency distributions of numbers of shops by sales size shows that the comparison of average sales per store given in Table V reflects actual differences in the typical sizes of shops in Great Britain and the United States.

⁴ The figures we have used for persons engaged include working proprietors, unpaid family workers and paid employees. No allowance has been made for differences in the extent of part-time working, the length of the working week, and the age and sex composition of the labour force.

relative number of shops in America below the British level in a number of trades which sell staple commodities and where, in consequence, *per capita* consumption levels do not exceed the British by a very large margin. In other trades American consumption is so much higher that this outweighs the effect of higher American productivity and results in there being relatively more shops there than in Great Britain.

TABLE V

Great Britain and the United States: Retail and Service Trades—Average Real Sales Volume per Shop, by Major Kind of Business Groups¹

Kind of business by major groups of the British Census of Distribution (1950)	Average £ sales per shop Great Britain (1950).	Estimated real value in £ of sales per shop, U.S.A. (1948).		Quotient of relative sales per shop, U.S.A./Great Britain.	
		U.S. quantity weights.	British quantity weights.	British price weights.	U.S. price weights.
I. Grocery group	9,051	14,837	13,270	1.64	1.47
II. Other food retailers	7,238	18,263	10,666	2.52	1.47
III. Confectioners, tobacconists and newsagents	6,863	12,582	12,582	1.83	1.83
IV. Clothing group	10,560	28,028	26,581	2.65	2.52
V. Hardware group	7,224	27,346	24,227	3.79	3.35
VI. Booksellers and stationers	7,171	41,575	29,404	5.80	4.10
VII. Chemists' goods and photographic goods group	9,479	—	—	—	—
VIII. Furniture group	16,101	26,593	24,095	1.65	1.50
IX. Jewellery, leather and sports goods groups	5,720	—	—	—	—
X. General group	287,636	206,011	184,072	0.72	0.64
XI. Coal, builders' materials and corn group	9,254	35,724	39,569	3.86	4.28
XII. Other non-food retailers	4,657	—	—	—	—
XIII. Catering group	4,265	—	—	—	—
XIV. Hairdressers	1,151	787	946	0.68	0.82
XV. Funeral furnisiers	3,851	—	—	—	—
XVI. Portrait photographers	1,871	—	—	—	—
XVII. Repairers group	1,090	—	—	—	—
XVIII. Motor vehicle dealers and repairers, cycles, accessories and garages group	18,846	44,203	35,606	2.35	1.89
XIX. TOTAL	8,650	23,152	18,960	2.68	2.19

Sources: Same as Table IV.

¹ See Table I, note 1.

² No adequate purchasing-power equivalent available.

³ Department and variety stores only.

⁴ Including "other general stores."

⁵ Excluding canteens.

5. Our analysis has shown that the larger size of outlets in the United States is associated with higher productivity there, and economies of scale may be regarded as one proximate cause of this. A distinction must, however, be made between economies of large scale which result from a greater average sales volume passing through individual retail outlets,¹ and the economies of large-scale organisation, the most important of which, in distribution, are those of large-scale buying. The latter are most commonly achieved by chain stores and co-operative societies, which unite a number of outlets under a single management, and the term large-scale retailing is often used to cover these forms of organisation. Table VII shows that, in last sense, it is British retailing which is larger scale. In every kind of business group shown in the table, without exception, the chain and co-

¹ These are the economies of size of plant in distribution.

operative forms of organisation are more numerous and more important in terms of sales in Great Britain than in the United States. As in many other respects, the position in Canada, as regards chains, is intermediate between Great Britain and the United States.¹

These figures certainly invite further investigation, since the rise of large-scale forms of organisation in retailing has generally been associated with the emergence of mass markets for consumer goods.² North America contains the largest mass markets in the world to-day, so that other factors in the situation are clearly also at work.

TABLE VI

Great Britain and the United States: Retail and Service Trades—Average Real Sales Volume per Person Engaged by Major Kind of Business Groups¹

Kind of business by major groups of the British Census of Distribution (1950).	Average £ sales per person engaged, Great Britain (1950).	Estimated real value in £ of sales per person engaged, U.S.A. (1948).		Quotient of relative sales per person engaged, U.S.A./Great Britain.	
		U.S. quantity weights.	British quantity weights.	British price weights.	U.S. price weights.
I. Grocery group	2,447	4,100	3,667	1.68	1.50
II. Other food retailers	1,909	4,564	2,665	2.39	1.40
III. Confectioners, tobacconists and newsagents	2,023	4,298	4,298	2.12	2.12
IV. Clothing group	2,347	4,416	4,188	1.88	1.78
V. Hardware group	1,967	5,603	4,964	2.85	2.52
VI. Booksellers and stationers	1,318	5,707	4,036	4.33	3.06
VII. Chemists' goods and photographic goods group	1,929	—	—	—	—
VIII. Furniture group	2,863	4,756	4,309	1.66	1.51
IX. Jewellery, leather and sports goods groups	1,856	—	—	—	—
X. General group	2,281	3,922	3,505	1.72	1.54
XI. Coal, builders' materials and corn group	2,269	5,532	6,127	2.44	2.70
XII. Other non-food retailers	1,409	—	—	—	—
XIII. Catering group	724	—	—	—	—
XIV. Hairdressers	453	—	—	—	—
XV. Funeral furnisiers	1,071	—	—	—	—
XVI. Portrait photographers	506	—	—	—	—
XVII. Repairers group	556	—	—	—	—
XVIII. Motor vehicle dealers and repairers, cycles, accessories and garages group	2,740	—	—	—	—
XIX. TOTAL	1,998	—	—	—	—
TOTAL, RETAIL TRADE ONLY	2,173	4,439	4,076	2.04	1.88

Sources: Same as Table IV.

¹ See Table I, note 1.

² No adequate purchasing-power equivalent available.

³ Excluding canteens.

⁴ Including "other general stores."

⁵ Department and variety stores only.

⁶ Available data do not include unpaid family workers.

6. If the pattern of numbers of shops revealed by our Anglo-American comparisons is of general significance, then we should expect to find it in evidence in inter-regional comparisons wherever the regions differ in their levels of real income and productivity in distribution but are otherwise comparable. We made such an analysis primarily as a check on the results of our international comparisons. We used data on numbers of shops given in the 1948 United States census for forty-eight states and the District of

¹ Eighth Census of Canada, 1941, Vol. X, Table 13.

² For an exhaustive discussion of the historical growth of large-scale organisation in British retailing, see J. B. Jeffreys, *Retail Trading in Britain, 1850-1950*, Cambridge University Press, 1954, *passim*, and especially pp. 119-20.

Columbia in conjunction with official estimates of *per capita* income in these regions.

As can be seen from Table VIII, we found a significant correlation between relative numbers of shops and income in twelve out of our eighteen

TABLE VII

The Structure of the Retail Trades in Great Britain (1950) and the United States (1948), Distinguishing Single Units and Chains of Various Sizes by Major Kind of Business Groups¹

Major group Nos. ²	1 Establishment.		2-9 ³ Establishments.		10-24 ⁴ Establishments.		25-49 ⁵ Establishments.		50-99 ⁶ Establishments.		100 ⁷ Establishments and over.		Co-operatives (Great Britain only).	
	% of no. of estabs.	% of sales.	% of no. of estabs.	% of sales.	% of no. of estabs.	% of sales.	% of no. of estabs.	% of sales.	% of no. of estabs.	% of sales.	% of no. of estabs.	% of sales.	% of no. of estabs.	% of sales.
I. G.B.	73.1	42.7	5.9	8.9	1.8	3.4	1.5	2.8	1.7	2.8	7.1	13.8	8.8	25.6
U.S.	91.5	58.9	2.4	7.4	0.6	3.4	0.5	2.4	0.4	2.0	4.6	25.6	—	—
II. G.B.	66.6	52.7	17.7	21.0	2.7	4.9	1.2	2.0	1.4	2.4	3.4	5.6	7.0	11.4
U.S.	92.0	76.9	4.7	8.3	0.8	—	0.5	×	0.4	×	1.5	×	—	—
III. G.B.	84.3	74.2	7.7	12.7	1.3	2.5	1.0	2.0	0.8	1.6	4.6	6.3	0.2	0.7
U.S.	88.2	73.3	3.5	8.5	1.6	—	1.5	×	0.7	×	4.5	×	—	—
IV. G.B.	63.3	40.1	19.7	20.0	2.7	6.9	1.8	4.4	2.3	4.0	7.0	18.3	3.3	6.3
U.S.	79.9	58.9	11.4	18.5	2.2	5.7	1.3	3.2	2.0	4.0	3.1	9.8	—	—
V. G.B.	70.1	55.1	16.5	17.8	1.1	2.0	1.1	2.0	3.8	9.0	6.3	12.4	1.1	1.8
U.S.	88.2	76.3	5.6	9.9	1.2	—	1.2	×	1.2	×	2.5	×	—	—
VI. G.B.	75.1	58.4	11.3	16.9	1.0	3.0	1.2	2.0	—	—	11.3	19.6	0.1	0.6
U.S.	89.7	72.4	6.5	12.9	1.5	5.7	0.9	×	1.5	×	—	—	—	—
VII. G.B.	62.9	44.3	15.9	15.2	1.7	1.8	—	—	13.6	32.7	—	—	—	—
U.S.	89.2	72.3	5.9	10.1	0.8	2.2	0.9	2.8	0.8	2.9	2.5	9.7	5.9	6.1
VIII. G.B.	66.6	45.7	23.8	25.2	2.7	7.4	—	—	3.6	11.9	—	—	—	—
U.S.	89.9	74.7	8.6	19.4	0.5	×	0.9	×	0.3	×	0.4	×	3.0	6.3
IX. G.B.	74.9	62.7	19.7	24.5	—	—	—	—	4.9	12.0	—	—	—	—
U.S.	90.3	78.2	8.6	17.0	1.0	×	0.1	×	—	—	—	—	0.5	0.9
X. G.B.	14.1	35.6	8.3	21.5	4.6	3.2	7.8	6.3	54.7	22.7	—	—	10.6	10.6
U.S.	54.3	32.2	11.4	18.1	2.6	6.7	2.8	1.3	2.0	1.1	27.0	40.5	—	—
XI. G.B.	77.8	58.8	9.0	12.7	3.3	6.0	—	—	4.7	10.2	—	—	5.2	12.3
U.S.	83.5	74.1	9.4	16.0	2.2	3.0	1.6	×	1.8	×	1.5	×	—	—
XIII. G.B.	83.0	64.7	6.6	10.4	1.6	3.7	1.4	2.5	1.0	1.8	6.0	16.1	0.4	0.8
U.S.	94.6	83.6	3.3	8.4	0.6	2.3	0.3	2.2	0.6	×	0.5	×	—	—
XVIII-XIX. G.B.	84.1	65.4	12.6	27.6	0.9	4.4	—	—	2.4	2.6	—	—	—	—
U.S.	94.2	89.2	3.2	7.5	0.4	0.7	0.3	0.2	0.4	0.3	1.6	2.0	—	—
TOTAL. G.B.	72.5	50.1	12.8	17.3	—	—	—	—	10.1	21.9	—	—	—	—
U.S.	89.9	68.7	4.9	11.4	1.0	×	0.6	×	0.7	×	2.8	×	4.6	10.7

Sources: British Census of Distribution and Other Services, 1950, Vol. II, Table 8, and United States Census of Business, 1948, Vol. I, Table 3A.

¹ See Table I, note 1. While the procedure used for allocating establishments to organisations controlling chains of different sizes is nominally different in the British and the United States censuses, the effect of this is negligible in practice. ² Data for Groups XII, XIV-XVII not available in the United States census. Figures shown in groups I, II, IV, V, VII-XI, XVIII and XIX are subject to slight errors which result from the necessity of omitting certain sub-groups from the comparisons owing to grouping and non-disclosure in the basic census data. ³ 2-10, 11-25, 26-50, 51-100, 101 establishments and over in United States census.

trade groups. It can also be seen from column 3 of this table that numbers of shops generally increase more sharply with income in the trades selling luxuries than in other trades. This may be regarded as confirming the interpretation we gave of the pattern of numbers of shops in luxury trades in our Anglo-North American comparisons (see Table III).

It is noteworthy that the correlation was positive in all cases except in the food trades, which, in terms of our analysis, suggests that the income factor was dominant over a wider range of trades within the United States than in our Anglo-North American international comparisons. This may be explained by the existence of wide variations in regional incomes in the United States, while the level of productivity in distribution did not,

TABLE VIII

United States (1948): Numbers of Shops per 10,000 Population in Relation to an Index¹ of per capita Income in Forty-eight States and the District of Columbia²

Kind of business by major groups of the British Census of Distribution (1950)	Correlation coefficients ³	Regression coefficients.	Regression coefficients as % of no. of shops/10,000 population in U.S.A.	General characteristics of goods retailed. ⁴
I. Grocery group	—0.58	—0.2076	—0.6	Necessaries
II. Other food retailers				
III. Confectioners, tobacconists and newsagents	0.55	0.0567	1.5	Luxuries
IV. Clothing group	0.51	0.0538	0.5	Intermediate
V. Hardware group	0.44	0.0504	1.0	Luxuries
VI. Booksellers and stationers	0.68	0.0073	1.5	Luxuries
VII. Chemists' goods and photographic goods group	0.51	0.0195	0.5	Intermediate
VIII. Furniture group	0.27	0.0119	0.3	Luxuries
IX. Jewellery, leather and sports goods group	0.51	0.0276	0.9	Luxuries
X. General group	0.16	0.0028	0.2	Intermediate
XI. Coal, builders' materials and corn group	0.29	0.0326	0.6	(Not consumers' goods)
XII. Other non-food retailers	0.52	0.0306	0.9	Luxuries
XIII. Catering group	0.27	0.0326	0.2	Luxuries
XIV. Hairdressers	0.70	0.0795	0.7	Luxuries
XV. Funeral furnisiers	0.18	0.0033	0.3	Intermediate
XVI. Portrait photographers	0.62	0.0064	0.8	Luxuries
XVII. Repairers group	0.66	0.1013	1.1	Luxuries
XVIII. Motor vehicles, cycles and accessories group	0.18	0.0200	0.3	Luxuries
XIX. Motor vehicle repairers and garages group	0.15	0.0375	0.2	Intermediate
A. Trades selling necessities	—0.58	—0.2076	—0.6	
B. Trades selling intermediate goods	0.37	0.1172	0.3	
C. Trades selling luxuries	0.74	0.4232	0.7	

Sources: United States Census of Business, 1948, Vol. III and Vol. VII, and Statistical Abstract of the United States, 1951, p. 264.

¹ I.e., *per capita* income in each of the forty-eight states and the District of Columbia, expressed as a percentage of *per capita* income in the United States as a whole. ² See Table I, note 1.

³ The 5 and 1% levels of significance of *r* with 47 degrees of freedom are 0.28 and 0.36 respectively.

⁴ Based on expenditure elasticities of demand, and "income sensitivity of consumption expenditures"; see Table III, note 2.

apparently, vary with income in such a pronounced manner in different regions of the United States economy as in our international comparisons.¹

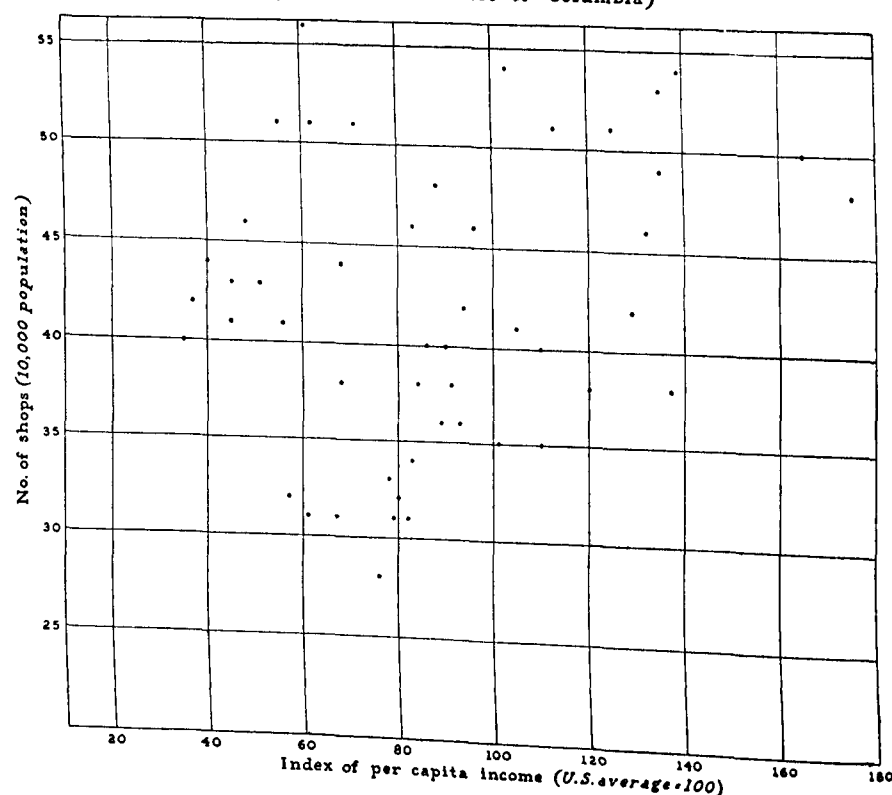
¹ In principle, the wider area of dominance of the income factor in the United States inter-regional comparison may be explained either by the existence of wider variations in incomes within the United States than in the Anglo-United States comparison, or by lesser variations in productivity with given income differences. As the range of income variation is similar in the inter-regional and the international comparisons, it follows that, generally, productivity in distribution varies less within the United States than between the United States and Great Britain.

It will be noticed that here, and throughout the remainder of this article, we postulate the existence of a connection, at a given level of income, between relative numbers of shops and size of shops, as well as between size of shops and productivity. It seems justifiable to do this as a first approximation, since the conditions which must be fulfilled for this procedure to be valid were found to be realised in our international comparison, and this may be expected to be so *a fortiori* in our inter-regional comparison.

It is most striking that in the food trades, where it is likely that productivity in distribution now varies very greatly according to the length to which the technical revolution associated with self-service and super-markets has gone, the effect of productivity on numbers of shops is found to be predominant. The power of the impact of the self-service revolution is indicated by the fact that in 1929, before the change-over to self-service had gone at all far, no significant correlation existed between numbers of shops in the food trades and income in the forty-eight states and the District of Columbia.¹ The contrast between the position in the food trades in 1929 and in 1948 is shown in the following scatter-diagrams:

Grocery group & other food retailers U.S.A. (1929)

(48 states & District of Columbia)



The strong negative correlation shown for the food trades in 1948 indicates that high productivity in food distribution is now found in the regions of highest income in the United States, so that the inter-regional comparisons in this trade afford a complete parallel to the findings of our international comparison in regard to trades selling staple products.

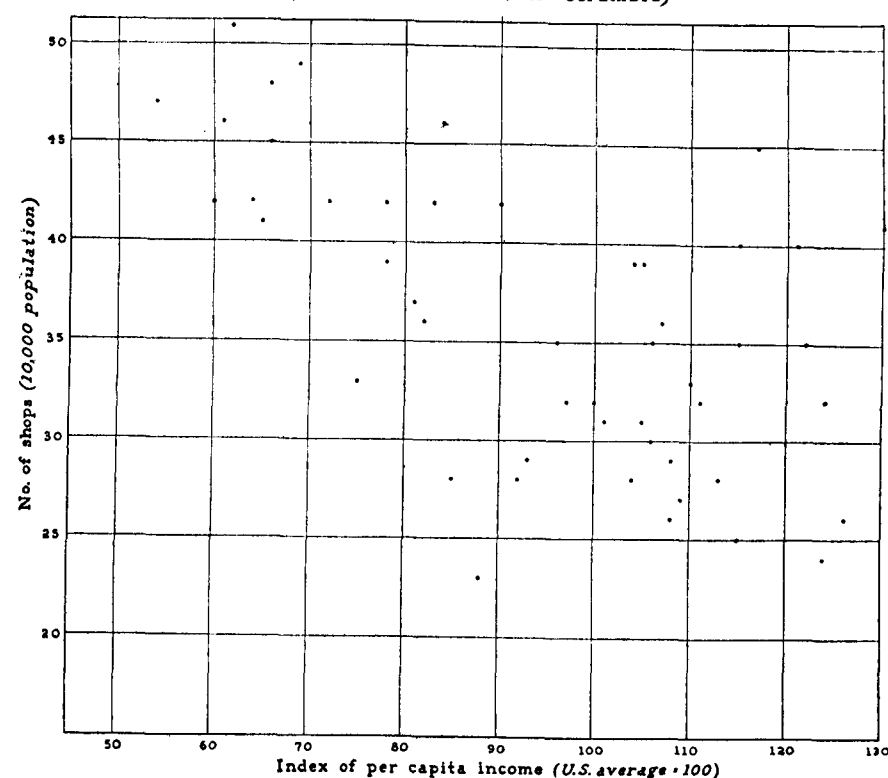
¹ The interpretation of this may be either that neither *per capita* sales of food nor productivity in distribution varied significantly with income in 1929, or that the influence of higher income on numbers of shops *via* higher food sales was offset by higher productivity in distribution in the richer states.

7. Historical data on numbers of shops can be interpreted in a similar manner. There are no British census data before 1950, but Professor Ford has done pioneer work in this field on data obtained from directories and Mr. Henry Smith has employed the same method of obtaining data numbers of shops.¹

Professor Ford showed that in his sample of twelve "typical" British towns, practically no change had occurred in the total number of retail shops of all kinds² relatively to population between the years 1901 and 1951. However, this constancy, through time, of the total number of shops relative to population was found to disguise widely divergent developmen

Grocery group & other food retailers U.S.A. (1948)

(48 states & District of Columbia)



in different trades. In one group of trades, in which the various categories of distributors of such staple commodities as food and clothing accounted

¹ See P. Ford, "Competition and the Number of Retail Shops, 1901-1931," *ECONOMIC JOURNAL*, 1935, pp. 501 *et seq.*; also Note on "Changes in the Number of Shops, 1901-1931," *ECONOMIC JOURNAL*, 1936, pp. 359 *et seq.*; and P. Ford and C. V. White, *Trends in Retail Distribution in Yorkshire (West Riding), 1901-1927*, (Manchester School, 1936), pp. 119 *et seq.*; also Henry Smith, *Retail Distribution* (2nd Edition), Chapter III.

² Certain service trades were excluded from the scope of Professor Ford's study, *e.g.*, hairdresses. On the other hand, he included photographers and fried fish shops. See *ECONOMIC JOURNAL*, 1935, pp. 505 and 507.

for a large proportion of the number of shops, significant declines had occurred in the numbers of shops relatively to population. In others, some striking increases had occurred in the relative numbers of shops, on a scale sufficient to keep the total for all trades at a constant figure.

Professor Ford's interpretation of these results was to suggest that the total number of shops had been held down, in spite of factors, such as the growth of new shopping centres, tending to increase them, by the economies of "massive retailing," i.e., by increased productivity in distribution.¹ The decline in the relative number of shops in trade groups selling staple articles of consumption should, he implied, be attributed to this. On the other hand, where an increase in the relative number of shops had occurred, this could, in many cases, be accounted for by rising standards of consumption. It is evident that the factors distinguished in Professor Ford's pioneer articles are the same as those that have been invoked in the foregoing analysis.

The historical changes in numbers of shops in the United States and Canada show a strikingly similar pattern to the one revealed by Professor Ford's results for Great Britain. It can be seen from Table IX that there has been an historical tendency for the number of shops engaged in selling the staples or necessities of consumption to decline relatively to the population in both the United States and Canada. By contrast, the relative number of shops has generally increased in both countries in trades selling goods which have a luxury character.² The net effect of these changes has been to reduce the total number of shops relatively to population over the twenty-year period for which North American census data are available.³

In view of the similarity between these patterns of development and the British, it is tempting to speak of what might be called the "Ford effect." This would reflect the fact that wherever productivity in distribution and the real income of the community both increase over fairly long periods of time, the relative numbers of shops selling necessities will tend to decline and the relative number of shops selling luxuries will tend to increase. This result would be the outcome of the joint action of two forces on the number of shops; first, the influence of increasing productivity, which tends to reduce the number of shops, and, secondly, the influence of the increasing

¹ P. Ford, *ECONOMIC JOURNAL*, 1935, p. 506.

² The exceptions to this in Table IX are mostly in the comparative figures in respect of service trades in Canada, 1930-51. It should be noted in this connection that the Canadian census of 1941 stressed that the 1930 figures in respect of service trades are not always comparable with later data (see *Eighth Census of Canada*, 1941, Vol. XI, p. 388). In addition, it is possible that the 1930 census results were already affected by the influence of depression, which tends to lead to a cyclical inflation of numbers of shops in some service trades, as well as in some other kinds of business groups. There is ample evidence of this effect in the United States censuses for the years 1933, 1935 and 1939. We have decided to avoid consideration of this material in the present article, since we are not here concerned with the influence of short-period factors on the distributive trades.

An example of an exception of a different type is afforded by the decline in the relative number of bookshops in the United States between 1929 and 1948. This is no doubt due to a change in the channels of distribution. Exceptions of this kind were noted in Professor Ford's articles, and do not refute his general thesis (see P. Ford, *ibid.*, p. 508).

³ Unfortunately, no data are available for comparing this trend with British experience over the same period.

scale of real consumption as income rises, which tends to raise the number of shops. Both these forces operate on all trade groups, but the influence of increased real consumption on numbers of shops will be asymmetrical because of the tendency for a diminishing proportion of income to be spent on necessities as income increases. Consequently it is possible for the net result of the operation of the two forces we have distinguished to be consistent

TABLE IX

United States and Canada: Retail and Service Trades—Historical Changes in Numbers of Shops Relatively to Population, by Major Kind of Business Groups¹

(United States, 1929 and 1948; Canada, 1930 and 1951)

Kind of business by major groups of the British Census of Distribution (1950).	Year: Population:	Number of shops per 10,000 population.				General characteristics of goods retailed. ^a
		U.S.A.		Canada.		
		1929. 121,770,000.	1948. 146,045,000.	1930. 10,208,000.	1951. 14,009,429.	
I-II. Grocery group and other food retailers		42.9	36.1	46.6 *	36.4	Necessaries
III. Confectioners, tobacconists and newsagents		8.8	3.7	11.7	8.3	Necessaries *
IV. Clothing group ^a		12.7	10.2	13.3	14.4	Intermediate
V. Hardware group		4.6	5.2	4.8	5.5	Luxuries
VI. Booksellers and stationers		0.6	0.5	0.4	0.5	Luxuries
VII. Chemists' goods and photo- graphic goods group		4.8	4.0	3.5	3.2	Intermediate
VIII. Furniture group		3.3	4.1	1.9	2.2	Luxuries
IX. Jewellery, leather and sports goods group		2.3	2.9	2.0	2.9	Luxuries
X. General group ^a		1.3	1.6	0.6	1.5	Intermediate
XI. Coal, builders' materials and corn group	}	7.0	5.3	4.5	2.8	{ (Not consumers' goods)
XII. Other non-food retailers		4.5	3.5	3.1	2.4	
XIII. Catering group ⁷		11.0	13.3	5.5	10.0	Luxuries
XIV. Hairdressers		— ^a	11.6	9.9	9.1	Luxuries
XV. Funeral furnisiers		— ^a	1.3	0.8	0.8	Intermediate
XVI. Portrait photographers		— ^a	0.8	0.7	0.8	Luxuries
XVII. Repairers group		— ^a	6.3	6.1	5.4	Luxuries
XVIII. Motor vehicles, cycles and accessories group		5.9	6.1	3.6	4.8	Luxuries
XIX. Motor vehicle repairers and garages group		— ^a	18.8	11.2	12.1	Luxuries ^a
TOTAL		—	135.2 *	130.2	123.1	

Sources: Same as Tables I and II; also *Seventh Census of Canada*, 1931, Vol. X, Table 1A, and Vol. XI, Table 1A.

¹ See Table I, note 1.

² Based on data of expenditure elasticities of demand and "income-sensitivity of consumption expenditure"; see Table III, note 2.

³ Includes itinerant operators. The direction of change in the relative number of shops, 1930-51, is not affected by this.

⁴ At earlier date.

⁵ Including "other general stores."

⁶ Department and variety stores only.

⁷ Excluding canteens.

⁸ Not covered in 1929 census.

⁹ Total not equal to sum of detail because of rounding.

with our own and Professor Ford's findings for Great Britain, the United States and Canada, even when the increase in productivity bears uniformly on all trades and, *a fortiori*, if there is a tendency for the increase in productivity to be larger in trades retailing staple articles of consumption. The results of our international and inter-regional comparisons of numbers of shops show that the Ford-effect may be detected in inter-spatial as well as in historical comparisons.

8. We have not attempted, in this article, to define the fundamental determinants which account for the differences in productivity indicated by our Anglo-North American comparisons, or the circumstances in which higher productivity in retail trade will result in lower retail prices. We are making a more detailed examination of the particular circumstances in which productivity differences have occurred, and this may be expected to throw light on these matters, as well as on the vexed question of efficiency in distribution.

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THE EFFECTS OF MAINTAINED CONSUMPTION IN THE UNEMPLOYED SECTOR

1. THE EXPLICIT USE OF UNEMPLOYMENT IN OUR ANALYSIS

IN the early empirical work on consumption or saving function it was generally assumed either that the function was fixed apart from a disturbance term or that it shifted in a regular manner through time. In recent years,¹ however, mainly through the work of Modigliani² and Duesenberry,³ it has come to be realised that less obvious types of shift are essential for a satisfactory description of the relationship over time of aggregate consumption to income. Thus in Modigliani's study just referred to a linear per head consumption relationship expressed in real terms is shifted about by reference to the highest level of real income per head previously attained. This takes into account unemployment indirectly, but gives up the heuristic advantages of its explicit use.

The author had already introduced the hypothesis regarding the impact of unemployment on consumption and savings in his investigations of changes in savings deposits in Czechoslovakia during the thirties. The advantages of this straightforward approach do not diminish with the lapse of time. This hypothesis starts each year from scratch, and is thus free from any danger of errors that might accumulate by reference to changes in the estimates for the preceding years. At the same time it leaves the way open for appreciation of some special factors relevant to the interpretation of saving in a given year. In comparison with the more recent approach of Modigliani the following points deserve attention:

(1) The real income is a synthesis of many components, some of which may influence the level of national saving in a manner different from the changes in the degree of employment of the economy. The growing productivity may raise the real income in the employed sector by, say, 2 or 3% annually, and at the same time unemployment may rise, so that there will be no visible change in the total real income, though there will be a substantial fall in net national saving, due to the specific behaviour of the unemployed sector. Changing conditions of international trade, irregular crops, etc., may produce similar divergent movements.

(2) The deflating of national income figures may not always be the safest step to an evaluation of the size of the unemployed sector with its

¹ R. Stone, *Model Building and the Social Accounts*. A Survey prepared for the Conference of the International Association for Research in Income and Wealth in Castelgandolfo.

² F. Modigliani, "Fluctuation in the Saving-Income Ratio: A Problem in Economic Forecasting" (in *Studies in Income and Wealth*, Vol. 11. New York, 1949).

³ J. S. Duesenberry, *Income, Saving and the Theory of Consumer Behaviour*. Harvard University Press, 1949.

special behaviour. This can be better measured, in most cases, by more direct and usually more readily available information.

(3) The explicit use of unemployment makes it possible to examine the consistency of available estimates of national income and savings in the light of information independent of the estimates themselves.

(4) The hypothesis relating the unemployed sector to full-employment income also makes possible an evaluation of net capital formation in an environment for which estimates of national income in absolute figures are not yet available.

On the other hand, the newer approach of Modigliani has the merit that it can deal with situations in which statistics of unemployment cannot be relied upon as an indicator of the size of the unemployed sector, but in which the estimates of national income are available.

First the paper will show the advantages of an explicit recognition of the unemployed sector in a discussion on the most general level. The second part will test our hypothesis on statistics from the inter-war period, which has the technical advantage that it includes years with a widely changing degree of unemployment, but with conditions otherwise fairly comparable.

The separation of the behaviour of the unemployed sector will help us to view the distinctly long-term nature of the propensity to save with the same assurance as was assumed in the early writings on the subject.

2. CHARACTERISTICS OF THE UNEMPLOYED SECTOR

The term "unemployed sector" has been chosen to emphasise that this factor is conceived here in the widest sense. Unemployment figures provide a clearly visible indicator of changes in the overall intensity of business activity, the practical consequences of which make themselves felt in all aspects of the economic system.

The pattern of the unemployed sector is taken as a microcosm of the whole economy under conditions of full employment of both men and assets: the pattern of trades in the unemployed sector is assumed to be the same as that of the whole economy; the average income and the distribution of incomes between factors under "normal" conditions (full employment) are also the same in the unemployed sector as in the whole economy; the same is true of consumption habits, savings, etc. However, so far as actual behaviour is concerned, the unemployed sector is not a simple microcosm of the whole under "normal" conditions. The changed conditions impose on the unemployed sector quite specific modes of behaviour, modifying the tendencies from the "normal" pattern. The specific characteristics of the unemployed sector are assumed to be elements of an independent origin and temporary nature superimposed on a long-term pattern of "normal" behaviour of the whole economy.

3. THE "RESISTANCE OF CONSUMPTION" DEFINED

The effects of the "normal" pattern of behaviour combined with the specific elements of the situation in the unemployed sector are summarised

primarily in the behaviour of the whole unemployed sector (comprising men and assets) as consumer. Though the unemployed sector has discontinued its contributions to the national production, it does not discontinue its participation in national consumption. The cost of inevitable maintenance and accrued obsolescence of idle assets have lost their cover in the gross product of the now unemployed sector, and emerge now as part of the consumption taking place in the unemployed part of the economy. It is a commonplace that the continuity of consumption is not a simple extension of consumers' behaviour under "normal" conditions, but shows substantial modifications in many of its features, and these again change in association with a number of factors. In this paper the accumulated results of all these specific factors modifying the "normal" pattern of consumers' behaviour will be subsumed under the term "resistance of consumption" in the unemployed sector. The term "resistance of consumption" has been chosen to express the specific set of conditions forming this particular case of elasticity of consumption, and its coefficient will be measured as a percentage of the full-employment income.

The author used the hypothesis of the special behaviour of the unemployed sector for the first time when he was faced with the task of interpreting the association in different regions of changes in savings deposits with the unemployment observed during the thirties (1928-35). In each of the analysed years, districts with unemployment near to 8% were districts with zero net changes in savings deposits. The "normal" saving having the liquid form of savings deposits could then be put at some 4% of full-employment incomes, and the main weight of dissaving rested on this relatively liquid form of assets. Thus a conclusion was suggested that the consumption in the unemployed sector must have been reduced to about one-half of the full-employment standard.¹

In the recently published *Saving in the Modern Economy*, R. W. Goldsmith summarises his examination of savings in the last fifty years in the formula²:

$$\frac{\text{Personal saving}}{\text{Personal disposable income}} = 0.15 + \frac{\text{Actual employment} - \text{Normal labour force}}{\text{Normal labour force}}$$

As Goldsmith points out, the formula was not intended to reproduce small year-to-year variations. He seems disappointed to find that the formula yielded values too low in the period between the Great Depression and the Second World War, and leaves open the question whether this is because of

¹ K. Maiwald, *Hospodářský život a úvěr*. Prague, 1937, p. 146. Translated in simple terms, the analysis has been summarised into a simple rule: There must be about twelve men under conditions of full employment to outbalance by their savings the dissaving caused by unemployment of one man, or, that one month of unemployment swallows about one year's saving deposits. See Table 7 on p. 98.

² R. W. Goldsmith, "Trends and Structural Changes in Savings in the Twentieth Century," in *Saving in the Modern Economy*, ed. by W. W. Heller, F. M. Boddy and C. L. Nelson, University of Minnesota, Minneapolis, 1953, p. 146.

an intrinsic defect of the formula or because of shortcomings of the saving or the employment estimates.¹ Had he introduced the specific characteristics of the behaviour of consumption in the unemployed sector, summarised in the concept of its resistance, instead of holding fast to the assumption of 100% resistance, implied in his empirical formula, he would have had a better chance of reconciling the formula with the short-term variations in the empirical series.

4. DISSAVING CAUSED BY UNEMPLOYMENT IN GENERAL

The aggregate net dissaving due to unemployment in the defined sense is given by the formula for net savings in an economy

$$S = aY - ru\bar{Y} \quad (1)$$

where a is the national propensity to save established for conditions of full employment and kept unchanged in the employed sector, Y is the national income in the current year, $\bar{Y}$ is the national income corresponding to the full-employment level in the economy, r is the coefficient of resistance of consumption in the unemployed sector and u the percentage of unemployment.

By simple algebraic transformation this general formula can be used to define conditions under which the critical point of zero net national savings is to be expected. To make the transformation simpler, we have only to express the current national income Y in terms of national income at the full-employment level by writing

$$Y = \bar{Y}(1 - u) \quad (2)$$

Then the zero level of net national saving will be reached when the saving of the employed sector is equal to the dissaving of the unemployed sector, *i.e.*,

$$aY = ru\bar{Y} \quad (3)$$

or

$$a\bar{Y}(1 - u) = ru\bar{Y}$$

and by re-arranging this expression we get the unemployment associated with zero net saving, namely

$$u = \frac{a}{r + a} \quad (4)$$

By a similarly simple expression, a formula for finding the resistance of consumption in the unemployed sector can be defined. By re-arranging formula (3) we get

$$r = \frac{a(1 - u)}{u} \quad (5)$$

From the above expressions there follow some straightforward rules useful in interpreting empirical series: Formula (1) is a useful guide for determining the "normal" propensity to save under conditions of full employment. If the series of net saving has years with a nearly zero unemployment,

¹ R. W. Goldsmith, *op. cit.*

the ratio of actual net savings to the net national income gives the "normal" propensity to save without the need of any further adjustment. If there are available only years with a lower (but not zero) unemployment, the "normal" propensity to save can be determined only after a proper allowance is made for the simultaneous dissaving. On the other hand, the best approximation to the value of resistance of consumption in the unemployed sector can be found in years when the magnitude of the member expressing dissaving is substantial, and thus the calculation is less exposed to hazards from erratic elements in the empirical material. On common-sense grounds it may be found advisable not to use for the latter purpose information from the years of greatest unemployment, as the unemployment of the preceding years might already have affected the resistance of the unemployed sector. Years near zero net national saving seem the best starting point for these calculations.

5. SOME SUGGESTIONS FROM SCHEMATIC CALCULATIONS

5.1. Unemployment Associated with Zero Net Saving

The schematic calculations of unemployment associated with zero net saving in Table I have the merit that they determine the logical consequences ensuing from combinations of the two factors relevant for aggregate

TABLE I

Unemployment Associated with Zero Net Saving

Saving at full employment. Co-efficient of Resistance of consumption.	5%.	7%.	8%.	9%.	10%.	11%.	12%.	20%.
30%	14.3	18.9	21.1	23.1	25.0	26.8	28.6	40.0
40%	11.1	14.9	16.7	18.4	20.0	21.6	23.1	33.3
50%	9.1	12.3	13.8	15.3	16.7	18.0	19.4	28.5
60%	7.7	10.4	11.8	13.0	14.3	15.5	16.7	25.0
70%	6.7	9.1	10.3	11.4	12.5	13.6	14.6	22.2
80%	5.9	8.0	9.1	10.1	11.1	12.1	13.0	20.0
90%	5.3	7.2	8.2	9.1	10.0	10.9	11.8	18.2
100%	4.8	6.5	7.4	8.3	9.1	9.9	10.7	16.7

results of the capital formation in any economy. An empirical investigation cannot change anything in the calculated results. The net of these schematic calculations covers the whole field which may come into practical consideration.

The range of resistance in the unemployed sector examined here spreads from 100 down to 30%; it goes below the level likely to be reached

under the social conditions of contemporary industrial communities.¹ It will almost certainly be agreed that the most frequent cases will be those with somewhere between one-half and three-quarters of normal consumption. Thus we may concentrate our attention on the three central rows of Table I. This eases the task of guessing the "normal" propensity to save likely to prevail in any economy under examination.

Those familiar with the specific conditions of the economy examined will find little difficulty in marking on the table the region most relevant to their case. But, even without an allowance for the specific conditions of a definite country, the range of the most probable cases is a fairly narrow one; it is delimited by one-half to three-quarters of normal consumption in the vertical direction, and by some 10–12% of propensity to save in the horizontal direction. In this region the critical point of zero net saving may, according to the Table, already be reached at about 12.5% unemployment, but must be reached before the unemployment exceeds 19.4%.

Alternatively, it can be inferred from the table that a country with, e.g., 10% unemployment can expect to have net saving only if the two relevant factors meet in combination corresponding to the following examples:

- (1) if with a resistance of consumption not greater than 70% of the normal level, the propensity to save is higher than 8%;
- (2) or if with a resistance of consumption not exceeding 60%, the propensity to save is higher than 7%;
- (3) or again if with a propensity to save not greater than 5%, the coefficient of consumption in the unemployed sector falls to something near 40%.

Inferences from the table could be multiplied; they may well give food for thought to many participants in recent inflation-deflation controversies. The implications of the point of zero net saving for general economic development cannot be elaborated in this connection. We shall confine ourselves to the statement that this situation is bound to threaten whenever any of the indicated combinations of the two factors analysed is allowed to emerge. In such a situation the rigidities of any economic system may produce problems difficult of solution through normal financial channels: the economic crisis is then bound to produce an acute financial crisis and commence another round of a self-propagating spiral.

5.2. The Sensitivity of National Aggregates of Saving to Changes in Employment

The sensitivity of national aggregates of saving to changes in unemployment is calculated in Table II, where the decrease of net saving is expressed as a percentage of national saving at full employment in economics with

¹ The 100% resistance would imply a higher level of consumption than under conditions of full employment; for in this case the normal saving would also be eliminated. However, the disappearance of gross production from the unemployed sector leaves uncovered the inevitable maintenance and accrued obsolescence which constitute a negative contribution of the unemployed assets. This item may take the place of a considerable part of the amount of normal saving.

TABLE II
Changes in National Aggregates of Saving due to 1% Unemployment
Decrease in the percentage of Full-employment Saving

Saving at full employment. Co-efficient of Resistance of consumption.	5%.	7%.	8%.	9%.	10%.	11%.	12%.	13%.	20%.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
30%	7.0	5.3	4.8	4.3	4.0	3.7	3.5	3.3	2.5
40%	9.0	6.7	6.0	5.4	5.0	4.6	4.3	4.1	3.0
50%	11.0	8.1	7.3	6.6	6.0	5.5	5.2	4.8	3.5
60%	13.0	9.6	8.5	7.7	7.0	6.5	6.0	5.6	4.0
70%	15.0	11.0	9.8	8.8	8.0	7.4	6.8	6.4	4.5
80%	17.0	12.4	11.0	9.9	9.0	8.3	7.7	7.2	5.0
90%	19.0	13.9	12.3	11.0	10.0	9.2	8.5	7.9	5.5
100%	21.0	15.3	13.5	12.1	11.0	10.1	9.3	8.7	6.0

some selected propensities to save and for different coefficients of resistance of consumption in the unemployed sector.

The calculation of this sensitivity (σ) is based on formula (1), in which the current income (Y) is made equal to the normal income ($\bar{Y}$) after deduction of the income lost by unemployment (u) and the current net saving (S) related to the normal aggregate of national saving ($\bar{S}$), i.e.,

$$\sigma = 1 - \frac{S}{\bar{S}} \quad \dots \quad (6)$$

where

$$S = a(\bar{Y} - u\bar{Y}) - ru\bar{Y}$$

and

$$\bar{S} = a\bar{Y}$$

Thus

$$\sigma = \frac{a\bar{Y} - a(\bar{Y} - u\bar{Y}) + ru\bar{Y}}{a\bar{Y}}$$

giving

$$\sigma = \frac{u(a+r)\bar{Y}}{u\bar{Y}} \quad \dots \quad (7)$$

which for $u = 1$ gives

$$\sigma = \frac{a+r}{a} \quad \dots \quad (8)$$

The calculations in Table II illustrate the dependence of national aggregates of saving on changes in unemployment in general, but in quite definite quantitative terms, for a chosen range of combinations between the two relevant factors: In the narrower range of combinations more probable in industrial countries of our time, say, between 9 and 13% of normal savings at full employment and with resistance of consumption between one-half and three-quarters of the normal level, a 1% change of unemployment has an echo of some 4–8% change in the national aggregate of savings (measured with the full-employment level as basis).

Table II may also serve as a numerical illustration of the importance of

an empirical investigation into the composition of the whole unemployed sector which would try to evaluate the frequency of groups with different resistance of consumption. In general, the high coefficients of resistance of consumption will be associated with high incomes backed by considerable stocks of wealth, and the individual propensity to save under full-employment conditions will be distributed in accordance with the known tendencies. The individual cases will be found clustered in a region somewhere near a diagonal running from the upper left-hand corner of a table analogous to Table II, but elaborated, of course, to cover the investigated field in a more comprehensive way.

TABLE III
Net Capital Formation Associated with Changing Unemployment as a percentage of "Normal" Income

Propensity to save. Coefficient of Resistance of consumption. Unemployed Sector, %.	11%.			12%.			13%.		
	50%.	60%.	70%.	50%.	60%.	70%.	50%.	60%.	70%.
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	10.4	10.3	10.2	11.4	11.3	11.2	12.4	12.3	12.2
2	9.8	9.6	9.4	10.8	10.6	10.4	11.7	11.5	11.3
3	9.2	8.9	8.6	10.1	9.8	9.5	11.1	10.8	10.5
4	8.6	8.2	7.8	9.5	9.1	8.7	10.5	10.1	9.7
5	8.0	7.5	7.0	8.9	8.4	7.9	9.9	9.4	8.9
6	7.3	6.7	6.1	8.3	7.7	7.1	9.2	8.6	8.0
7	6.7	6.0	5.3	7.7	7.0	6.3	8.6	7.9	7.2
8	6.1	5.3	4.5	7.0	6.2	5.4	8.0	7.2	6.4
9	5.5	4.6	3.7	6.4	5.5	4.6	7.3	6.4	5.5
10	4.9	3.9	2.9	5.8	4.8	3.8	6.7	5.7	4.7
11	4.3	3.2	2.1	5.2	4.1	3.0	6.1	5.0	3.9
12	3.7	2.5	1.3	4.6	3.4	2.2	5.4	4.2	3.0
13	3.1	1.8	0.5	3.9	2.6	1.3	4.8	3.5	2.2
14	2.5	1.1	-0.3	3.3	1.9	0.5	4.2	2.8	1.4
15	1.9	0.4	-1.1	2.7	1.2	-0.3	3.6	2.1	0.6
16	1.2	-0.4	-2.0	2.1	0.5	-1.1	2.9	1.3	-0.3
17	0.6	-1.1	-2.8	1.5	-0.2	-1.9	2.3	0.6	-1.1
18	0	-1.8	-3.6	0.8	-1.0	-2.8	1.7	-0.1	-1.9
19	-0.6	-2.5	-4.4	0.2	-1.7	-3.6	1.0	-0.9	-2.8
20	-1.2	-3.2	-5.2	-0.4	-2.4	-4.4	0.4	-1.6	-3.6
21	-1.8	-3.9	-6.0	-1.0	-3.1	-5.2	-0.2	-2.3	-4.4
22	-2.4	-4.6	-6.8	-1.6	-3.8	-6.0	-0.9	-3.1	-5.3
23	-3.0	-5.3	-7.6	-2.3	-4.6	-6.9	-1.5	-3.8	-6.1
24	-3.6	-6.0	-8.4	-2.9	-5.3	-7.7	-2.1	-4.5	-6.9
25	-4.3	-6.8	-9.3	-3.5	-6.0	-8.5	-2.8	-5.3	-7.8

5.3. Sensitivity of Estimates to Coefficients of Resistance of Consumption

Table III also illustrates the significance of the coefficients of resistance of consumption for the results of estimates of net capital formation based on unemployment figures. The differences in the expected net capital formation based on different coefficients for consumption in the unemployed sector are quite negligible in cases of low unemployment. Even at 5% unemployment,

the coefficient of 70% resistance of consumption gives net capital formation of 7.9% instead of the 8.9% expected in a situation with only 50% resistance of the unemployed sector. But at 25% unemployment the 70% resistance yields a net dissaving of 8.5% of the national income (in terms of the full-employment level), whereas a 50% resistance would cause only a 3.5% dissaving. A 100% resistance of consumption at 25% unemployment would produce a net dissaving of 16% of the national income (measured in terms of the full-employment level).

These numerical examples show how important is the introduction of the factor of resistance of consumption in the unemployed sector for every model intended to explain the empirical aggregates of national saving; they also specify conditions under which the hazards involved increase to an especially serious extent.

6. EMPIRICAL TESTS OF THE DISCUSSED ASSUMPTIONS

6.1. Possible Deficiencies of the Empirical Material

The logical necessity of consistency between the factors discussed above in general terms should have its counterpart in an analogous consistency of the empirical measurements of these factors. A lack of consistency in the results of these measurements cannot upset the conclusions reached from our general discussion. It can, however, disclose the imperfections of such measurements.

The statistical material examined, of which space allows us to discuss only two examples, points to the decidedly long-term nature of the propensity to save in the employed sector. On the other hand, in years of nearly full employment the resistance of consumption in the unemployed sector shows an over-sensitiveness caused by erratic elements in the available estimates. That these irregularities can be due only to erratic elements follows from Table III; one practical example of the usefulness of readings from our schematic tables for the first orientation of the research worker. The methodological problems ensuing from the changing predictive value of economic observations in cases like those suggested by this table are reserved for another opportunity. This note is inserted here only to explain the simplicity of the tools used in what follows.

6.2. The Test on Data of the United States

Table IV is intended as a synopsis of the available information and calculations based on our general discussion. Room is purposely left for speculation on the lines discussed and care has been taken to avoid the danger of obscuring the clarity of the principal components by over-elaboration of statistical technique.

The information used in the table consists of data on unemployment expressed as a percentage of all gainful workers.¹ Kuznets' estimates have been chosen for the present paper because they cover both years of full

¹ These data were obtained from *Historical Statistics of the United States 1789-1945*, p. 65, and S. Kuznets' estimates of net national income, gross and net capital formation in *National Income and Capital Formation 1919-1935*, New York, 1937, p. 85.

TABLE IV
Unemployment and Net Capital Formation in the United States

	1920.	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.
1. Unemployment, %	1.33	11.20	6.79	1.71	4.57	1.82	1.01	3.45	3.88	0.89	5.91	14.19	22.71	23.36	19.04	17.56
2. Net national income:																
(a) Actual, \$ milliard	72.4	58.3	59.7	69.7	70.4	74.8	79.5	77.4	80.4	83.4	72.9	56.0	39.6	39.3	47.8	53.0
(b) Full-employment level, \$ milliard	73.4	65.7	64.0	70.9	73.8	76.2	80.3	80.2	83.6	84.1	77.5	65.3	51.2	51.3	59.0	64.3
3. Net capital formation:																
(a) Kuznets' estimate, \$ milliard	11.6	3.7	5.8	9.7	6.8	10.6	9.7	8.9	8.2	10.1	3.9	-0.3	-4.4	-3.0	-1.9	0.8
(b) As a percentage of actual national income	16.0	6.4	9.7	13.9	9.7	14.2	12.2	11.5	10.2	12.1	5.4	-0.5	-11.1	-7.6	-4.0	1.5
(c) As a percentage of full-employment national income (as a percentage of full-employment national income):	15.8	5.6	9.1	13.7	9.2	13.9	12.1	11.1	9.8	12.0	5.0	-0.5	-8.6	-5.8	-3.2	1.2
4. Expected net savings (as a percentage of full-employment national income):																
(a) At 30% resistance	12.2	5.9	8.7	11.9	10.1	11.8	12.4	10.8	10.6	12.4	9.3	4.1	-1.3	-1.7	1.0	1.9
(b) At 50% resistance	12.0	4.8	8.0	11.7	9.7	11.7	12.2	10.5	10.2	12.3	8.7	2.6	-3.6	-4.1	-0.9	0.2
(c) At 70% resistance	11.9	3.7	7.4	11.6	9.2	11.5	12.2	10.1	9.8	12.2	8.1	1.2	-5.8	-6.4	-2.8	-1.6
(d) At 100% resistance	11.5	0.3	4.3	11.1	7.8	11.0	11.9	9.1	8.6	11.9	6.3	-5.8	-12.7	-13.4	-8.5	-6.9
5. Renewals:																
(a) Kuznets' estimate, \$ milliard	10.5	7.8	7.5	8.5	8.4	8.6	9.3	9.3	9.6	10.2	9.8	8.8	7.5	7.3	8.0	8.2
(b) As a percentage of actual national income	14.5	13.4	12.6	12.2	11.9	11.5	11.7	12.0	11.9	12.2	13.4	15.7	18.9	18.6	16.7	15.5
(c) As a percentage of full-employment national income	14.3	11.9	11.7	12.0	11.4	11.3	11.6	11.6	11.5	12.1	12.6	13.5	14.6	14.2	13.6	12.8
6. Observed resistance:																
(a) Including depreciation as a percentage of full-employment national income	-223.5	53.1	44.4	-53.9	70.2	-62.5	76.1	42.1	69.5	99.4	122.4	82.1	82.1	67.5	72.1	54.2
(b) Excluding depreciation as a percentage of full-employment national income	-235.5	41.1	32.4	-65.9	58.2	-74.5	64.1	30.1	57.5	87.4	110.4	70.1	70.1	55.5	60.1	42.0
Impact of historical values (example):																
(a) Tension of price residuals	50.8	66.9	74.7	70.5	73.7	76.4	79.0	83.0	84.3	83.1	89.0	93.7	106.1	106.2	98.8	100.7
(b) Renewals deferred by % of (a), as a percentage of full-employment national income	9.0	10.0	10.5	10.2	10.4	10.6	10.7	11.0	11.1	11.0	11.3	11.6	12.4	12.4	11.9	12.1
(c) Change of net savings as a percentage of full-employment national income	+3.0	+2.0	+1.5	+1.8	+1.6	+1.4	+1.3	+1.0	+0.9	+1.0	+0.7	-0.4	-0.4	+0.4	+0.1	-0.1

employment and of unemployment and all other conditions offer the best chances for comparability.

The net *national income at full-employment level* is the net national income from Kuznets increased by the assumption of a straightforward proportionality between the established national income and the degree of employment.

The effect of applying our earlier schematic calculations is shown in the table by four alternatives of the "*expected net savings*" giving the net capital formation as a percentage of national income at the full-employment level.

The *propensity to save* assumed for the employed sector in these calculations is 13%. This coefficient is chosen as being approximately the ratio of net capital formation to the net national income established in the years of lowest unemployment: 1926 with 1.01% of unemployed had a net capital formation of 12.2% (12.1% of full-employment level) of the net national income, and 1929, with 0.89% unemployed, 12.0% (or 12.1% respectively). An allowance for the simultaneous dissaving of the small number of unemployed raises the ratio mentioned by something between $\frac{3}{4}$ and 1%, according to the actual resistance of consumption at that time, which, as these were years of nearly full employment, must have been fairly high. Years in the early twenties recording a higher percentage of net capital formation have not been regarded as relevant for our purpose. They have been considered as years when the effects of the unsettled post-war conditions were still producing some erratic changes.¹ Moreover, our indicator of the tension of price residuals, constructed *ad hoc*, shows a large span between the historical values and current price conditions in these years.

One very important point which should not be missed when studying any empirical material is the *rigidity of depreciation allowances* needed in this sector; Kuznets' figures for this are a telling illustration. For here the description and interpretation of characteristics of the unemployed sector reveals a quite distinct component of the summary concept of "resistance of consumption," the behaviour of which apparently has its own features worthy of and suitable for a special investigation.

For this reason, the "Observed Resistance of Consumption in the Unemployed Sector" has two variants in Table IV:

(a) includes appropriations for depreciation in the unemployed sector;

(b) excludes appropriations for depreciation; the deduction provides these appropriations at full, "normal" rate (12% of the net income at full-employment level); this takes into account price changes in so far as these are expressed in the total national income, but does not account for possible savings through a smaller physical deterioration of assets when not used; the deduction makes the remainder a better expression of the resistance in the more familiar terms related directly to human consumption.

¹ See Kuznets' warnings, *op. cit.*, p. 84.

The student of the unemployed sector may find it useful to note that the contribution of replacement allowances grows in weight within the overall coefficient as the resistance of other consumption declines.

The testing of our general assumption on the information from the United States suggests that a fully elaborated model would benefit by dividing the overall coefficient of resistance of consumption in the unemployed sector into the two described components, each of which has its special conditions for empirical measurement.

To illustrate by a numerical example the possible deforming influences of historical costs on social accounts, the indicator of the tension of price residuals has been applied to a constant ratio of renewals to national income at full employment (12%), in the neighbourhood of which Kuznets' estimates are clustered. The level of renewals thus deformed is expressed as a percentage of national income at full employment. The differences between the standard 12% and the deformed series of expected renewals gives the artificial elements which might have entered illegitimately into the series of net saving; the series of fictitious saving (or dissaving) is also expressed as a percentage of national income at the full-employment level.

6.3. The Test on Information for the United Kingdom

In this example we try to demonstrate that the assumptions and schematic calculations in the first part of this paper can be a useful set of consistency rules for verifying results of empirical investigations of social accounting. They may serve as a detector of major deficiencies in the estimates, originating perhaps in a systematic bias of the actual behaviour of the economy itself under special historically given conditions. Thus the investigation may get an orientation of the direction in which the attention should be focused.

The basic sources of information for the synopsis constructed in Table V are: the average percentage of unemployed calculated from the total number of work-people insured under the Unemployment Insurance Acts¹ and the estimates of net national income of the United Kingdom made by J. R. N. Stone and published in absolute figures by A. R. Prest.²

The expected net capital formation has been first calculated on the assumption that the propensity to save in the employed sector has been 12% and that the dissaving corresponded to an overall 60% resistance of consumption. The 60% resistance of the unemployed sector has been chosen with regard to the persistently high level of unemployment.

The missing information on renewals has been substituted by a series—"Expected Capital Goods for Renewals"—for the construction of which the American experience has been used. The American data point to a fairly stable ratio of renewals required to national income at the full-employment

¹ *Statistical Abstracts for the U.K. and Abstracts of Labour Statistics of the U.K.* The 1919 unemployment was assumed to be equal to 1920 in regard to the absence of change in the information on unemployed members of trade unions.

² A. R. Prest, "National Income of the United Kingdom," in the *ECONOMIC JOURNAL*, March 1948, p. 59.

TABLE V
Unemployment and Expected Net Capital Formation in the United Kingdom

	1919.	1920.	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.	1938.
1. Unemployment, %	3.9	3.9	16.9	14.3	11.7	10.3	11.3	12.5	8.9	7.4	8.2	11.8	16.7	17.6	16.4	13.9	13.1	11.2	9.3	10.2
2. Net national income:																				
(a) Established, £m.	5,461	5,664	4,460	3,856	3,844	3,919	3,980	3,914	4,145	4,154	4,178	3,957	3,666	3,568	3,728	3,881	4,109	4,388	4,616	4,671
(b) Full-employment level, £m.	5,683	5,894	5,367	4,499	4,353	4,369	4,487	4,473	4,550	4,486	4,551	4,486	4,401	4,330	4,459	4,508	4,728	4,941	5,089	5,202
3. Expected net capital formation:																				
(a) As a percentage of net national income at full employment	9.19	9.19	-0.17	1.70	3.58	4.58	3.86	3.00	5.59	6.67	6.10	-3.50	-0.02	-0.67	0.19	1.99	2.57	3.94	5.30	4.66
(b) £m.	522	542	-9	76	156	200	173	134	254	299	278	157	-1	-29	8	90	122	195	270	242
4. Clark's estimates:																				
(a) Gross fixed investment, £m.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(b) Overseas investment, £m.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5. Net domestic investment:																				
(a) Expected, £m.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(b) "Available," (4(a)-5), £m.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(c) Difference ((b)-(a)), £m.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6. Capital goods for renewals:																				
(a) Expected, £m.	682	707	644	540	522	524	538	537	546	538	546	538	528	520	535	541	567	593	611	624
(b) "Available," (4(a)-5), £m.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(c) Difference ((b)-(a)), £m.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
7. (a) Tension of price residuals, historical values as a percentage of current prices	39.5	38.2	54.5	72.6	75.8	75.8	78.8	82.0	84.9	89.1	88.0	88.0	88.0	103.2	104.3	105.3	104.1	100.4	93.0	94.9
(b) Renewals deformed by tension, £m.	476	489	497	466	459	461	481	489	505	516	516	516	516	516	516	516	516	516	516	516
(c) Difference between expected and deformed appropriations, (7(b)-6(a)), £m.	-206	-218	-147	-74	-63	-63	-57	-48	-47	-29	-30	-17	0	8	12	14	12	1	-21	-16
8. Expected gross capital formation:																				
(a) Unadjusted, £m.	1,204	1,249	635	616	678	724	711	671	700	837	824	695	527	499	513	531	689	788	881	866
(b) Adjusted for deformation by tension of price residuals, £m.	998	1,031	488	542	615	661	654	623	659	808	794	678	527	499	513	531	701	789	860	850
9. Adjusted expectation of net capital formation, £m.	316	324	-156	2	93	137	116	86	113	270	248	140	-1	-21	104	104	134	196	249	226

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Xm56, M90
N55.65

level. From the schematic calculations in Table I we know that zero net saving in a country with 60% resistance of consumption and a 12% propensity to save is due at an unemployment exceeding 16% (16.7%). Accordingly, the sales of capital goods in such years must have been on a level just covering the requirements of objectively measured renewals.

The unemployment figures of the United Kingdom stood most closely to the critical point of zero net saving in 1931 and 1933. The total sales of goods for fixed asset formation in the United Kingdom were, according to C. Clark in the *ECONOMIC JOURNAL*,¹ on the level of £556 million and £561 million respectively. This was 12.9% of national income at the full-employment level of these years. Kuznets' estimates of renewals in years close to full-employment conditions cluster near 12% of national income, but in years at zero net saving (or above) tend to exceed this level (see Table IV, where the zero year 1931 records 13.5%). In the light of these experiences a coefficient of 12% out of national income at the full-employment level has been taken as sufficient for estimating the renewals due in the economy of the United Kingdom.

The required renewals with new domestic fixed investments should give a total corresponding to the sales of assets for fixed capital formation. This comparison is made in the table by deducting first "Overseas Investment" from the "Expected Net Capital Formation" in "Net Domestic Investment." Then by allocating capital goods to cover the expected net domestic investments we get the "Available" Capital Goods for Renewals. The difference between the "Available" and Expected Capital Goods for Renewals may be useful in the orientation of further investigations in this field.

The general impression may be summarised by saying that Clark's estimates of Gross Fixed Investment for the years 1931-37 are in fairly good agreement with the expectation from our general assumptions. This can be stated in spite of the differences in the years 1931, 1936 and 1937, as these differences are evidently caused by large negative amounts of overseas investment, of which apparently only a smaller fraction belongs to the long-term forms of capital transactions. On the other hand, the differences found in the years 1924-30 cannot be explained by reducing the overseas investments to the long-term net new capital issues. The deficit of the "available" capital goods is systematic and considerable, and its size would be increased if the comparison were made with regard to long-term issues.

A hypothesis regarding fluctuations in inventories might help to explain short-term irregularities in both directions throughout the whole investigated period, if it could be shown to correspond with reality. For a long-term absorption of new saving by changes of inventories there was, however, little probability in an economy with a fairly stable level of national income.

¹ C. Clark, "Determination of the Multiplier from National Income Statistics," in the *ECONOMIC JOURNAL*, September 1938, p. 446. See also Bretherton, Burchardt and Rutherford, *Public Investment and the Trade Cycle*, Oxford, 1941, p. 402.

Thus a tentative calculation of the possible deformation of actual renewals has been added to the synopsis in Table V. The "Tension of Price Residuals" expresses the historical costs of assets as a percentage of the current cost for the respective year. The deformed renewals ensued from application of the "Tension" under the assumption that this was effective by one-half of the maximum of its possible influence.

The basis of a figure of one-half for this coefficient is that the financing of fixed assets uses the form of long-term loans to the extent of about one-half of their historical costs. A renewal of these assets tends to be effected in this proportion, again in the form of loans, and if in time of renewal a higher price level prevails the economy treats the additional amounts needed as new investment, not as mere renewals. In such cases the national net saving is absorbed by the economy for a different purpose from that generally assumed.

The thus calculated "Renewals Deformed by Tension" are fairly close to the "Available" capital goods for renewals.

In this way the synopsis in Table V arrives at the expected gross capital formation, first in an unadjusted form, showing what the gross capital formation would have been like under the established employment conditions, if the renewals were made according to economic requirements. Then it proceeds to deduct the neglected renewals and arrives at the reduced actual gross capital formation. The Adjusted Expectation of Net Capital Formation concludes the whole examination. I must emphasise that the testing procedure described has the limited purpose of an empirical appendix to the general discussion of the first part of this paper.

6.4. *A Case of Regional Distribution of Unemployment and Changes in Saving Deposits*

Table VI shows the results of the author's investigation of the influence of unemployment on the annual net changes of saving deposits in districts of the industrial part of Czechoslovakia during the years 1928-35.

The net changes of deposits are expressed there as a percentage of the level of savings at the beginning of each year. In the thirties the total of these savings was nearly two-thirds of the national income at full-employment level, thus the interpretation of the table in terms of national income can be readily made, if the appropriate allowance is made. The percentage of unemployment has then been calculated from the total of the gainfully engaged population in each district.

Savings deposits were then the most popular form of investment, but their changes may differ in this or that year from those of the overall net saving. But in spite of all the pitfalls of limited information, exposed to a number of disturbing changes, the relationship discussed between unemployment and saving emerges reasonably clearly. The original annual tables repeatedly showed a clustering in good agreement with the association apparent from mere inspection of their summary in Table VI. With regard to the limitations of information mentioned, the objective of the investigations was to find the conditions for the most probable emergence of the zero point for savings deposits. This has been found in the range

TABLE VI
Savings Deposits and Unemployment¹

Number of cases in which the percentage of unemployed was associated with the given percentage of net increase of saving deposits in districts of the industrial part of Czechoslovakia, 1928-35.

Deposits, % + — Unemploy- ment, %.	Net increases.										Net decreases.								
	20.1 and more.	18.1- 20.0.	16.1- 18.0.	14.1- 16.0.	12.1- 14.0.	10.1- 12.0.	8.1- 10.0.	6.1- 8.0.	4.1- 6.0.	2.1- 4.0.	0.1- 2.0.	(13)	(14)	(15)	(16)	8.1- 10.0.	10.1 and more.	Total.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	
0-2.0	17	1	8	16	35	47	83	89	76	29	15	15	6	4	1	1	3	446	
2.1-4.0	3	—	—	1	4	2	10	8	19	20	26	19	17	7	—	3	1	138	
4.1-6.0	2	—	—	2	1	1	3	9	15	19	25	30	23	15	3	1	1	152	
6.1-8.0	2	—	—	—	2	2	2	4	3	13	18	27	12	12	5	1	1	104	
8.1-10.0	1	—	—	—	1	—	1	1	3	5	10	18	11	10	3	2	2	68	
10.1-12.0	2	—	—	—	—	1	2	—	5	5	5	10	11	6	5	2	3	57	
12.1-14.0	—	—	—	—	—	1	—	—	2	7	2	6	3	1	1	—	3	31	
14.1-16.0	—	—	—	—	—	—	—	—	4	4	4	4	7	1	3	1	1	31	
16.1-18.0	—	—	—	—	—	—	—	1	2	4	12	4	5	9	3	1	2	42	
18.1-20.0	—	—	—	—	1	—	1	—	—	—	4	8	4	3	4	3	—	30	
20.1-22.0	—	—	—	—	—	—	—	2	—	2	2	2	1	5	3	1	—	19	
22.1-24.0	—	—	—	—	—	1	—	—	—	3	3	4	1	3	3	—	1	19	
24.1-26.0	—	—	—	—	—	—	—	—	—	1	1	2	5	1	1	1	2	14	
26.1-28.0	—	—	—	—	—	—	—	—	—	—	2	4	—	4	—	—	—	12	
28.1-30.0	—	—	—	—	—	—	—	—	—	—	1	1	1	3	—	1	1	8	
30.1 or more	—	—	—	—	—	—	—	—	—	—	2	2	—	2	4	—	3	13	
Total:	27	1	8	19	44	55	103	114	129	113	132	158	107	91	39	19	25	1-184	

¹ From the author's *Hospodářský život a úspora*, Prague, 1937, p. 146.
Also in the author's *Národohospodářská Teorie*, Part II. Prague, 1947, p. 108.

of 6-8% of unemployed. At this range the number of districts with net dissaving began to outnumber districts with net increments.

7. A SUMMARY WITH SOME FURTHER SUGGESTIONS

The main object of this paper has been draw attention to the need for a systematic examination of the specific characteristics of the unemployed sector in an economy. It therefore underlines the necessity of recognising the existence of the unemployed sector with its full economic implications.

The tentative collection of evidence from the inter-war development of unemployment, national income and net capital formation points to fairly stable coefficients of propensity to save in the employed sector, with some bias to unconscious deformation due to the tension ensuing from discrepancies between the historically produced valuation of accumulated fixed assets and the prevailing price conditions of the time.

To these general conclusions a few further points may be attached here, which, however, must be accepted more as mere suggestions worthy of further elaboration:

(1) The 12% propensity to save indicated by the examples analysed implies the need of a high rate of growth or of another outlet for savings, if economies with such a disposition are to maintain full employment.

(2) The 12% of normal renewals points to a first-cost value of fixed assets of almost 400% of national income at full-employment level, wherever on the average 2 units of all buildings (with 2% renewal costs) are combined with 1 unit of plant (requiring 5% renewal costs). An amount of a half-year's national income for inventories completes the typical asset equipment of an economy of the above type.

(3) The rate of growth needed to maintain full employment under such conditions is about 4% of net national income. The net accumulation of assets for this growth is 18% of national income, of which 12% comes from the above propensity to save and 6% from the difference between actual renewals and depreciation under conditions of constant growth, as evaluated by Domar.¹

(4) An economic crisis initiated primarily by under-investment (or over-saving) should have its absolute limit in the level of unemployment associated with zero net savings, as calculated in Table I. At this point such an economic crisis will have completely worn out its momentum, if no secondary effects are put into motion by the original disturbing factor.

¹ E. D. Domar, "Depreciation, Replacement and Growth" in the *ECONOMIC JOURNAL*, March 1953, p. 8. In an economy with 4% growth and thirty years average life of assets the actual renewals require only some 53% of depreciation allowances (straight-line method), thus leaving 47% reserves free for further expansion. The depreciation of the typical equipment under (2) is 12% of the net national income, of which almost one-half (5.6% national income) is a reserve free for further investment. With 12% from normal propensity to save the total investible funds amount to 17.6% practically corresponding with the above requirement of new assets.

(5) If an accumulation of secondary effects or other additional causes raises unemployment above the level associated with zero net saving it is bound to create situations in which the contingent adjustments to the net national dissaving exceed the capacity of absorption of the normal financial channels of the economy. Calculations in Table I indicate when such a critical point is about to be expected, if conditions of a particular case are taken into consideration.

(6) The long-term nature of the overall propensity to save points to the importance of the resistance of consumption in the unemployed sector for measures stabilising the economic development. The calculations in Table I indicate the different dispositions of the various strata of resistance of consumption with regard to effectiveness of measures undertaken to increase the overall resistance of consumption.

(7) The calculations in our schematic tables indicate in general terms the approximate dimensions of the tasks to be expected under various environmental conditions, and may give some guidance for a preliminary examination of the adequacy of measures prepared or used in case of emergency; they may be seen as a temporary substitute before a more accurate knowledge will be available from empirical investigation of the resistance of consumption in the unemployed sector.

(8) And last, there must be put on record the generally admitted fact that the rigidity of historically given valuations of fixed assets, accumulated under different price conditions, tends to aggregate factors disturbing the smooth general economic development. Measures protecting the national accounts against the deforming tendencies originating from the tension of residuals of past price development may eliminate one not insignificant element from the group of factors undermining the stability of economic development.

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REVIEWS

The Economist in the Twentieth Century, and Other Lectures in Political Economy.
By LIONEL ROBBINS. (London: Macmillan, 1954. Pp. xi + 225.
16s.)

THE central core of this powerful and impressive book consists of a series of lectures on the problems of international trade and exchange delivered at Rio de Janeiro in 1953. But the author has done well to place in the immediate foreground of this series an earlier (1949) lecture on "Full Employment as an Objective." "I have little doubt," he told his hearers, "that if this lecture is ever published it will be made the occasion for aspersions, not only upon my understanding but even upon my good faith." I hope and believe the result will be very different. It would be impossible to miss the grave and humane concern for the public good, impossible to improve on the studied moderation of language, with which in this paper Professor Robbins not only challenges the exaggerated concept of "full employment" publicised by Lord Beveridge in his *Full Employment in a Free Society* but marshals the reasons against regarding even a more wisely conceived employment objective as the unique, or even as a necessarily over-riding, aim of policy. It is the candour and courage with which Robbins discloses his attitude on this vital matter which give him a right, still unearned by a good many eloquent apostles of a "return to freedom," to press hard, as he does in these Rio lectures, the case for liberal trade and exchange policies.

Does he press that case too hard? Does he, in his justified determination to hammer in the close connection between unwise domestic policies and "balance of payments difficulties," take too short-run and optimistic a view of the admitted phenomena of post-war "dollar shortage"? Opinions will differ; and a review is not the place to attempt to traverse the whole complex field. But it must be admitted that almost simultaneously with the delivery of these lectures the present reviewer in fumbling parable at Charlottesville, and Professor Hicks with scientific clarity at Oxford, were treating the concept of chronic "dollar shortage" with greater respect than Robbins can bring himself to accord to it. To both of us, I think, the difficulty occasioned by differential rates of productivity-increase in different countries seemed to be not merely a monetary difficulty, whose relevance to the case of post-war America could be disproved, as Robbins seeks to disprove it, by pointing out that she has considerably indulged in a handsome inflation, but a more real one connected with the *character* of the relative productivity-increase. Perhaps we were mistaken—Sir Donald MacDougall seems to think so (*Economica*, August 1954, p. 192), and so does Mr. Johnson (*ECONOMIC JOURNAL*, September 1954, p. 462, n. 4); and anyway I for one did not intend my treatment to be taken as a final justification of permanently isolatory policies, but rather as a part-explanation of their *prima facie*

attractiveness. But I still feel there is more to be said on this aspect of the "dollar problem" than would be gathered from this book.

Apart from this doubtful matter, on nearly every important issue Robbins seems to me to achieve almost exactly the right balance of sound theory and practical wisdom. Thus, after a little legitimate merriment at the "dismaying innocence" of recent "discoverers" of the possibility that trade restrictions may turn the terms of trade in favour of the restricting country, he comes down firmly on the side of the Marshallian view that for Britain as a long-run policy that game is not worth the candle (pp. 109-14); nevertheless, he admits frankly the strength of the case, in a world already tangled in restrictions, against precipitate unilateral economic disarmament, and pins his faith rather to the laborious multilateral procedures of the estimable cacophonous GATT (pp. 135-47). Thus also, in the matter of the efficacy of exchange movements in restoring external equilibrium, the "special cases of the more unworldly text-books" leave him "wholly unconcerned"; but he is very much alive to the danger that indefinitely floating exchanges (as contrasted with exchanges adjustable à la Bretton Woods), so far from automatically preserving equilibrium, would be likely to generate persistent inflationary pressures which it would need definite acts of policy to resist (pp. 98-9). Convertibility, again, he holds to be a right aim, and one not to be indefinitely postponed; nevertheless, a premature attempt to achieve it might harmfully delay the dismantling of damaging restrictions on trade (pp. 153-4). On all these matters and others too—the limitations of fiscal policy (pp. 69-73), the importance of a firm hold on the credit base (p. 76)—these lectures seem to me full of ripe wisdom, skilfully and lucidly expressed.

The prologue which gives its title to the volume is an address delivered at one of the recent anniversary gatherings of the famous School in whose service Professor Robbins has so faithfully and fruitfully laboured. My admiration for this splendid oration is in no measure diminished by the fact that I would still, as a recent interchange has revealed (see this JOURNAL, December 1954, p. 677), draw the frontier up to which purely economic analysis can legitimately press somewhat more generously than himself; nor by the fact that I scent dangers as well as advantages in his adjurations to the young men and women whom he was addressing to turn themselves not only into economists but into something more. It would not do, I think, if all economists, including those outside the public service, were at all times too anxiously concerned about what is—or is currently said to be—administratively or politically possible or the reverse. That Robbins himself has transcended the dangers is shown by the paper on Employment Policy already alluded to, and by the essay in high statesmanship which (except for an admirably conceived and executed appendix on economic policy in wartime) brings the book to a close. This essay is a powerful critique, written in 1950, of the more half-baked schemes for "European economic integration" then in some vogue, and a powerful plea for the alternative policy of advance "Towards an Atlantic Community." Perhaps—I do not know—if the

author were re-writing it in 1955, he would feel sufficiently secure that the main stream of policy is going the way he wants to find more use than he did in 1950 for subsidiary groupings within the framework, or even overlapping the borders, of the NATO to which he bids us pin our primary loyalty. It is not, I think, altogether an accident that, as duly recorded on p. 162 of this book, the Organisation begotten of the Marshall Plan has since 1950 set an example to the more comprehensive and grandiose international bodies of "how difficult and delicate financial matters may be handled by a comparatively small secretariat with a minimum of fuss and publicity."

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The New Issue Market and the Finance of Industry. By R. F. HENDERSON. (Cambridge: Bowes & Bowes, 1951. Pp. xii + 172. 25s.)

THIS short book examines the significance for industry of the new-issue market, primarily the London new-issue market, in respect of the volume of new capital funds supplied through its agency, the cost of its services to industry in relation to the funds provided, and the degree to which and the costs at which the requirements of the small company are met as compared with those of the larger concern. These are measures of the efficiency of the new-issue market as part of the machinery for bringing together the supply and demand for investible funds. The book is not "a comprehensive study of the new issue market as a whole, much less of the capital market, or the finance of industry"; but the author's particular research, discussed below, is knit into the texture of a survey of more general scope which supplies some of the *rationale* for its subject matter and, as Sir Henry Clay observed in his preface, deserves attention as a contemporary study.

The structure of the book falls substantially into three parts. The first (Chapter 2) is an attempt to assess the volume of funds, *i.e.*, new capital funds, provided for industry, by way of share issues, through the new-issue market. The second (Chapter 3), complementary to this, is a study of the demand for and supply of funds for the finance of industry outside the London new-issue market.

In the former of these chapters the author starts from the figures of the volume of home industrial issues contained in *The Economist*, the Midland Bank and the Bank of England series of published figures of new capital issues. The work of some Cambridge economists in Mr. G. D. H. Cole's *Studies in Capital and Investment* directed to the same end, an estimation of the new capital provided, comes in for rough handling. On the basis of his own calculations for the two years 1926 and 1937, drawn from a detailed examination of *The Times* prospectuses, and using the work of Mr. E. A. Radice and Mr. Colin Clark on capital accumulation as a method of checking the financial figures with the estimates of real investment, Dr. Henderson arrives at some provisional results for 1926 and 1937 which are interesting, and useful. This is a shrewd discussion. It will increase the critical awareness among

students of new-issue figures of the pitfalls which are encountered. There is a useful appendix on published new-issue statistics of home industrial issues.

The next part, Chapter 3, provides in the first place, a comparison of the situation in Britain with that in the United States, mainly in 1930-40, based upon the abundant publications of the National Bureau of Economic Research. This brings out the well-known similarities between the industrial structure in America and this country and (in spite of differences in financial technique) of the outlines of the capital market, especially with regard to the financing of the small business. In passing, one might have hoped perhaps for some reference to the role of term loans in America, though these are no much of a resource for the small business. This review leads naturally to a discussion on the "Macmillan Gap" in this country, and the developments partly stimulated by the fame which this feature of the Macmillan Report achieved, which took place between the two Wars and after 1945. Here the position of the small company is very much the key theme. To the account of the operations of ICFC in this section might be added one detail, which is the fact that the Corporation has decentralised its operations in Scotland, in the Manchester Region and in the Birmingham Region. This accords with the view put forward by Dr. Henderson of the need for local contact in dealing with the smaller concern. All the observations in this part seem to me to be interesting, including those concerning provincial issues. It is still reasonably up to date.

The third section of the book comprises Chapters 4, 5 and 6; and in these Dr. Henderson's special research contribution appears. This is based upon detailed analysis of the share issues of the last three years, 1945-47 inclusive. It starts with a chapter (Chapter 4) on the technique of analysis of new issues which records the fruits of the toil and sweat which Dr. Henderson has undergone to acquire a knowledge of the technique of the issue market. This may be the place to say that in the application of this acquired skill Dr. Henderson has done a good job. Now and then in the book, I fancy, a groan escapes him about the tedium and difficulty of analysing prospectuses (Oh what labour! O prince, what pain!); but considered as a one-man job this is an excellent piece of work. It will, I hope, have blazed the trail for later investigations in which assistance will be available.

I have little to say in detail upon the results of new-issue statistics (Chapters 5 and 6) except one technical point that is important. This concerns the cost of placings where a quotation is obtained. Dr. Henderson takes as his general standard of cost the difference between what the company receives and what the investing public pays. This is a formula I have often used, but I must admit really as a shorthand expression for the difference between the price the company receives and the prospectus price. And Dr. Henderson himself in the case of public issues and offers for sale takes the prospectus price and does not propose to pursue "the possible margin of error" which may be thrown up in the dealings. In the case of placings, however, he has convinced himself, by reasons which are fully set out on pp. 91-3, that the

placing price cannot be taken reasonably as the price to the investing public. He therefore substitutes "the average price on the day on which transactions in the shares begin and are officially recorded on the stock exchange." This basis would, perhaps, be more accurately stated as "the average of the marks officially recorded on the day on which transactions in the shares begin." It is reasonable to suppose that in this type of case all bargains are marked; but not all marks are recorded; only one mark at any one price is as a rule recorded. It is thus not possible to get an unweighted average price of the transactions, still less, of course, a weighted average. However, this is not the gravamen of my objection. In a placing, as a matter of experience, the larger part usually is retained by the original taker (perhaps better described as "the investor" rather than "the investing public"). This is certainly true in the wide extension which placing, public and private, has lately received. The advantages of placings are several; one of them is that it is a cheap method. Dr. Henderson's formula overstates the cost of placings taken on any common-sense basis; and for that reason Tables 9, 10, 11, 14, 18 and 21 are to that extent vitiated. So are the two "conclusions" on p. 146. I believe that most market men, I am inclined to say all market men, would agree with this.

Coming now to the conclusions, and looking at the book as a whole, I have a feeling that Dr. Henderson, aside from the excellent factual analysis which he presents, is perhaps—may I say?—a little too inclined to discern trends and, broadly speaking, to generalise. To justify this impression without going into great detail may be difficult. To begin with, I would suggest that in so far as the deductions depend on a comparison of the 1926 and the 1937 estimates with the results of analysis of the years 1945-47, one should look at the experience of 1945-47 with a more provisional eye. These years were a little too soon after the War for so weighty a comparison. The three years 1952-54 will show a different picture: a different emphasis as between small and large issues and some further developments in the more informal operations of the market. Also (due to Profits Tax) issues and placings, public and private, of loan capital, with which this study hardly deals, had become more important.

The comment on Table 17 on p. 140 mainly exemplifies the same point; and it is perhaps worth emphasising the "fashion" element in the form of the securities which the market will prefer from time to time. In this, of course, the institutions play a leading part; and as regards the institutions, I think I could find a Shakespearean quotation to express the (short-term) variability of their notions.

Both of the conclusions on pp. 138-9 are stated too absolutely for my taste. As regards the first, the actual (though perhaps not the logical) movement as regards private companies was that many of them were becoming public companies, or rather being "floated," and some of them were raising new money by issues. To obtain new resources was not, I would think, the motive in the majority of cases. As regards the second, it represents important elements of fact but overstates the total effect. I agree that between 1937 and

1947 the minimum practicable size of issue did not rise greatly, and certainly not as much as prices.

The "Deductions" on p. 147 summarise to a certain extent all this section of the book. I would agree with the first proposition, that large financial institutions (including pension funds) are becoming more important as the investors in home industrial issues; one might add to this that it applies to the small as well as the larger industrial issues. What is said here about placings reflects current facts: the method is cheap, because a considerable proportion of the shares placed are acquired by long-term investors at the placing price. The observations about staggering and the role of short-term speculation are sound enough; and, of course, what is said about the advantages of the British system of underwriting as contrasted with American practice is much to the point.

The final conclusion (p. 152) that access to the issue market on reasonable terms is more important now than ever before as a stage in the growth of small firms is obviously true. Equally, the development of new forms of finance outside the new-issue market is more important now than ever. It is a paradox that lack of genuine marketability has not prevented a considerable absorption by the institutions of small issues, whether representing the flotation of existing interests or requirements for new money. But there are sharply marked limitations to this; and the fact that the small issue is not a suitable investment for the general investing public is a fundamental difficulty which cannot broadly or in the long run be overcome. The doctrine of continuity does not seem to me to apply as between the small firm and the large; the one sometimes develops from the other, but typically the small company remains a small company, and good reasons can be adduced for this. I do not look therefore to the issue market as the main resource in this field.

The new-issue market has shown both a good deal of plasticity in detail and a considerable fixity of underlying structure. Not even the great switch-over from a primary interest in Government securities and foreign bonds to home industrial issues has altered this. Hence the importance—and this is one of Dr. Henderson's merits—of endeavouring to see this important combination of agencies in its true position in the capital market as a whole.

London.

PIERCY

Consumers' Expenditure in the United Kingdom, 1900-1919. By A. R. PREST, assisted by A. A. ADAMS. Studies in the National Income and Expenditure of the United Kingdom, Vol. III. (London: Cambridge University Press, 1954. Pp. xiii + 196. 42s.)

THIS is the third volume to appear in the monumental series of studies on the British National Income and Expenditure edited by Richard Stone. Much of what I said in reviewing the first two volumes in this JOURNAL applies equally to this one; in particular, there is the same high standard of scholar-

ship and the same elegance of production. Even more than in the other studies, the object here is "to provide material which people may quarry at will" rather than to deduce "principles of economic behaviour and motivation." And what a quarry it is! This earlier material, though necessarily less accurate than that for the inter-war period, will prove exceedingly useful, and it makes possible longer runs of comparable figures than hitherto available.

The inevitable limitations must be remembered by those proposing to quarry, even casually. Dr. Prest summarises his main methods by stating:

"That in general we have had to start with production statistics and then add the quantity of retained imports and deduct the volume of exports. If it is possible to allow for changes in stocks, we then have some points in a consumption series. The difficulty is, of course, that statistics of stock changes are probably the greatest deficiency of all in historical British statistics, and therefore this correction is in the great majority of cases impossible. . . . To obtain the consumption series for all the individual years we have often had to assume linear trends. This may seem arbitrary, but . . . demand analysis on data for which no such assumptions were necessary shows that trends were a dominating feature of the movements of the various series during this period. From the consumption series derived in this way a deduction usually has to be made for business usage. . . . To obtain price series we generally had to combine data from a number of different sources, and few refinements . . . were possible" (p. 3).

In the end, many expenditure series are built up from separate runs of price and quantity figures, but some are obtained directly from estimates of expenditure and deflated by a price index to give a volume series. The quantity figures are in simple units, usually weight, and it is rarely possible to supplement them with other series showing changing composition or quality.

Details of expenditure by quantity, price and value are given in twenty-one main groups, nine of food and twelve of non-food expenditure, together with rough estimates for "other foods" and for "other goods" and some adjustment for expenditure of tourists and the Armed Forces. The amount of detail varies from one group to another. Except for such items as the cinema and private motoring, which are inappropriate to the period, the classification is designed to fit in with that adopted in the National Income Blue Books. The comparability remains good even after the changes introduced in the latest (1954) Blue Book.

It is unfortunate that the tabulation bringing together the figures into totals (Table 112) is presented with practically no description. It takes a little effort even to check that the group totals are at market prices rather than at factor cost. Further, the price and quantity index numbers are shown only in total in this table and simply described as "based on the sum of expenditure on all groups except amusements and other goods." This expenditure total rises slightly from 1913 to 1914, for example, and yet both the index numbers of price and quantity fall. It takes quite a little research in the text to discover what has been done.

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The price and quantity index numbers are of chained "ideal" (or Fisher) type, so that they should multiply out to an index of change in value. However, even apart from amusements and other goods, they are not comprehensive in their coverage, and they are necessarily rather arbitrary for services. It is a pity that nowhere are all the price and quantity index numbers brought together, to show for what groups they are calculated and to enable comparisons of expenditures to be made in real terms. For changes from 1900 to 1913 the data when assembled are as follows:

Group.	Expenditure (£ millions).		Index Numbers 1913 (1900 = 100).		
	1900.	1913.	Expenditure.	Price.	Quantity.
Food	532	695	131	118	111
Alcoholic beverages	195	182	94	106	87
Tobacco	27	40	149	113	131
Rents and rates *	177	230	130	102	119
Fuel and light	78	81	104	84	122
Other home expenses *	140	179	128	113	116
Clothing	153	210	137	117	117
Reading matter	15	22	145	91½	155
Travel and vehicles *	82	114	140	92	181
Communications *	5	9	172	106	147
Medical and similar services *	51	63	123	93	112
Other services *	115	153	133	111	120½
All above Groups	1,570	1,978	126	109	115
Amusements	32	42	132	—	—
Other goods	33	47	144	—	—
Adjustments	4	7	—	—	—
Total expenditure	1,639	2,074	127	—	—

For groups marked with an asterisk the index numbers are subject to particular limitations, or are less than comprehensive. For example, those for rents and rates are obtained from average rentals and numbers of houses in Great Britain; those for travel exclude buses, taxis and some other forms of transport. Again, "other home expenses" includes domestic service, peculiarly difficult to quantify. It is seen that, in these cases, the product of the price and quantity index numbers can diverge considerably from the value change.

The figures in this table relate to aggregate expenditures, and they should be used in conjunction with the fact that the population increased by 11% between 1900 and 1913. The table then shows up very clearly one of Dr. Prest's main conclusions—that standards of consumption, at least of basic commodities, increased quite slowly in the years before the First World War.

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R. G. D. ALLEN

A Study in Trade-cycle History. Economic fluctuations in Great Britain 1833-42.

By R. C. O. MATTHEWS. (London: Cambridge University Press, 1954. Pp. xiii + 228. 25s.)

MR. MATTHEWS has put ten years of nineteenth-century economic history under a microscope in order to see how the British economy fluctuated in the early days of industrialism. He has produced a fascinating study of the trade cycle that makes the efforts of others in the same field seem half-hearted, slipshod or amateurish by comparison. The facts are assembled with patience and scholarship and are then cross-examined with a thoroughness and analytical skill that wring from them conclusions of great theoretical interest. If the period under scrutiny seems remote, the problems in applied economics which it provides remain highly topical.

In tracing the course of the cycle between 1833 and 1842 Mr. Matthews lays a good deal of emphasis on psychological factors—the revival of confidence in the early stages, the later speculative mania, the reaction as normal standards of business caution re-asserted themselves. But he does not, as one might expect, single out re-stocking and speculation in commodities as the principal symptoms of these changes of mood. Instead, he dwells mainly on new projects, extensions of capacity and fixed capital investment. The argument runs in terms of a steadily mounting consumer demand, with capacity expanding in the boom and in the years immediately following the boom, and a pause to digest the new capacity thereafter. Mr. Matthews readily admits that all sectors of the economy were not equally affected. He shows, for example, that if brick production is a reliable guide to building activity, the peak in new construction came in 1836 in one group of towns (including most of the textile centres), and not until 1840 in another group (including London and most of the south). He allows also for a continued increase in various forms of fixed capital investment well after the peak of the boom in 1836: in railway-building until 1839, in shipbuilding until 1840, in building (after a dip from a lower peak in 1836) also until 1840. Since capacity in other directions (e.g., coal-mines and blast furnaces) was also expanding rapidly after 1836, one may reasonably ask whether total fixed capital investment reached a peak as early as 1836 and in what sense the years between 1836 and 1840 represented a recession.

One may also ask whether fluctuations in investment exercised as large an influence as harvest fluctuations or exports on economic activity. The biggest year-to-year change before 1842 in capital expenditure on railway-building was no more than £3 million, while in shipbuilding the biggest year-to-year change was probably not more than £1 million. Agricultural incomes, on the other hand, represented about 40% of the national income, or £150 million, and although we are unfortunately given no quantification of the changes that occurred, a fluctuation of, say, 10% or £15 million can hardly have been unknown. Mr. Matthews makes an interesting attempt to reconcile the view that the cycle was not dominated by harvest fluctuations with the marked cyclical rhythm of wheat imports, and finds an explanation

partly in the influence of carry-over stocks, partly in the operation of the Corn Laws. He points out that the later thirties were already overshadowed by the long-term trend away from self-sufficiency in food; and there seems little doubt that it was mainly the financing of imports of wheat on an unprecedented scale from 1839 onwards that pushed up interest rates and brought on the slump in fixed capital investment.

In his discussion of fluctuations in exports, which are often given pride of place in explanations of early cycles, Mr. Matthews concentrates on the American market, which was by far the most variable, and gives a lengthy analysis of events there in order to establish how far the boom of 1836 was independent of the cyclical upswing in Britain. He has little to say about exports to the countries of "Northern" Europe (including France) because they show a steady upward trend throughout. Exports to other markets he equates with total imports, excluding corn, and there is an impressive congruity between the curves for these two variables, alike in trend and in fluctuation. This is in many ways a surprising relationship. It would be easier to understand a rough equivalence between imports and exports in trade with the more distant parts of the world, with which triangular settlement was difficult. But even this equivalence would be upset by the triangular settlement that took place with the Far East via the United States; and there must also have been some triangular settlement with other countries via northern Europe. Indeed, it calls for some explanation why exports to Northern Europe after 1837 were so unresponsive to the heavy imports of corn that took place; not all of the resulting deficit can have been paid in gold.

Mr. Matthews issues a warning against too ready an assumption that the fluctuations that took place were primarily in output or consumption, and cites the example of cotton, the consumption of which rose steadily, without a break and at an almost uniform pace, from 1826 to 1838. In this industry, at all events, it seems to have been prices, profits and investment rather than output that fluctuated. Perhaps cotton was exceptional; productivity was rising steeply, output was doubling every decade, export markets were taking nearly 60% of total output and more than half the workers were under twenty. One wonders, however, whether other industries, such as pig iron, that were subject to a similar rate of secular expansion would not show the same phenomena if the figures were available.

The chapter on money and banking includes a defence of the Bank of England against some of the attacks on the Palmer rule that have been made by historians of monetary thought. The rule amounted to little more than a decision against offsetting any decline in bankers' deposits and similar liabilities due to an efflux of gold. Mr. Matthews argues that this rule was fundamentally orthodox, gave rise to a consistent policy and was adhered to, at least in spirit, on all appropriate occasions. He shows that there was a close inverse relationship between the discount rate and the state of the gold reserve, and that the deviations from this relationship were erratic and not, as one might expect, related to the general state of trade. When gold flowed

out and interest rates went up, idle money and money substitutes (including inland bills) were brought into circulation and the supply of loanable funds increased without much check on the demand, except in years when credit became excessively tight (as in 1839). It is also suggested that fluctuations in the state of trade brought about the requisite changes in the money supply without the intervention of a change in discount rates. All this adds up to a picture of great elasticity, both in credit and in money substitutes, and makes it more difficult than ever to understand how the Bank of England got along with a bullion reserve that was about as often below £5 million as it was above and was liable to fall by £5 million within six months. Presumably the international use of the sterling bill gave the Bank some elbow room. But not, to judge from the events of 1839-42, a great deal. Why did it take so long, at this critical time, for high discount rates to bring back bullion and re-build the Bank's reserve? Was it really necessary to force down the level of fixed investment by a prolonged spell of dear money and usher in the forties with a slump?

It is at this point that Mr. Matthews' analysis is, for once, a little inadequate. It would seem, from the figures that he gives, that exports and home investment together were pulling the economy up until 1839 or early 1840. Some check was inevitable after the harvest failure of 1838. But were the short crops of 1839-41 bound to result in a general depression? Throughout the entire period Britain seems to have been a net long-term capital exporter. Might not the necessary imports of grain have been financed through a cut in foreign lending or a little foreign borrowing? Mr. Matthews points out that capital exports to the United States dried up in 1840-42; but he also demonstrates that this brought no reflux of gold, so that the net effect was presumably to add to the troubles of the export industries. What then of Europe? Was the French loan of 1839 not capable of extension? And why, one asks again, were markets on the Continent so inelastic?

Mr. Matthews tries to handle the repercussions of foreign trade on the home market in terms of what he calls "the income balance" (*i.e.*, exports less expenditure by consumers on imports). In the process he draws a distinction between autonomous and induced changes in imports and (with less emphasis) in exports. But it is doubtful whether much use can be made of this distinction in analysing the income balance, for whereas one type of this distinction in analysing the income balance, for whereas one type of autonomous change that he instances, *viz.*, a harvest failure, leads simultaneously to a fall in real incomes and a rise in imports, a second type, *viz.*, a fall in the supply-price of imports, operates to raise incomes and imports simultaneously. It would have been simpler, and perhaps more illuminating, to look at changes in exports alongside changes in home investment, however approximate, and then examine any factors operating independently on the level of income through changes in consumer spending and the relative attractiveness of imports and home-produced goods.

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Glasgow.

Economic Processes and Policies. By W. J. BAUMOL and L. V. CHANDLER. (New York: Harper & Brothers (London: Hamish Hamilton), 1954. Pp. viii + 690. 45s.)

THIS is a book that must rank high among text-books on economics. It covers the usual range of subjects, but with an emphasis on matters of policy that leads to some drawing on welfare economics and input-output analysis. It draws heavily on descriptive material; albeit of the American scene, which limits somewhat its value for the British reader. It takes the student directly to practical problems, so as skilfully to display the uses of economic analysis. It is a model of discerning sifting of the debates of the past to show the student the valuable contributions and not the sterile controversies. It is extremely lucid and highly readable; and one is left in constant admiration at the number of problems dealt with in a manner at once deft, brief and illuminating.

A book of this quality cannot be without its controversial features. The professed emphasis of the authors is on helping the student to *analyse* processes and problems. But it is their exposition of the tools of analysis that may arouse some reservation. Their treatment is varied, and with it the level of sophistication.

Part III sets out the analysis of the determination of national income. One cannot question the very high quality. But are the Hicks-Modigliani diagrams ideally suited as the main exposition of income determination in what aims to be an introductory and elementary text-book? No doubt they have great uses to sum up a discussion which has displayed the Keynesian analysis piecemeal. But the authors have no time for such an approach, and their treatment in consequence seems better suited at this point for the student who already has some of the rudiments of the subject. Then one wonders whether the analysis goes far enough for such a reader. The discussions of policy devote some considerable space to problems of instability. Nevertheless, of the multiplier there is little; and of the acceleration principle, which for all its gross deficiencies for precise interpretation of events summarises something of those relationships between stocks and flows that can so easily produce instability, there is nothing. The reader approaches what is an excellent discussion of stabilisation problems without the analytical equipment to assess the authors' conclusions. Have they, then, wholly avoided providing "the student with ready-made answers"?

This same problem of whether the analytical tools provided are sufficient for the problems discussed afflicts Part V on the composition of output. The problem, however, takes a different form. The elementary analysis of demand, of the firm and of factor markets appears in an appendix. It is easy to see the authors' purpose in this arrangement. In a series of chapters of high excellence they bring the reader straight to the problems so that he can see the purpose of his study, a matter so commonly neglected in elementary text-books. One can argue that the student with his appetite so whetted can turn to the appendix, to which there are ample references, to

find the tools employed in the main body of discussion. For all that, the arrangement has its disadvantages. One suspects that the novice will not be very clear after Chapter 20. He is also less likely to appreciate the underlying unity of method of economic analysis than he would be were the discussions of problems to indicate at the time the relevant tools. It is, after all, a small number of concepts that are constantly being applied in different contexts. As it is, the reader is left with footnote references and the rather lame statement on p. 653 of the appendix: "In this way we indicate the theoretical background for some of the policy discussions presented in the book itself." One profoundly hopes that the student who reads "that long-run competitive output must be greater than the long-run output of the firm under monopolistic competition" (p. 650) will dutifully obey the injunction of the footnotes and turn back for the qualifications.

But these criticisms, and others that may be levelled, are matters of detail. They must not be allowed to blur our appreciation of the overall excellence of the book. There is much to be learned by teachers and students alike from the skill, lucidity and modesty with which Professor Baumol and Professor Chandler have set out their subject.

A. D. KNOX

London School of Economics.

Government Finance. An economic analysis. By J. F. DUE. (Homewood, Illinois: Richard D. Irwin, 1954. Pp. ix + 562. 60s.)

THIS volume is very much in the tradition of the typical text-book written for courses in Public Finance in colleges and universities in the United States. In the course of some 550 pages of text most issues normally thought of as being within the subject (and a few which are not usually so reckoned) are worked over. Starting off with a discussion of the principles of government intervention and the actual position of the United States government accounts *vis-à-vis* those of the whole economy, we are taken through the legal powers of taxation in the United States, the principles of public enterprise pricing and the traditional chapter on the principles of taxation. Some parts of this discussion, especially those concerned with the legal bases of United States taxes and the pricing principles of public enterprise, are well done and are a useful summary of these aspects of the subject.

These seven introductory chapters are followed by fourteen on the problems of individual taxes—those on personal income, corporation income, excess profits, consumption expenditure, commodities, gifts and wealth being dealt with in succession. Finally, bringing up the rear we have a chapter on central-local government relations, another on the re-distribution of income through public finance and several on Government borrowing and compensatory fiscal policy.

This book has a good deal to recommend it. The treatment is simple and easy to understand. The order of arrangement is sensible (it is interesting to note that compensatory fiscal policy is demoted from the head of the queue,

where it seemed so firmly ensconced only a few years ago, to the very tail). And, although perhaps not always as rigorous as it might be, the treatment is fully up to date with most of the recent contributions to the subject. No student who has worked through this book thoroughly would be likely to fail his examinations in public finance.

Despite these merits, one cannot really feel that this is a very suitable book for British, or more accurately non-American, readers. One reason is that almost all the discussion is related to United States and Canadian practices. It is reasonable enough that most of it should be. But one would have thought that, for instance, the discussion of block grants from the central government to local authorities might have been enriched by some references to British experience, which is much more relevant in this field than that of the United States or Canada. Similarly, although there are many references to the latest articles and sub-articles in the various learned journals (principally United States ones), the reader of this book will finish it totally ignorant of the fact that, for instance, there was a gentleman called Adam Smith who had something of interest to say on public finance.

Secondly, and perhaps even more fundamentally, this book will appeal to all who like to digest information in a pre-cooked form neatly served on a well-garnished platter. But all those who like a little variety in their fare, all those who believe that a few loose ends left untied can do a power of good in stimulating minds, will not find this sort of dish very appetising.

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Economic Doctrine and Method. By J. A. SCHUMPETER. (London: Allen & Unwin, 1954. Pp. 207. 15s.)

This is a remarkable but not a wholly satisfactory book. It is remarkable chiefly because of the immense erudition of its author, who displays on page after page an astonishingly extensive knowledge of his subject. Beginning with the Greeks, Professor Schumpeter's study is carried down to Marshall, Taussig and Böhm-Bawerk, and the only conspicuous omission is that of Wicksell. Many of the comments on particular schools or individuals are strikingly illuminating, especially for the reader who possesses prior knowledge of the subject. On mercantilism, on utilitarianism, on the German historical school—about which there is not likely to be an over-supply of prior knowledge among British readers—Professor Schumpeter is particularly good, and he is best of all on the English classical economists as a whole. This section contains a detailed discussion of the labour theory of value, which is excellent; there are only two other such discussions in the book, one of the Ricardian theory of rent, and the other concerning the contributions made by the historical school to the general body of economic knowledge.

It is unfortunate that so much has been compressed into so small a compass. In a couple of pages in the first chapter, for instance, reference is made

to no fewer than sixteen authors. Further on in the book Sismondi receives three lines, Cournot less than half a page, Petty less than one page and so on. And yet, desperately brief and allusive as much of this is, the book is amply good enough to encourage the reader to go on, as he should go on, to the massive *History of Economic Analysis*.

Apart from the occasional fuller discussion and apart from the many hints and comments *en passant*, the present book amounts to an oblique discussion of method. The different approaches and the different interests of the various schools are sympathetically outlined, and emphasis is always laid on what the various writers have been seeking to do. Here the author's catholicity of interest and liberality of judgment raise this volume altogether out of the ordinary. He insists on the many-sidedness of economic reality, on the impossibility of its being fully comprehended by any one author, method or school. His intention is to lay bare not only the "heteronomy of economics"—a phrase borrowed from Knies—but to use the device of a historical survey so as to bring out and illustrate the several advantages of the various methods, while advancing his own views as to the precedence of a truly scientific (not a normative or political) analysis set in a framework of social and institutional study. The book shows once again how close to Pareto Professor Schumpeter's position was.

It is a pity that the book has been translated from the German into a language which, while comprehensible, can scarcely be described as English. Thus we read that Ricardo—

"was often content with approximations with which occasionally he was not satisfied himself. In a way he strangled the vital connection between the value of the product and that of the means of production with his concrete causes which determine the various branches of income" (p. 115).

Yet *Economic Doctrine and Method* remains worth reading, although it must be judged as a whole to be either too brilliant or too brief.

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Newtonian Classicism and Darwinian Institutionalism. A study of change in economic theory. By D. HAMILTON. (Albuquerque: University of New Mexico Press, 1953. Pp. 138. \$1.)

WITH this book the University of New Mexico launches a new series of publications in economics. It is a statement of faith and a call in the Veblenian tradition for a revolution in thinking. The author is strongly of the opinion that western economics is a prisoner of Newton. The mechanics of the *Principia* reached into every aspect of western thought, with its static, and mechanistic view of the universe. Equilibrium about a norm became, and remains, the dominant mode of economic reasoning. This has meant that political economists, to the present day, have failed to view society as changing in an evolutionary, cumulative way. Further, it has inspired an active

hostility to those who, taking their cue from Darwin, have sought after a theory which stems from the problem of change, rather than the continuous reassertion of norms.

Who can deny the power of the Newtonian cosmology? But in this matter we must distinguish three questions, each addressed to a different kind of student. First, the historical problem—To what degree did traditional economic thought in fact derive its idiom from Newton? Secondly, the economist's question—How far does current economic thought rely upon Newton? And finally, the problem for the student of the theory of knowledge—To what extent is the present state of economic thinking due to a failure of economists to realise the real nature of their own thought processes?

These are all important questions. Mr. Hamilton seeks to answer them from a polemical point of view—in Newton lies stultification, in Darwin life; it is necessary to demonstrate to modern economists the nature of the leading-string which still binds them, condemning them to the sterile elaboration of exhausted concepts while a whole new world of discovery is accessible. In order to liberate the modern mind, strong, unequivocal theses are offered at all levels of discourse. The result is well worth reading—it is, as its author intended, provocative.

The historian will be provoked to wonder whether the evolution of economic thought was really so simple. Surely, in probing at such a depth as this, it is not enough to identify the parent of method alone. To construct a general system of social analysis, two ingredients seem to be required: a method of reasoning, often derived from or related to a cosmology, and some sort of view of the nature of man and his behaviour, derived from metaphysics or psychology. In fact, political economy should honour two great fathers of the enlightenment, Newton and Locke, who worked largely independently and with very little appreciation of the work of the other. Though the author has much to say about hedonism, there is a failure to give Locke an independent existence; the impression is left that the view of man embodied in the classical economics was, like its method, derived exclusively from Newton and natural science. But Newtonian science could not of itself have guaranteed the acceptance of automatism in economic matters; Kant was able to form German thought by his distinction between the phenomenal world, where the classical mechanics operated, and the world of human culture, where they did not.

As to the present state of economics, again there can be no doubt that the shade of Newton is still present; equilibrium is still the leading form of thought, as Mr. Hamilton demonstrates. But to say this is not, of course, to concede that it is a mere *ignis fatuus*. May it not be, that for all its age it is still a potent tool of analysis, and that when used with the caveats so often laboured by the classics, it yields those short chains of reasoning upon which policy must rely? It is easy to sympathise with those who fear that reasoning in terms of evolving cultures will lead only to demonstrations that everything depends upon everything else, that it will no longer be possible to attain the kind of logical rigour that follows from saying "such are the

assumptions, such are the conclusions," and that, as yet, such thinking yields few clues to the choice of alternative courses of action. But it is excellent that some economists should do their thinking in terms of cumulative change, with economic actors who are themselves both caused and causing, within the matrix of their culture, with emphasis upon technology as the dynamic element. It will be of great interest to see how such scholars deal with the problem of giving structure to their thinking, for however concerned we may be with process, it is difficult to see how understanding can be achieved without categories.

To blame the present relative failure to make progress with the problem of change upon Newton seems somewhat unreal. The leading post-war concern has probably been with questions of growth and process; if a plausible theory was offered in a new form, it seems likely that, far from being strangled by the dead hand of Newton, it would enjoy a vogue in excess of its real merits. It is hard to believe that the great diversity of talent now devoted to such problems is so rigidly confined in thought, when even elementary expositions of economics distinguish between the older equilibrium approach and the newer dynamic aspirations. Indeed, impatient readers of Mr. Hamilton will probably find themselves wondering why, if current theory is in fact so hidebound, some institutionalist does not give the *quietus* to Newton by the offer of an alternative demonstration, rather than the offer of an alternative patron. The answer surely is that it is the inherent difficulty of the questions now being asked, rather than an outmoded and undetected way of thinking, that bars the way.

But for all this, it is occasionally a valuable exercise to lay aside scholarly purism, seize upon two or more archetypal figures and see what can be done by way of arranging the history of economic thought around them. Mr. Hamilton has chosen two which most economists would probably think were remote even from the penumbra of their discipline; his book should be read as a vigorous attempt to relate economic to general thinking, and as a challenge to those who are practitioners or elaborators of narrowly prescribed techniques.

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Studies in Econometric Method. Edited by W. C. HOOD and T. C. KOOPMANS. Cowles Commission for Research in Economics, Monograph No. 14. (New York: John Wiley (London: Chapman & Hall), 1953. Pp. xiii + 323. 44s.)

THIS valuable book provides an expository account of the methods of econometric analysis developed by members of the Cowles Commission. Much of its contents has already appeared elsewhere in articles or in a rather indigestible form in Dr. Koopmans' formidable Cowles Monograph No. 10. However, there still remains much that is new or that has developed significantly in recent years.

The description "expository" does not imply that the work is an elementary text-book. Rather it attempts to provide the reasonably well-equipped reader with understanding and insight into the methods employed, the conditions for their validity and the problems as yet unresolved. Considerable efforts have been made to keep the discussion as simple and straightforward as possible, but the core of the book (Chapter VII) is scarcely food for those with only a nodding acquaintance with matrix algebra, despite the sporadic assertions of the editors to the contrary.

There is now general acceptance of the view that the methods of estimation appropriate to quantitative economics cannot be considered in isolation and that attention must also be paid to the manner in which any economic system is supposed to function. A plausible structure of inter-relationships between the variables of an economic system must be set up so that the joint probability distribution of the variables, the values of which are determined by the operation of the system, can be deduced. The aim must be to estimate structural parameters (the parameters of, say, demand and supply relationships), because only armed with a knowledge of these can we predict the probable results of a sudden shift in, for instance, the supply relation due to a specific act of Government policy.

The first chapter on "economic measurements for policy and prediction" by Dr. Marschak argues broadly along these lines aided by a few very simple illustrations. As an opening it is not too successful, since Dr. Marschak is dogmatic and at times also rather condescending. His insistence on the rigid distinction between the technician, who estimates, and the politician, who decides, seems to me to be overdone.

It may often happen that the formal properties of the structure of inter-relationships between variables are such that it is not in fact possible to derive estimates of some of the structural parameters, in which we are interested. Loosely speaking, this is the problem of identifiability, which is discussed lucidly and simply by Dr. Koopmans in Chapter II.

When the values of a number of variables are jointly determined by the operation of a particular economic system, the meaning of "cause" and "effect" is veiled in a certain amount of mystery. Simon tries to help us to peer more effectively into the darkness in a highly abstract discussion entitled "causal ordering and identifiability." The causal ordering of the variables in a system of equations specifies which variables will be affected by interference at various points in the system. Simon shows that there is an intimate connection between causal ordering and identifiability.

Haavelmo's exemplary discussion of "methods of measuring the marginal propensity to consume" has become Chapter IV. It is surprising to find after all that has been written since, that he never mentions the word "maximum likelihood," that he relies entirely on Markoff's theorem on least squares, and that he is only concerned to derive consistent estimates. It is a pity that the editors did not woo their readers by using Haavelmo's contribution as bait and Chapter I. Chapter V is also a reprinted article but in truncated form. While the "statistical analysis of the demand for

food" was a pioneering venture in its time, its inclusion in this volume seems to make for unnecessary repetition.

The long Chapter VI by Koopmans and Hood on the "estimation of simultaneous linear economic relationships," while excellent in its way, makes fairly heavy demands on the reader. The maximum likelihood method of estimation as applied to the structural parameters of a system of equations is developed in all its glory. The reasons for using this method are explained and also why the method of least squares is equivalent only in certain cases. A rewarding novelty is the stepwise maximisation of the likelihood, first with respect to the covariance matrix of the disturbances for given values of the structural parameters, and then with respect to the structural parameters themselves. This approach is extremely fruitful, as it leads to the least variance ratio principle (and its generalisation) as an intuitive justification for the rather remote appeal of the limited information method of estimation. It helps to explain why the methods of estimation have desirable properties, even when the disturbances no longer have a joint normal distribution.

Next Chernoff and Rubin summarise briefly the less stringent conditions, which must hold, if the methods of estimation are to remain valid. They touch on the effects of leaving out variables, on errors of observation and on non-linear equations.

In Chapter VII and VIII Drs. Allen and Bronfenbrenner return nearer to the earlier simplicity of Koopmans and Haavelmo. They illustrate points of considerable practical importance with easily intelligible examples. Allen discusses the effect on the asymptotic efficiency of the estimator of a structural parameter of ignoring a pre-determined variable. Bronfenbrenner examines the size of the asymptotic bias in least-squares estimates and shows how large it may be in certain circumstances.

Finally, Chernoff and Divinsky discuss at length computational procedures. Four methods are explained: the full information method with unrestricted covariance matrix of the disturbances, the same method with a diagonal covariance matrix and the limited information method for both a single equation and a subset of equations.

The imposing structure of theory which has been erected by workers at the Cowles Commission inevitably arouses feelings of awe and admiration. Yet doubts remain. How far have they succeeded in developing a practical tool of analysis, which takes account both of the limitations of the data and of the fact that time and resources for computation are scarce? How far will investigators using the prescribed methods be able to engage in notable forays on the frontiers of economic knowledge? Time alone will show.

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An Essay on the Economic Theory of Rank. By R. H. TUCK. (Oxford: Basil Blackwell, 1954. Pp. 52. 7s. 6d.)

THE central problem, which Mr. Tuck discusses in this ingenious essay, is that of allocating differently endowed individuals, who are demonstrating their fitness for promotion at varying rates, to their appropriate place in the industrial hierarchy. Each entrepreneur possesses his own individual demand and supply curves for new capital. The more promising his past record, the more new capital he can borrow, other things being equal. An entrepreneur's scale of operation is determined by the amount of capital that he controls. Since the number of immediate subordinates any man can effectively supervise is immutably fixed, a firm's scale of operation determines its requirements of wage and salary earners of various grades.

In any industry, or indeed in the economy as a whole, there exist at any given moment two distinct distributions of economic rank—by economic rank is meant the number of steps of promotion a man has achieved above the level of basic operator. There is, firstly, the distribution of actual rank achieved by existing individuals due to the general process of economic advancement. Secondly, there is the distribution of individuals by rank required if an industry (or industry as a whole) were organised in a single hierarchy of control. These two distributions do not, in general, coincide; normally there are insufficient people of any given rank to control effectively the persons in the rank next below. The economy effects a reconciliation of the two distributions by the emergence of independent firms widely differing in size.

Since a transfer from the ranks of salary earners to those of entrepreneurs, possibly of humble standing, is always permissible, and vice versa, a certain level of income corresponds with each economic rank. The income of an entrepreneur of given rank is not, however, proportional to the scale of operation of his firm, but it will depend on the economies and diseconomies of scale in the industry concerned. With the aid of a certain number of additional assumptions, two important ones being the age distribution of individuals and their average rate of personal advancement, the distribution of incomes can be deduced.

Mr. Tuck applies his theory to examine the effects of a slackening of population growth and to account for the trade cycle. His explanation of the latter phenomenon implies a cyclical variation in the size distribution of firms, but he adduces no evidence to support this contention. He also analyses the effect of nationalisation on an industry, and he concludes that there will result either a distortion of the hierarchy of control or promotion at an excessive rate for the higher ranks. The existence of small independent firms is necessary for the efficient use of the existing supply of entrepreneurial ability.

Mr. Tuck attempts to support his theory statistically by computing theoretical distributions of firm size, for two industries, and of total incomes. At first sight the correspondence between theory and reality appears remark-

able. An examination of his assumptions and method suggest, however, other reasons for this goodness of fit. He uses adaptations of the log-normal distribution with little, if any, theoretical justification, although this type of distribution is well known to give fair fits to distributions of firms and incomes by size. He also allows himself great freedom in the number of parameters that he estimates and on which his theoretical frequencies depend. At least one of his approximations can only be described as heroic.

The freshness and originality of Mr. Tuck's approach to a most intricate problem deserves recognition and encouragement. He will, I hope, continue to improve and refine his model, using what empirical data he can find to support each assumption directly, rather than attempting an *en bloc* justification by curve fitting. His present work remains, however, a pleasing reaction against the assumption of homogeneous labour.

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Colonial Social Accounting. By PHYLLIS DEANE. National Institute of Economic and Social Research, Economic and Social Studies, No. XI. (London: Cambridge University Press, 1953. Pp. v + 360. 50s.)

THIS is an important work of reference in a field in which there is still too little information. The reasons for making national-income studies in so-called backward or under-developed territories are well known and in essence not different from those applying to industrial countries. But the difficulties arising from the peculiarities of economies in which subsistence production is of more real significance than cash transactions and detailed statistical, accounting and social data are woefully inadequate have limited the number of inquiries on which administrators and economists can place reliance. Miss Deane is one of the pioneers in the terrain of national-income studies in the British Colonies, and this full and detailed account of studies made in 1945-48 will go a long way to laying the foundations for future work. Together with the admirable studies conducted by Dr. Benham in the West Indies and Malayan territories and by Dr. Prest and Mr. Stewart in Nigeria, it will help not only to provide basic facts about the particular territories with which it deals but also to clarify the many theoretical and analytical problems which distinguish emergent economies from the fully advanced economies of the industrial countries.

The topicality of the work suffers from the long delay in publication. Figures relating to 1945-48 are, as absolutes, only of historical interest, especially when, as in these territories, there has been a continued and extraordinary expansion of the monetary economy. To take Northern Rhodesia alone, trade measured by exports has increased threefold over the past five years while public revenues have more than doubled. Changes of this order of magnitude and rapidity rarely occur in wider-based economies, and the effect they have on the internal economy must only emphasise the need for

continuous detailed study if misleading conclusions are not to be drawn from out-of-date figures. Nevertheless, the analysis of the economic structure showing the difference between incomes of the different social groups, the limited impact of mineral development on the economic life of the rural areas, the importance of external capital and enterprise and the role of development programmes has value which is not so limited.

Though Miss Deane had, as she acknowledges, the co-operation of Government officials, traders, anthropologists and other social scientists in the field, her work was still that of an individual and naturally enough she had to limit severely the range and scope of her survey samples. Her final conclusion is that, as an experiment in national-income measurement, her study has had but a very limited success. Modestly she states that it has done little more than "collect, sift and discuss the readily accessible evidence." This surely under-estimates the value of her study. It is probably true that the aim of giving Governments an accurate blueprint of the economy as the basis on which decisions regarding general development planning can be taken is far from being fulfilled. This is inevitable. Indeed, the author rather over-emphasises (pp. 7 and 68) the extent to which Governments can influence by planning the course of economic progress. None the less, the collection and systematic organisation of basic economic facts cannot but be helpful in many ways, and this is sufficient justification for the laborious work entailed.

There are some doubtful conclusions. Does it follow that, because the bulk of Nyasaland's national income flows to native residents, capital for economic development must be largely provided by Africans (p. 111)? That, because mining development has not succeeded in raising average living standards above very low levels, they can *only* (reviewer's italics) be lifted by an improvement in agricultural yields (p. 219)? Such an improvement is clearly necessary, but the implication that mineral development is of secondary importance is hardly valid. If Africans very quickly reach the point at which they devote money incomes to luxuries and leisure (pp. 224-5), is the low scale of living due to development "passing these people by" (p. 33) or to choice? The fact that "market" agricultural output is shown (p. 267) to represent less than one-tenth of subsistence output of the Africans throws doubt on the validity of village studies confined mainly to transactions. The evening out of African incomes in the three territories now comprising the Federation, on the other hand (p. 216), seems to suggest a greater influence of the cash nexus than does a straightforward division between subsistence and cash production. The general conclusion on p. 219 that "balanced economic progress in Central Africa depends primarily on the productivity of the African and particularly the African farmer" is hardly more than a truism made platitudinous by the word "balanced," and it under-estimates the contribution of general development to African productivity. It is surely not a fair deduction that the net gain from external investment in Northern Rhodesia is "negligible" because savings of Europeans are exported (p. 217). Does not the attraction of the mines and the

remittances back to African villages from the proceeds of that investment represent a net gain to the economy—or else why do the Africans seek urban and mining employment?

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London.

The Scottish Economy. A statistical account of Scottish life by members of the staff of Glasgow University. Edited by A. K. CAIRNCROSS. Social and Economic Studies, II. (London: Cambridge University Press, 1954. Pp. xv + 320. 30s.)

THE twenty essays which comprise this volume are exercises in the technique of using statistics to describe and analyse the salient economic and social characteristics of a region. The fact that Scotland has enjoyed "country status" ever since it became part of the United Kingdom has ensured a richer vein of basic data than is usually available for a region and has rendered less formidable the task of effectively defining its economic boundaries. Nevertheless, the perennial problems of inadequate data and of defining the region for purposes of economic analysis are still there, and the authors' treatment of these problems will interest regional investigators faced with more complex versions of the same general problems. There are, for example, courageous and rewarding ventures in the field of estimation of significant aggregates—notably the chapters on national income and the balance of payments by A. D. Campbell and W. M. L. Murray respectively—which break new ground in Scottish statistics and contain a number of object lessons in the imaginative use of scanty data.

It is as a compendium of, and as a commentary on, the quantitative information on the Scottish sector of the United Kingdom economy that this book makes its most effective contribution. The essays cover a wide variety of topics in concise fashion. Their main connecting thread is a twofold comparison—with an earlier period and with the rest of the United Kingdom—which puts each analysis in historical and geographical perspective. The picture of Scotland which emerges from them is one of an industrial economy, "above all, an urban economy, with a scattered agricultural fringe," in which the level of economic activity or of social welfare measured in terms of such indicators as income per head, output per worker, size and quality of dwelling-houses, or sickness rates, lags behind that of the rest of Great Britain.

It is possible to over-emphasise this differential, especially when the comparison is made in terms of the average south of the border rather than in terms of the range of averages exhibited by the various regions of England and Wales. To be below the average for the rest of Great Britain frequently does not signify a ranking below sixth or seventh in an ordering which distinguishes each of the ten standard administrative regions south of the border. Nevertheless, the lag between Scotland and some or most of the regions of England and Wales is sufficiently marked and con-

sistent to call for some explanation. The interpretations which twelve authors put on their various series in order to explain this lag in its different aspects provide numerous hypotheses for further investigation.

It is interesting to note that the indicators do not always point conclusively in the same direction. In terms of output per person engaged, productivity in Scottish manufacture is generally, but by no means invariably, below the average for Great Britain. We have unfortunately no comparative measures of output per unit of capital employed. In terms of gross output per acre of crops and grass, agricultural productivity in Scotland in 1950-51 was lower than that for England and Wales. On the other hand, in terms of gross output per person engaged (at the time of the 1951 Census) in agricultural, horticultural and ancillary occupations, Scottish agriculture seems to have been more productive.

But an interesting paradox, to which the authors offer no firm explanation, emerges from the estimates of the Scottish share in United Kingdom incomes from property. There is a great deal of evidence to suggest that total personal income per head for Scots who are normally resident in Scotland is below the average level for England and Wales. On the other hand, if it is assumed (as is tentatively assumed for the purposes of the national income calculation) that the Inland Revenue "analyses of personalty" assessed to death duties provide an indicator of the proportion of capital in Scottish ownership, Scottish savings per head are or have been well above the level south of the border. Can it be that Scottish savings behaviour conforms so admirably to its legendary fame?

It is true that the value of estates passing at death reflects past rather than present savings behaviour. However, A. D. Campbell's estimates of national income suggest that throughout the period 1924-48 Scottish income per head never rose above 94% of the United Kingdom level and fell as low as 86% in the slump of the 1930s. His calculation of a nine-year moving average of Scottish estates, expressed as a proportion of the value of British estates, on the other hand, gave values of 12% in 1944 and 11.8% in 1948, in relation to a population which was 10.6% of the Great Britain total in 1948. If these figures are truly significant in this context they suggest a relatively high rate of savings in the past, if not in the present.

The chapter on consumption does not throw any light on the other aspect of this hypothesis by attempting to gauge the Scottish propensity to consume, although it provides evidence of a relatively high rate of expenditure on entertainments and a relatively low rate on rents and purchases of houses. 1950 Census of Distribution results (which were presumably not available when these essays were written), on the other hand, suggest that the Scottish propensity to consume may be even higher than that for England and Wales. Average sales in the Scottish retail and service trades, expressed per head of the population of Scotland, were 99% of the average for Great Britain as a whole, and were higher than the average for any of the English and Welsh standard regions except London and south-east and South. Retail sales do not cover the whole of personal expenditure on consumption, but they cover

enough to throw some doubt on the proposition that the Scots show an abnormally high propensity to save.

The omission of a chapter on savings and capital formation is indeed the major conspicuous omission from this volume. Possibly the available data were too scanty to justify the separate treatment of that difficult topic in what is essentially an introductory symposium. It may be one of the trails which, because it demands considerable first-hand research, has deliberately been left open for future exploration. This volume is the second in the new series of publications sponsored by the Glasgow University Department of Social and Economic Research. It is agreeable to suppose that we may expect a continuing series of monographs of the same sound standards of scholarship and interest as the first two. We may hope that a study of the Scottish capital account stands high in the list of research projects envisaged by the Department as part of the material for its series of monographs.

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A Concise Economic History of Britain from 1750 to Recent Times. By W. H. B. COURT. (London: Cambridge University Press, 1954. Pp. viii + 368. 21s.)

ALL those concerned in the study of economic history must have looked forward with rare interest to Professor Court's own sequel to Clapham's *Concise Economic History of Britain*. General economic histories of Britain appear with a frequency which is almost wearisome, but a worthy successor to Fay's *Great Britain from Adam Smith to the Present Day* has not yet been found. Is Professor Court's book what is wanted?

It is abundantly clear that this is a work of erudition and authority. Professor Court appears to have read everything that matters and to have reflected upon everything. The coverage is wide; the information extensive accurate and detailed; the judgment balanced and mature. The author has rightly treated the study as one in economic development, and his approach is distinctive in the emphasis laid upon investment. The text of the book, so to speak, might be given in the author's own words, "National income rises, roughly speaking, with the increase of new capital invested" (p. 165). Sometimes there seems too little awareness of the possibility that national income may rise for other reasons than the undertaking of net investment; but obviously the approach is a good one, and the social and "philosophical" circumstances favouring investment are happily not neglected.

Beyond this individuality of approach, however, Professor Court's treatment must be acknowledged to be prosaic. This does not seem to be an accident. Outstanding events are put by the author severely in their place, and are merged into the even flow of the narrative. The construction of the canals is dealt with in little over a page. The great steel inventions, although producing "a genuine revolution" (p. 220), are dealt with in less than half

a page. In a sense, this is right. The "great" events of economic history seldom seem great at the time. Economic life goes on, washes over them, absorbs them. There is little commotion, little fuss. Even the most rapid adjustments take years, and the disturbances which they cause are seldom on the surface. In a way, therefore, Professor Court's method is the right one. As a depiction of the march of events his work is not open to any but detailed criticism. But as an explanation of development it is not so satisfactory, precisely because the reader's attention is inadequately directed to those changes and innovations which proved, in the end, important and significant.

This quality of flatness in the narrative is emphasised by two other peculiarities of treatment. First of all, there is only one table of statistics in the whole book. No doubt these are often overdone. Eighteenth-century and most nineteenth-century statistics have to be used with care, and they are for the most part wretchedly inaccessible (Professor Court himself makes a plea, which deserves support, for their official collection). But statistical tables, besides leavening a lump of prose, can add a useful precision and clarity to the economist's verbal argument and description, and it is discouraging to see a book at a higher than elementary level reverting to purely verbal means of exposition. Secondly, the division of the book is into only two parts: from 1750 to 1837; and from 1837 to 1939. The experiment having been made, there does not seem much to be said for it. Clapham, cautious as ever, once remarked that, "In economic history starting and finishing points are always hard to find. But it seems likely that 1914 will remain a recognised finishing point." In a way, Professor Court's treatment hardly implies that 1914 was not a finishing point, for to the inter-war years he devotes a mere twenty pages, so that his book is, in effect, not much more than a study of the years from 1750 to 1914. But the arrangement cannot be called a successful one. The inter-war period cannot be dealt with in a meaningful way in twenty pages; and to include it at all in the same section as the years from 1837 to 1914 gives a spurious impression of continuity, whether we believe that "the division" came in the 1890s, or was caused by the first war, or by the final abandonment of the gold standard, or by whatever else we please. No doubt no division here is entirely satisfactory. But, if it comes to that, neither is 1815, nor 1830, nor 1837, nor 1851; least of all, perhaps, 1837.

These criticisms do not detract from the many great merits of this book. But they do leave one with the feeling that Professor Court could have written a much more useful book. Would a much more useful book, however, very much resemble this one? The answer would seem to be no, and Professor Court's work itself supplies the reasons. For in stressing the importance of "a commercial view of property and income" (p. 172), and in emphasising the significance of changing international economic relationships (in a manner reminiscent of Marshall) Professor Court has begun to strain against the bonds of the conventional national economic history. When economic history is the history of economic development, are we any more concerned with the mechanism of change than with the motives and the origin of the motives

which give rise to it? When international trade plays a vital part in economic growth, can we very usefully study national economies in isolation? The answers to these questions are not clear, but they are very important. Professor Court, by adopting the orthodox form of text-book but using a more up-to-date approach, has made the need for such answers stand out more clearly than before.

A. J. YOUNGSON

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Maturity and Stagnation in American Capitalism. By J. STEINDL. Oxford University Institute of Statistics, Monograph No. 4. (Oxford: Basil Blackwell, 1952. Pp. v + 248. 30s.)

THE main theme of this book is the alleged tendency toward stagnation in the American economy. Dr. Steindl believes that in the decades preceding the nineteen-thirties the United States was moving gradually into a condition of stagnation which became observable to the naked eye after 1929. In American manufacturing the wage-share in value added is said to have declined from the eighteen-nineties on, especially in the oligopolistic industries. The author suggests that the oligopolistic policy of keeping prices and profit margins high relatively to current costs is responsible for the gradual lowering of the rate of new investment below full-employment savings. The present performance of the American economy he would obviously have to attribute to defense expenditures.

In the reviewer's opinion, Dr. Steindl's interpretation of statistical data is often tenuous. The wage-share behaves differently from his expectations in four of his nine markedly oligopolistic manufacturing industries, and this is explained away by arguments which do not seem very plausible (pp. 81-4). As for manufacturing as a whole, Dr. Steindl shows that the share of wages declined in the period 1899-1937, but if the reader puts together two tables in the book he discovers that the share of employee compensation, consisting of wages plus salaries, did not decline (pp. 76 and 86). It is conceivable that Dr. Steindl could have obtained a mild decline in the joint wage-salary share in manufacturing if he had selected a period bordered by different dates. But he could scarcely have established the same tendency for the economy as a whole. Dr. Steindl's readers should be reminded of the fact that during his period of observation manufacturing accounted for less than one-fourth of the American national income.

From other sources we know that in the economy as a whole, employee compensation as a percentage of national income showed an approximately horizontal trend from 1920 to 1929. Subsequently, there was a *rise* in the share, although if we exclude the effect of changes in the composition of out-share, although if we exclude the effect of changes in the composition of out-share, although if we exclude the effect of changes in the composition of out-share, put there seems to have occurred practically no change from 1929 to 1950. There exist indications that prior to 1920 the relative share of employees also rose, even if we eliminate that part of the change attributable to the growing

weight of employees in the labor force. Such statements become, of course, increasingly hazardous as we move back in time. But what matters here is that for the economy as a whole there exists no reason whatsoever to assume a downward trend in labor's relative share during the period with which the book is concerned. On no reasonable interpretation can such a suggestion be derived from estimates of the Department of Commerce, of Kuznets or of King.

What about Dr. Steindl's belief that yields per unit of business capital declined from the turn of the century to the nineteen-twenties, and that new investment was losing its profitability? Here again, certain indicators point to a rise rather than a fall (pp. 151-3), but Dr. Steindl adds various explanations, and he argues that in reality there was a fall (pp. 171-4). This may be so, although the evidence is quite inconclusive. If there was a fall in yields, then this reinforces the presumption that there was a mild rise in the share of labor. For neither Dr. Steindl nor any other investigator has inferred from available materials that the stock of capital (Dr. Steindl's net capital) per unit of output would have risen from the turn of the century to 1929. Dr. Steindl concludes, probably correctly, that this ratio was about the same at the end as at the beginning of this period (p. 191). Denote the capital stock by V , output by O , property income by P ; then, whenever V/O does not rise, a fall P/V expresses a fall in P/O . It is conceivable that, coupled with a fall in P/O (with a rise in the labor share) there occurred a moderate decline in "yields" defined as property income per unit of existing capital. Yet even if this should be the case, the argument that insufficient profitability during the nineteen-twenties heralded an era of stagnation remains far-fetched; and if someone nevertheless believes himself to have discovered a danger signal at this point, then, in contrast to Dr. Steindl, he is really suggesting that labor income was eating into profits to a dangerous extent.

Yet whatever the reader's reaction may be to Dr. Steindl's argument, the problem of continued growth or imminent stagnation stays controversial—to some extent a matter of faith or at least of temperament—as has been the case since the time of the classical economists. Most of us believe that a great deal depends on the race between diminishing returns and improvement. However, Dr. Steindl does not look at long-run development from this point of view. For the sake of illustration rather than statistical testing, he develops a theory of imperfect competition, and also an aggregative dynamic model. These direct attention not to the need for offsets to diminishing returns but to entirely different limiting factors. Considerable importance is attributed to the dependence of new investment on profits, via certain structural parameters. What is the nature of this relationship? Internal accumulation (reinvested business savings) are viewed as depending on profits, and a further parameter links total business capital to internally financed business capital. If the ratios gearing total investment to profits bear the proper relation to various further structural parameters, including the propensity to save out of personal income, growth will be self-perpetuating. This is because more profits lead to more investment, and more investment

leads to more profits. However, a shift toward oligopoly lowers investment relatively to profits, and further difficulties develop because outside savings do not diminish correspondingly. Therefore, oligopoly leads to insufficiency of new investment relatively to full-employment savings.

In this framework there is little room for the analysis of relative resource-scarcities and of the processes by which diminishing returns have become largely offset over a long period of economic growth. Investment is assumed to create enough profits if profits give rise to enough investment. The author is aware of the fact that this *implies*, among other things, a sufficient rate of overcoming resource-scarcities by technological and organisational improvements. But he simply suggests that "technological innovations accompany the process of investment like a shadow" (p. 133).

Readers of this book must use their own judgment and information for discovering those sections of the analysis which are legitimately controversial. They will find these sections challenging and thought-provoking. But uncritical reading of the book can be very misleading.

WILLIAM FELLNER

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Big Business in a Competitive System. By A. D. H. KAPLAN. (Washington: The Brookings Institution, 1954. Pp. xii + 269. \$4.00.)

THIS book is written with the object of forming judgments and correcting current attitudes. It has thus a very definite bias. This bias lies both in the general plan and the emotive use of words.

Dr. Kaplan says that the "chief aim of the study is to explore those aspects of big business participation in American industry which may reveal whether or not it is compatible with the objectives of competitive private enterprise" (p. 1). This is very near to trying to say whether big business is a good thing or not, and this question is one which can hardly be answered in general terms, as big business is not homogeneous, and its effects vary from situation to situation. Dr. Kaplan, however, deals in general terms and, in addition, he excludes many of the problems by looking at the very long period only. This leads him to give great weight to change, innovation and new products, and to emphasise the impermanence of given monopoly situations. He argues that big firms are peculiarly capable of innovation and that the competitive drives are mainly towards further progress. He claims that this progress causes secular price reductions which are relatively large compared with the downward pressure on prices of atomistic competition. Further, the development of new products is so important that freedom of entry into "industries" is not a major question. Thus we have a picture of large firms giving rise to great progress and making the normal short-period considerations about the role of competition comparatively unimportant. The picture drawn by Dr. Kaplan may be true of many firms and industries, but very much more study of individual big business is required before it can be accepted as the general rule.

Statistical analysis is used by the author to make two points. Firstly, that big business occupies an important but minor fraction of the whole economy: its proportion of total assets is growing only gradually and its proportion of total income is probably declining slightly. Dr. Kaplan maintains that this shows that there is still plenty of scope for individual enterprises. Secondly, the ranking by size of total assets of the 100 largest industrial corporations at various dates shows that there have been considerable changes. Dr. Kaplan calls this "mobility of business leadership," suggests that this shows that competitive forces are at work, and concludes that "positions of business leadership as reflected by a place among the 100 largest appear from the record to have been on the whole unsure and maintained with great effort" (p. 141). He also gives the impression that changes in ranking are a measure of success in the competitive struggle, but surely they are equally a measure of changes in the relative importance of different industries. In any case, changes in the ranking of firms in general can give little indication of whether there is competition in any particular industry.

Dr. Kaplan's general conclusion follows easily: "Big business has not merely been kept effectively subject to a competitive system; on the whole it has also made an essential contribution to its scope, vitality and effectiveness" (p. 248). The value of the book does not lie in this conclusion, which was only to be expected, but in the emphasis laid by Dr. Kaplan on dynamic considerations when judging the performance of firms. It is unfortunate, nevertheless, that he does not discuss more fully his justification for exclusive emphasis on these considerations. However much one may recognise the importance of the very long period, it must be remembered that big businesses may have considerable disadvantages in particular industries at particular times: all industries are not equally dynamic and all innovation do not necessarily come from big business. As it stands, the book gives little help to those who are trying to assess the merits of particular cases.

There is little that is completely new in this book. It is, for the most part, an extension of the ideas of Schumpeter, but many interesting points are made by way of illustration. Reading the book involves a continuous effort to avoid the tyranny of emotive words. It is doubtful whether the effort is well rewarded.

Cambridge.

P. LESLEY COOK

The Growth of Integrated Oil Companies. By J. G. McLEAN and R. W. HAIGH (Boston, Mass.: Harvard Graduate School of Business Administration, 1954. Pp. vii + 728. \$12.)

THIS big and expensive book illustrates the advantages that American investigators of business have over British economists. The authors give detailed figures describing 106 companies producing and selling almost all the oil, and owning 94.7% of the refining capacity in America; no significant series of data appear to have been omitted, and the figures, whether they be of domestic sales, crude oil output, refinery runs or of foreign production are

imports, cover, in most cases, almost all the history of the companies. There is, in addition, for seven major companies, an impressive body of figures of cost breakdowns, sales, product varieties, oil reserves and prices, which are reproduced in numerous tables, charts, diagrams and maps. All this material is attributed specifically to companies, who have not only supplied the statistics but have co-operated in giving descriptive information with which movements in the statistical series can be elucidated.

Unfortunately this double-columned factual plethora drowns the original thesis, which is that vertical integration is usually due to the ebb and flow of profit opportunities. A description of the present structure of the industry leads into an analysis of the growth of integrated companies, laying emphasis among many factors on the pressure of crude oil output before conservation laws were enacted, and the influence of Standard Oil, whose horizontal refining combination was a response to the chronic instability of the industry. This is followed by an exhaustive analysis of the ebb and flow of profit opportunities at various levels of the industry. "We conclude . . . that vertical integration in the oil industry has been significant as a means of providing protection from profit fluctuations in the separate phases of the business and not as a means of precipitating those fluctuations and thereby gaining competitive advantages over non-integrated firms" (p. 180).

In the last chapter of this section, on the "fluidity of integration patterns," the authors try to discover the causes of structural adjustments in the patterns of company organisation; the detail is perhaps more illuminating than the rather obvious conclusions. ("A company's integration pattern at any given moment may thus be regarded as the net solution of the whole matrix of business problems which the management has faced prior to that date.")

The economist who is prepared to use the book as a quarry can learn much about the organisation and growth of American oil companies, but one hopes that the authors will produce a shorter work, stating clearly the context in which the industry operates, which will require less effort by the reader. The present work is an unsatisfactory compromise between a reference book and a monograph.

JOHN VAIZEY

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The World Wheat Economy, 1885-1939. By W. MALENBAUM. (Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1954. Pp. vii + 262. 48s.)

THE origin of this book was a Ph.D. dissertation submitted at Harvard University. This no doubt accounts for the form in which the subject is here presented, notwithstanding a certain amount of new material. It is not a history of the most important half-century in the evolution of the world's wheat economy, though certain episodes are given a brief historical summary. Nor is it addressed to the general reader. It is primarily a book for the university student, and for the student of economics rather than of agriculture.

By taking a fairly long period of time before the war Dr. Malenbaum's objective is to isolate, in the light of the statistical and other material available, the fundamental factors which explain the pre-war changes and which contributed, in his view, to a persistent tendency towards over-production, a growing disparity between supply and demand.

In a brief summary of the pre-war wheat position, particularly in the 1920s and 1930s (for little space is given to the rise in prices after 1896 and its economic causes), the author is mainly concerned with the growth of wheat surpluses, their effect on the incomes of American farmers and those of other exporting countries, the impact of surpluses on world prices and the measures to assist farmers adopted both by exporting and importing countries. In spite of the years of depression, poverty and hunger during the thirties he takes the view (commonly held) that the large carry-overs of these years were due to an expansion of production, not to a decline in consumption; indeed, wheat utilisation for all purposes increased both in total and *per caput*.

With this at the root of the problem Dr. Malenbaum examines statistically the separate factors determining world supply and world demand. Thus, on the supply side the basic relationship is the close correlation between the growth of production and the expansion of acreage in the world as a whole over the greater part of this period. A statistical analysis follows, of the acreage responses to certain influences, including changes in prices (and in "deflated" prices), in farmers' incomes, production costs, in political activity by governments. Other conditions also considered in relation to acreage trends in the major exporting countries are the growth of population, immigration and the extension of railway mileage. The author takes the view that the increase of wheat production in these new territories was an inherent part of their general economic growth rather than a response to world demand, hence a contributory cause of the persistent "imbalance" between world supply and demand.

On the demand side, a similar section treats of "Demand responses." Wheat is used for human food (the largest element in total utilisation), for animal feed, for seed and for industrial purposes. The elasticity of demand for human food, and for other uses, is examined statistically, based mainly on data compiled in the United States, with a result that a greater elasticity is shown for "other uses," notably animal feeding-stuff in the United States, than for human food. Again, taking the whole period covered by the study, a comparison of the acreage "necessary" to produce the wheat required for human consumption and seed, with the actual acreage sown, indicates that the amount available for non-food uses has tended to increase more rapidly than that required for human consumption "at least after the turn of the century." It is suggested that this production in excess of the demand for human food has been the principal reason for "the continuous decline in the real 'value' of wheat over the fifty-odd year period considered in this study."

Dr. Malenbaum's careful treatment of the whole subject with which this book deals cannot fail to have its statistical and economic interest. Nevertheless, it is difficult not to be left in doubt as to what conclusive inferences or

what guide for the future can be drawn from the statistical analysis, particularly of the various economic responses, when applied over so long a period of the past (perhaps the most exceptional in agricultural history); a period, moreover, during which the technique of wheat production was itself undergoing rapid change; in the old world, for example, the development of mixed farming on limited land, with wheat as one of the products of a system of crop rotation; in the new world a rapid extension of specialised farming, with wheat (in suitable areas) as its primary or often its only product.

The book ends with a useful summary of the various pre-war attempts at international action and a short account of the failure (meaning the failure to maintain or raise the price of wheat) of the international wheat agreement of 1933; it includes a reference to the problem of United States action in the international field designed both to help under-developed countries and assist in the disposal of excessive surpluses.

Dr. Malenbaum has certainly something to add to the already voluminous literature of wheat, yet it seems a pity that having served, so to speak, its immediate academic purpose, a work of this kind, bearing this title, could not have been expanded so as to cover the next fifteen years (years of rapid change) and to have included in particular a section on international trade in wheat, including the causes which lay behind the shifts in production and changes in the destination of exports. It is the experience of recent years rather than of the more distant past that will usually be looked to for a solution of the problems of the world wheat economy which still remained unsolved.

R. R. ENFIELD

London.

An Introduction to Trade Unionism. By G. D. H. COLE. (London: Allen & Unwin, 1953. Pp. 324. 18s.)

Power in Trade Unions: A Study of Their Organisation in Great Britain. By V. L. ALLEN. (London: Longmans, 1954. Pp. 323. 25s.)

PROFESSOR G. D. H. COLE's new text-book of trades unionism is sufficiently recommended by the repute of its author. Any mainly contemporary description of a developing movement must lose some of its relevance in time. The British unions, however, may now be entering—after the rapid recent growth of their membership and influence—a period of relative stability. Professor Cole's account is thus also well timed.

What has most drawn recent attention to the unions is a suspicion that their consolidation has entailed an internal malaise. This is evidenced, on the one hand by a reported apathy of workers towards their unions' representative processes, and on the other, by the frequency of strikes conducted without the support—in major cases, against the advice—of official union leaders.

This problem gives Mr. Allen's book its immediate interest. The substance of his study is contained in the three chapters (and several appendices)

of its second part, which analyses the machinery of central government in 127 organisations commanding the great majority of union members. The analysis is largely formal, elaborated in terms of the rules constituting the unions' policy-making assemblies and defining the appointment and powers of their executive committees and principal officials. But in one chapter the merely constitutional status of General Secretaries is illuminated by both biographical citation and statistical history, and this, in particular, is excellently done.

There are no surprises in the factual part of Mr. Allen's study. Its main effect is to detail and tabulate what is broadly known rather than extend it. Such a statement is nevertheless an essential preliminary to the wider discussion. Mr. Allen's, though admirable, is not complete: the powers of local and sectional organs and officials, of branch committees and shop stewards, are barely touched on. But in this area one gets beyond the union rule-book into a less manageable field of material: if Mr. Allen had left matters there, he would have done well enough.

He has, however, minimised the incompleteness of his account: "... the control of funds and the negotiation of agreements lie mainly in the hands of central officials—they possess organisational control." This statement is hardly accurate. In important unions—like those of the miners and cotton operatives—local bodies have a substantial control of finance; while wages in many industries (like engineering and the docks) depend as much upon the activity of shop stewards and local officers as on central agreements.

This partiality, however, is essential to the *first* part of Mr. Allen's book. Here, he is apparently concerned to answer those who discern a tendency to bureaucratic rule in British unions. And he wishes to do so by accepting that analysis—which his own material neither confirms nor denies—but rejecting its critical inference. His argument is performed at length: its gist, however, is that trade unions are not to be tested by the standards of political democracy. They are voluntary societies, which workers join to secure material improvements. In no such societies do the generality of members take an active part. They are interested only in results, and results—in unions as in other large organisations—are best secured by a bureaucracy. If its efficiency does not satisfy the society's members, they leave. The true test of the unions' effectiveness is thus their membership.

The argument is ingenious but unconvincing: union memberships are clearly more affected by other factors—like the level of employment—than the officials' competency, and provide small index to the latter. But it also compels Mr. Allen to represent compulsory trade unionism as both abnormal, and involving a bureaucratic despotism over the worker. These propositions seem quite defective.

Trade unions tend—as Mr. Allen recognises—to make membership compulsory whenever they are strong enough to do so. Professor Cole explicitly rejects their description as "voluntary societies." The Webbs considered compulsion to be both coeval with trade unionism and quite consistent with the worker's liberty; their discussion still provides a sufficing comment on

Mr. Allen's theoretical argument. To that, two points of common observation. Among manual workers, compulsory union membership is widely enforced, not by decree of central union bureaucracies but by the rank-and-file's refusal to work with non-union labour. While their dissatisfaction with official union policies is usually expressed, not by a lapsing from union membership but through "unofficial" movements or (in the extreme case) the formation of "breakaway" unions from the dissidents. These twin principles are remarkably illustrated by an incident of 1952's great dock strike, when a section of London dock-workers, having participated in the stoppage despite their union, renewed their strike to compel certain non-members to join it.

Compulsory union membership is symptomatic only of the collectivist nature of union democracy, and is irrelevant to the latter's present problem. It is relevant that some unions—like certain printers' societies—display (in a large assumption of administrative work by voluntary officers, the important role of lay assemblies and high voting figures) an active participation by their members which, if by no means overwhelming, compares well with political forms. While in other unions, a low degree of membership participation is paralleled by powerful "unofficial" movements.

For this disparity comparative study might suggest reasons other than the differing character of union memberships. Constitutional differences will play a part, though Mr. Allen suggests little of what that may be. The more important factors, however, are likely to be of another kind. Professor Cole, for instance, has (in an appendix—he does not otherwise discuss the problem) a revealing comparison of the itemised working expenditure of two great unions. Such things as the size of union branches, and whether union organisation is based upon the work-place or the locality, might also prove significant. Of especial importance is likely to be the extent to which a union's members form a coherent and conscious sectional interest. However successful the great general and amalgamated unions in extending collective organisation, they seem to encounter trouble as soon as distinct groups of their memberships become stable and aware both of their sectional identity and a minority standing.

Mr. Allen is right, however, to emphasise that collective organisation is not an object in itself. What is also relevant is the extent to which it conveys to workers a sense of influencing everyday industrial management. Perhaps most interesting in Professor Cole's book is its concluding reformulation of his own views on "workers' control." Faced with the practical issue of their relation to nationalised industry, British trade unions mostly abandoned the claim to direct representation in management. It involved assuming the responsibility of the employer, and this they could not reconcile to their freedom to protect the employees. To that dilemma, Professor Cole now suggests two solutions. First, a system of representation formally independent of the unions, through which workers might assume a collective responsibility for the conduct of particular establishments and a share in the appointment of higher managers. It may well be a failure of nationalisation

that it has not experimented in novel forms of management. But it is difficult to regard this proposal as currently more than a wistful gesture to the principles of Gild Socialism.

More cogent—and of general application—is a second suggestion: that unions extend the scope of collective bargaining—now conventionally (and arbitrarily) limited to wages and certain related matters—so as to modify those “managerial functions” the exercise of which workers may at present influence only to the small extent that “joint consultation” is effective. If the fixing of wages and conditions shifts still more to remote central boards and tribunals, the unions will have the more need to demonstrate their effectiveness in the work-place. But Professor Cole does not ask how far centralised bargains, with the elaboration, defence and ritualistic adjustment of which union leaders are so pre-occupied, now serve either the best interest of workers or the internal health of their organisations.

University of Manchester.

H. A. TURNER

Nationalisation in Practice: The British Coal Industry. By W. W. HAYNES. (London: Bailey Bros. & Swinfen, 1953. Pp. xviii + 413. 32s.)

THE body of Professor Haynes' doctorate thesis is a study of industrial relations and administration in the nationalised coal industry. To this he has added several chapters of introductory material, mainly historical, and, at the end, two chapters on the economics of the industry.

These additions are probably the least satisfactory parts of the book. The introductory chapters are designed mainly for American readers, and they may well benefit from Professor Haynes' calm and sensible exposition. British readers, however, will find some of what he writes too simple-minded (for instance, a two-page outline of British socialist philosophy), and be annoyed by errors (for instance, a muddling of the I.L.P. and the Labour Party on p. 62). The economic chapters present a useful, but not very penetrating survey. Most of the criticisms of *Plan for Coal* are now well known, but perhaps others have not placed sufficient emphasis on the argument that it is unrealistic to expect wages to be tied to productivity in an industry facing deteriorating physical conditions. On the other hand, Professor Haynes' enthusiasm for price regulation by tribunals is unlikely to win much support. The general reader still lacks a good outline of the nationalised coal industry, and, in particular, the economics of the industry. The student may glean a good deal of information from this book, but for historical background and serious economic analysis he should be advised to turn elsewhere.

Although the chapters on industrial relations put together a considerable amount of material and contain an eminently sensible discussion of joint consultation, they are rather disappointing. The description of the organisation of the National Union of Mineworkers and the account of union-board relationships in the areas and collieries are particularly weak, and nowhere does Professor Haynes penetrate very deep.

The book is redeemed and abundantly redeemed by its chapters on administration. The Board's official line of command runs from Coal Board, through Division and Area, to the colliery. This neglects the interposition of Sub-Area Managers or Agents, or both, between Area Manager and Colliery Manager. If the task of the Colliery Manager is to be understood, this and other aspects of organisation within the Area cannot be ignored. Professor Haynes has little of value to add in his description of central organisation. (He even omits the power to appoint senior officers and divisional boards from his list of National Coal Board functions.) But this is far outweighed by the fullness of his account of Area Organisation and his analysis of its effects on the Colliery Manager. Everyone knows that the position of the Colliery Manager has changed under nationalisation, but no one has before described so clearly just what the changes have been, and how Colliery Managers have reacted to them.

On the more hackneyed topic of decentralisation Professor Haynes gives form to his argument and strength to his conclusions by taking the functions of management one by one and attempting to determine how far decentralisation can be applied to each of them. As a result of this, and of his study of Area organisation, he emerges as a moderate decentraliser, anxious to heighten the prestige of Colliery Managers so that they may be “kingpins” of the industry, and highly critical of “lack of clarity” in organisation.

In his concluding chapter Professor Haynes tries to make general judgments about the results of nationalisation, but again it is his remarks on organisation which command attention. If he had avoided the temptation to cover the whole field of coal nationalisation, and concentrated on administrative matters, this could have been a first-rate book. Even as it is, its virtues outweigh its faults.

H. A. CLEGG

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Wirtschaft ohne Wunder. Volkswirtschaftlichen Studien. Edited by A. HUNOLD. (Zurich: Eugen Rentsch, 1953. Pp. 359. DM. 11.50.)

A NUMBER of economists, mainly from the Continent of Europe, have joined hands to show that there is nothing miraculous in a prosperity achieved in defiance of planning and monetary manipulation. The first section of their symposium, “Foundations,” contains an article by President Einaudi on saving and investment, an essay by Professor Hayek on the rise and decline of government by law, a study by Professor Roepke of the old and new economics and a thesis by Professor Ruestow on social market economy *versus* Communism and Bolshevism.

The second part, “Policy,” deals with the post-war economic policies of Belgium (Professor Baudhuin), Germany (Professor Erhard), the United States (Dr. Harry D. Gideonse), Austria (Dr. Franz Nemschak); and winds up with “a natural explanation of a miracle” by Jacques Rueff.

A third part deals with specific problems. Dr. Paolo Baffi analyses and compares the recent monetary policies of Germany and Italy; Professor F. W. Meyer, the foreign trade of Western Germany; Dr. Carlo Moetteli, trade unions and economic order; Dr. Rudolf Mueller, from collapse to background and beginnings of monetary reform; Dr. Volkmar Muthesius, faults in Western Germany's currency policy; and Professor Erich Welter deals with education in economics.

The arrangement of the volume is not wholly satisfactory. Professor Hayek's brilliant paper goes beyond its range, and Dr. Gideonse's finding that the American competitive system has digested a good deal of intervention illustrates the earlier "American miracle" better than its so-called German successor. Seven out of the fifteen papers deal with Germany, whose recovery after six years of war and three years of deliberate industrial destruction was indeed astonishing. Unfortunately there is no study of Switzerland, whose natural resources are limited and whose national market is small—those who advocate a larger common market usually mean a protected market—nor of the Netherlands, whose recovery after their heavy losses in Europe and overseas is almost as instructive as that of Germany.

All writers give well-deserved credit to Professor Erhard, the German Federal Minister of Economics. The warmest tribute to him comes from M. Rueff of France in his concise analysis of the so-called miracle, and of the conditions which made it possible. Fifteen years of planned economy had brought Germany near starvation. Bountiful supplies of cheap money showed her that this cheap money was cheat money. Having gone through near famine, she was not subject to that fear of plenty which vitiated full-employment policies elsewhere. She had learnt that inflation perpetuates scarcity, and that scarcity perpetuates planning. Her currency reform was carried through by the Occupation Authorities, advised by disinterested economists, not by a democratic parliament, where it would have been obstructed by the beneficiaries of inflation. This ruthless sweeping away of the entire inflation structure gave Dr. Erhard the opportunity which he courageously exploited. He could ignore entrepreneurs, who wanted to borrow cheap money and pay back their debts in even cheaper money, and trade unions, who wanted to maintain standardised wages and prevent unemployment. Famine in Germany was a better teacher of sound economics than mere austerity in Britain. No doubt Germany could not have succeeded without United States' help, but this help was not more ample than that given to other countries. The editor and his collaborators can justly claim that the policies which they advocate have been successful under most adverse conditions. The argument, that other patients might be unwilling to undergo similar treatment before they are in extremis, does not destroy their value. The absence of an index in a symposium is particularly inconvenient.

London,

M. J. BONN

Science and Civilisation in China. Vol. I. Introductory Orientations. By J. NEEDHAM. (London: Cambridge University Press, 1954. Pp. 318. 52s. 6d.)

THE history of Chinese science and technology may seem an esoteric subject, even to the economic historian. But quite apart from its general interest it has at least two important and by no means peripheral points of contact for him. First, the Chinese contribution to technology and specifically to Western techniques was much greater than has been widely supposed. Second, the student of the genesis and development of modern Western economic institutions is confronted with the challenging question why it was that industrial capitalism did not first break through in a country which was apparently technically the most advanced in the world up to the end of the Middle Ages.

The first volume of Dr. Needham's monumental work is largely in the nature of an introduction providing the minimum indispensable historical and cultural background and an overall survey. Readers will find it most informative on the Chinese contribution, which was primarily in the field of technology as distinct from systematised science. It includes not only the basic inventions of paper and printing (the earliest surviving record, going as far back as A.D. 594, is a printed "Beware of the dog" notice!), the compass and gunpowder, but also raw materials, tools and processes in textiles, pottery and transportation, among others. Marco Polo noted the use of coal and *paper currency* in thirteenth-century China. In addition, there are a number of Chinese discoveries, such as in the manufacture of cast-iron and in the construction of bridges, which the West may have rediscovered for itself only many centuries later; a definite if curious instance of this genus is the employment of the rectangular grid for artillery and transpolar flying maps. Finally, there are some cases, such as that of porcelain (the story of d'Entrecastelet's theft of china clay from the Imperial kilns has already been told in the *Economic History Review*), where Chinese craftsmanship has never been equalled. In contradistinction, the Jesuit missionaries of the seventeenth century could bring China only four fundamental inventions she did not already have: the Archimedean screw, the double force-pump, the crank-shaft and clockwork. The common view expressed by Toynbee that the mechanical penchant is—or was—a Western monopoly is thus revealed as another outmoded generalisation.

The process of transmission was extraordinarily variegated, involving as it did Roman legionaries and Chinese soldiers, jugglers and acrobats, alchemists and engineers, missionaries—Zoroastrian, Manichaeic and Buddhist as well as Christian and, among the latter, Arian and monophysite as well as Athanasian—and, of course, artisans, merchants and travellers of diverse ethnic origin and creed. In many cases the actual mechanics and details of transmission are not fully known, but there is sufficient evidence to establish a strong presumption of indebtedness to China. In this connection, the author has an illuminating discussion of the diffusion controversy in which

he takes a balanced position as between the more extreme pro- and anti-diffusionists.

As for our second point of contact, as is well known, Max Weber's interest in Chinese history arose from his appreciation of precisely this problem. If his work must be deemed a failure, whether as an interpretation of the place of Confucianism and Taoism in Chinese social and economic history or as an explanation of why capitalism did not emerge in China, it was at least a failure on a grand scale, which despite its many errors of detail and interpretation remains an invaluable preliminary survey, still stimulating because it asked the right questions. Perhaps unfortunately, it will not be until his seventh and last volume that Dr. Needham will review the inter-connections between science and technology and social milieu, as the intervening volumes are to deal with the history of Chinese scientific thought and with specific branches of Chinese science, both "pure" and applied. Those concerning engineering, agricultural, industrial and military techniques should naturally arouse our curiosity, but it is the finale which we shall most eagerly await.

The author possesses the inestimable advantages both of encyclopædic equipment as a scientist, historian of science and Sinologist and of first-hand knowledge and perceptive grasp of Chinese society and, to use Lattimore's felicitous phrase, of "the Chinese style of life." This union must surely be unique. Others have enriched Far Eastern studies by the accumulation of monographs on circumscribed subjects or, as in the case of Weber and Veblen in his all too brief and little known essay on Japan, by the brilliance of their individual and perhaps unco-ordinated *aperçus* into social structure. Dr. Needham, ably assisted by Wang Ling, combines in this work not only the laborious fact-finding of the monograph and the grand sweep of the broad canvas but also the vision of an alien culture and civilisation from within, without which the latter remains incomprehensibly remote.

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S. ADLER

The Economic Development of Van Diemen's Land 1820-1850. By R. M. HARTWELL. (Melbourne: Melbourne University Press, (London: Cambridge University Press), 1954. Pp. xi + 273. 35s.)

THE serious study of Australia's economic history is still only in its infancy, but recent work in this field has been of high quality, and Professor Hartwell's story of the early history of Tasmania is no exception.

Professor Hartwell tackles his subject systematically. After an introductory Part One, he proceeds in Part Two to a history of the supply of resources, grouped under the headings of land, labour and (external) capital. In Part Three he surveys the development of the various extractive and manufacturing industries, and of trade and finance. Finally, in Part Four, he gives a narrative of the course of Tasmanian trade fluctuations,

well supported by statistical evidence, and set against the background of a simple but effective theoretical model of the trade cycle in a dependent economy.

Though Professor Hartwell concentrates on the history of Tasmania before 1850, he has a most eventful story to tell. Much more of Tasmania's development occurred pre-1850 than in the case of any of the other Australian states. Even to-day, as Professor Hartwell observes, Hobart has the appearance of a Georgian town. Much of the best land in Tasmania is readily accessible, and was (due to circumstances explained by Professor Hartwell) rapidly transferred to private ownership. Labour, thanks mainly to transportation, was supplied about as rapidly as it could be absorbed. Little capital was needed to open up the country's natural resources, apart from mercantile capital, which (thanks to the rapid growth of wool exports) could be drawn from London. Of the portion of the island suitable for white occupation, "by 1850 the only important areas not developed at all were the northern coastal plain and the west coast mining district."

Professor Hartwell is to be congratulated on this most stimulating and readable book.

BRIAN TEW

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The Shrewsbury Drapers and the Welsh Wool Trade in the XVI and XVII Centuries.

By T. C. MENDENHALL. (London: Oxford University Press, 1953. Pp. 248. 21s.)

THIS study of the Welsh cloth trade makes a welcome contribution to our knowledge: it is valuable not only as a regional study but also as an important new piece to fit into the pattern of the English cloth industry as a whole. England probably from an early period, and certainly by the sixteenth century, produced a great many different kinds of cloth; cloths differing in weight, texture, colour, and of course in quality and price. In the sixteenth and seventeenth centuries there were three major groups: first, the fine-quality broadcloths, made in the West of England and exported usually in the white to be finished abroad, took their place in the most sophisticated markets of Europe; secondly, the "new draperies," the bays and says and serges made either wholly or in part from yarn spun from combed not carded wool, largely replacing the medieval worsteds of Norfolk and the kersies of Suffolk and Devonshire, found an increasing market, especially in Southern Europe; and thirdly, the coarser and heavier woollens of Wales and the North satisfied yet other customers and supplied an expanding market alongside the new draperies. The first group has its illustrative study in G. D. Ramsey, *The Wiltshire Woollen Industry in the Sixteenth and Seventeenth Centuries*; the serge industry of Devonshire discussed by W. G. Hoskins, *Industry, Trade and People of Exeter, 1688-1800* illustrates the second group; and now this book joins H. Heaton, *Yorkshire. Woollen and Worsted Industries* to illustrate the third. Wales has most in common with Yorkshire; in both areas industry grew to

supplement incomes derived from a land where farming could not be intensive and was carried on in tiny farms scattered among many remote valleys; it lay far from sources of raw material other than wool and far from markets. But the cloth industry of Wales is sufficiently different from that of Yorkshire to make a study of it complementary and not merely supplementary.

Mr. Mendenhall examines the industry and trade of this remote borderland which continued to produce coarse and heavy cloths for the overseas market when other areas, even Yorkshire, turned to finer broadcloths and new draperies. He discusses all the stages: the production of the cloth, the disposal of the cloth in the local markets, the finishing industries of the border towns, the sale of the cloth at Blackwell Hall in London and finally its export abroad. He shows that the demands of the export market determined the prosperity of the manufacturers, even in this remote region, and afforded the middlemen the opportunity to dominate the trade.

Corn production on the valley farms, cattle farming on the hill farms early took first place in Welsh economy, but sheep were present too on both hill and valley farms, and the social and political changes of the fourteenth century served to increase their relative importance. Welsh cloth was already marketed abroad in the medieval period; items of Welsh cloth appear in fourteenth- and fifteenth-century customs accounts of Bristol, Lynn and London. There is evidence, however, that more cloth was then made in South Wales than in North Wales, but by the sixteenth century the industry had certainly declined in the southern and grown in the northern counties. The increasing interest in mining, especially in coal-mining, in South Wales is given as the cause of the change. This may have been an important factor in the change, but it is unlikely to have been the sole factor. Changes in location have as a rule very complex causes. By the time of the Civil Wars a petition addressed to the king on behalf of "Your Majesties' six northern Counties" spoke of "many thousands of families in the mountainous parts of this country who sowing little or noe corn at all, trust merely to the sale of their cattle, wooll and Welch cottons for provision of bread."

The manufacture of a great variety of fabrics (friezes, cottons, flannels, linings and rugs are frequently mentioned) carried on in small, widely scattered units, each with little capital, favoured, if the cloths were to reach a profitable market, the growth of middlemen. From the manufacturing districts stretching deep into the Welsh highland the cloth was brought to be finished and sold in the border towns. Oswestry was a first stage; it was already an entrepôt in the time of Edward I; Chester and Shrewsbury early competed for control over the next stage, Shrewsbury was made a staple town in 1326 at the same time as Carmarthen and Cardiff. Chester in 1582 made a bid for the staple in Welsh cottons, stressing the advantage to the realm of granting the staple as a step to restoring and maintaining the prosperity of the city. Shrewsbury in a cogent protest emphasised her own advantages, her more southerly situation giving a wider hinterland in Wales and a shorter journey to London, enabling the town to provide the manufacturers with the three necessities of "oft return, ready payment and easy

furniture of victuals and such things as they need." The Shrewsbury Drapers are shown to exploit most successfully this situation. They were sufficiently wealthy to split off from the Mercers Guild in 1464, and sufficiently powerful to limit thereafter the activities of the Mercers to retail trade; they supported and largely controlled the finishing trades within the city; and they extended their influence to London, maintaining members in the capital. The Welsh clothiers struggled against their monopoly, the Shrewsbury shearmen kicked against their pricks, the London merchants strove to establish themselves in Wales; all failed. Yet the Shrewsbury Drapers never possessed an official monopoly; even such regulation of trade as existed was withdrawn in 1621 and the cloth trade declared free. But the Welsh clothiers, who had struggled so long to "free" the trade, now found that the "free" trade flowed yet more directly and exclusively to Shrewsbury, and thereafter the London merchants, troubled by the general depression, came no more to Wales. When trade was declared free the Shrewsbury Drapers gained *de facto* a monopoly.

The final market for the Welsh cloth was on the Continent, contemporary documents stress the importance of Rouen: "the great vent of such cottons is at Roane in ffrance, where they be bought by the merchants and spent by the poor." In the great depression which English cloth exports as a whole suffered in the 1620s, Welsh cottons almost alone seem to show no steady fall. As the French market became upset, the Spanish and Mediterranean market expanded. Once again this work demonstrates the complexity of local reactions, the dangers of generalisation and thus the value of these detailed studies.

Appendices contain a trade agreement between a Shrewsbury Draper and a London Merchant Taylor, some figures of the enrolment of apprentices and freemen, and the text of the Cloth Bill of 1621. There are no maps; a map of Wales and of the routes between Shrewsbury and London would have been an asset, and might have been expected in a book that states that "the manufacture of cloth in Wales takes its shape from the geography of the Principality."

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The Structure and Growth of the Italian Economy. Prepared by the Program Division of the Special Mission to Italy for Economic Co-operation of the UNITED STATES MUTUAL SECURITY AGENCY. (Rome: Mutual Security Agency, 1953. Pp. 165.)

THE title of this study gives an accurate but incomplete description of its subject-matter; a possible explanatory sub-title would have been "An application of input-output analysis to Italian economic problems." The two principal authors are Professors Hollis B. Chenery and Paul G. Clark, both of whom had previously been associated with Professor Leontief at the

Harvard Economic Research Project. The main interest and importance of the book derives from the fact that it makes use of the input-output approach in order to analyse some of the immediate issues of economic policy in Italy. As the authors remark in their Introduction:

"Up to now, most attention has been given to the development of the theoretical scheme and the compilation of the basic tables. The application of input-output analysis to practical problems of economic policy is only just beginning. It is as an illustration of such practical applications that our work in Italy may be of some general significance."

The book contains five main chapters. The first of these consists of an introduction to input-output analysis by Professor Chenery, which is a remarkably good piece of exposition—clear, thorough and concise. It includes some interesting remarks on the subject of "methods of solution," together with a useful illustrative example. After this Professor Clark describes the construction and properties of the input-output table which was drawn up for Italy for the year 1950. (The full technical details of the methods and sources employed are given in an Appendix written by Dr. Vera Cao-Pinna.) An unusual feature of the table is that it is rectangular rather than square: it contains more rows than columns. In the main part of the table (which records transactions in "intermediate products") there are fifty-six columns, of which fifty-three refer to the commodity-producing sectors of the economy and three to the service trades. The same fifty-six sectors are listed in the rows, but in most cases they are split up into sub-sectors, of which approximately 200 are distinguished. For most practical purposes, however, the authors have used consolidated forms of the main table, with a comparatively small number of sectors. Professor Clark makes use of the table to describe and illustrate some of the features of the Italian economy. He also describes an interesting experiment which was performed in order to test the reliability of the input coefficients yielded by the table. The results of this were encouraging.

The next chapter, by the same author, is perhaps the most interesting. It is entitled "The Structure of the Italian Economy in 1956," and assesses the implications of achieving the aim, which was agreed on by the O.E.E.C. countries, of a 25% increase in total output between 1951 and 1956. Specific assumptions are made about each of the main categories of final demand, and a solution is found, with the help of the input-output matrix, which gives the total requirements for the output of each individual industry. These estimated requirements are compared with estimates of productive capacity in 1953, in order to investigate the possibility that economic expansion on this scale might be threatened by shortages of capacity. The conclusion which emerges is that this is unlikely, and that only in the case of agriculture are capacity limitations a serious matter. The solution is also used to estimate the effects of expansion on import requirements, and therefore on the balance of payments; and a further calculation is made of the possible effect on industrial employment—with rather depressing results. In addition, a special study is made of possible substitution among fuels and its effects on

the rest of the economy. The method of procedure and the results obtained are set out very clearly. Two minor complaints may be made. First, the projections of final demand are made in a rather casual way, and a more detailed analysis would have been of interest. Second, no attempt is made, in the section which deals with productive capacity, to consider what rate of increase in capacity might be associated with a given rate of investment, and to relate this to the assumptions which were actually made about investment for the purpose of the inquiry. It is only fair to add, however, that there was little evidence which could have helped the authors to arrive at any conclusion about this.

The final two chapters are by Professor Chenery. In the first, he outlines a regional input-output model, in which the North and South of Italy are distinguished, and attempts to estimate the effect on each region of an investment programme carried out in the South. The second is concerned with the problem of structural unemployment, and the possibilities of economising in the use of capital in Italy. Estimates are made, for sixteen main industries, of average unit requirements of labour and capital; and the solution of the input-output matrix is used in order to include in these estimates each industry's indirect requirements, which arise from the purchases it makes or causes to be made from other industries. These chapters are interesting as exercises in method; but as the author points out, the available statistical evidence is too fragmentary for much confidence to be placed in the actual results.

Altogether, this is a most impressive piece of applied economic research, which deserves a wider circulation than it seems likely to get in its present form. It should be of interest to all economists who are concerned with the quantitative aspects of national economic problems.

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Realms of Value. A critique of human civilisation. By R. B. PERRY. (Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1954. Pp. vii + 497. 60s.)

PROFESSOR BARTON PERRY's *General Theory of Value* appeared twenty-eight years ago, and his new work is a sequel to it, developing his theory of value in its application to all main sectors of human knowledge. It is that rarest of present-day philosophical enterprises, an attempt "to achieve systematic unity in a field which would otherwise be divided among experts unaware of one another," a persistent effort to find a common set of human values applicable equally to science and ethics, to politics and economics, to law and education. In general approach Professor Perry may be called utilitarian, in the sense that his philosophy is one of interests. He contends that any thing has value when it is "the object of an interest," and "a thing is an object of interest when its being expected induces actions looking to its

realization or non-realization." Morality is man's endeavour to harmonise conflicting interests, and an object is good when it is the object of a positive interest (that is, when its being expected induces actions looking to its realisation). It is morally good when "the interest which makes it good satisfies the requirement of harmony." We seek freedom when we seek to harmonise interests for the sake of the interests harmonised: and the purpose of morality is "to provide room" for all interests which can be harmonised.

Psychologically, he sees the individual as having a certain fund of available energy for which his different interests compete: as one interest grows stronger, it tends to weaken others. The strength of an interest is its precedence in this rivalry, and the development and play of interests is governed by a principle loosely like the conservation of energy. Democracy is defined as "a harmony of wills by which to achieve the maximum fulfilment of the interests of all concerned." The economy most consistent with democracy is defined as a "regulated capitalism." Regulation is necessary for the harmonisation of interests and the conscious promotion of moral ends and human values. As Professor Perry points out, the writings both of Lord Keynes and of Lord Beveridge are pervaded by an appeal to social and moral standards. Moral control of economic activity must be lodged either in the public authority or in the conscience and wills of those who participate in economic activity. An economy must either regulate itself, or submit to being regulated, and "the interference which it resents is the penalty of its moral irresponsibility." Although, being an American, he is somewhat reluctant to recognise or admit it, Professor Perry has produced a philosophy admirably suited to justify the growth of the welfare state.

Although few will agree with all the inferences he draws in applying this argument to aesthetics and culture, law and education, Professor Perry always writes with a refreshing common-sense and down-to-earth sense of reality. On the topical subject of the validity of seeking an historical pattern in the growth and decline of civilisations, he makes comments which strike devastatingly at the very base of the Spengler-Toynbee interpretations of history. There are no characteristics of a physical organism more obscure, as he points out, than those of growth and senescence. To transpose these ideas to the study of cultures and civilisations brings no clearer understanding of them, and gives merely a specious sense of scientific achievement. Indeed, it only obscures and confuses the study, because civilisations may be declining in some respects whilst they are advancing in others. In ancient Athens great philosophy flourished alongside small politics, and Southern California could combine medieval ideas with the latest technical gadgets. Despite its occasional crudities of ideas and style, here is a work of wide interest and stimulus, and a commendable, courageous attack on the fragmentation of modern thought.

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DAVID THOMSON

NOTES AND MEMORANDA

A NOTE ON PRODUCTIVITY AND THE LOCATION OF INDUSTRY

It has been argued in the *ECONOMIC JOURNAL* that productivity would be increased by abandoning the diversification of industry programme and concentrating industrial development in the Great Industrial Belt.¹ It is the purpose of this note to defend the Government's Development Area policy, and to argue that the factor endowment advantages of the Great Industrial Belt can be duplicated in the Development Areas. If this claim could be substantiated, then there would be no need for economists to advocate, on grounds of efficiency, that people should emigrate from Cumberland, the North-east Coast, South Wales, etc., into the centre of Britain, where, already, over 55% of the population live on under 20% of the total land area.

Does the Great Industrial Belt offer lower-cost sites to industrialists than the Development Areas? Mr. Hobson's conclusion that "If our aim is for greater efficiency it would appear that there should be a gradual movement of population and industry away from the Development Areas"² was based on the relative costs of coal and iron and steel in different locations and on external economies generated by the concentration of medium-sized plants.³ The evidence cited is not convincing. Not all industries are heavy users of coal, nor can generalisations be readily made from one sector of the metal industries. The economies of concentration found in the cotton industry, the engineering industry of the Midlands and some of the London industries⁴ could lead to external diseconomies of congestion if pushed too far. Outside the Great Industrial Belt economies of concentration are to be found too. In Glasgow, Belfast and Newcastle upon Tyne an efficient complex of the metal trades and marine engineering has developed; the economies of concentration enjoyed by the linen industry of Northern Ireland is another example.

J. Sykes has pointed out the following advantages of location outside the Great Industrial Belt:⁵

"New factories which need to be near native raw materials . . . (chiefly coal, other minerals and chemical materials) are prolific there . . . new factories in the many industries which find their cheapest location

¹ A. C. Hobson "The Great Industrial Belt," the *ECONOMIC JOURNAL*, Vol. LXI, No. 243 (September 1951), pp. 562-76, and "The Great Industrial Belt: A Rejoinder," the *ECONOMIC JOURNAL*, Vol. LXII, No. 246 (June 1952), pp. 436-40.

² *ECONOMIC JOURNAL*, Vol. LXI, No. 243 (September 1951), p. 575.

³ *Op. cit.*, pp. 572-4. ⁴ *Op. cit.*, pp. 569-70.

⁵ *ECONOMIC JOURNAL*, Vol. LXII No. 246 (June 1952), pp. 431-6.

in and near ports often will have to go outside the belt . . . a number of new factories will make products which tie them to local areas outside, as well as inside the belt . . . the belt contains only a moderate number of industries employing more than its share of the national total of insured population. This suggests that over a fairly wide range of industries locations outside the belt have costs as favourable as locations inside it . . . there is a wide range of lighter industry which can, and does, take locations in different parts of the country because costs at these do not vary materially."

In addition, Professor Sykes points to the wastes of duplicating social capital and to possible increased costs through increased congestion, if Development Area policy were to be abandoned. J. H. Dunning has underlined the advantages that have been derived from the diversification of industry policy through tapping surplus female labour and the stabilising influence of diversification on the economic unit of the family.¹

A reversal of diversification policy would create a serious situation for Britain's major ports. Unemployment tends to be concentrated at the ports² because of the highly specialised nature of their industrial structures, their heavy dependence on unskilled labour, their high susceptibility to seasonal movements in activity and their vulnerability when faced with adverse movements in the level of international trade. It is particularly important that ports be diversified through the introduction of industries not directly dependent upon the movement of goods through them.

What would be the effect of emigration on the population left in the Development Areas? The solution of mass emigration for Britain's present balance-of-payments problems has been rejected, because of the adverse effects it would have on the morale of the population left behind. The same effects would result from a policy which left only a skeleton labour force in the Development Areas. The basic industries and port services which could not be moved into the Great Industrial Belt could not be expected to produce efficiently when deprived of their neighbouring light industries and the social amenities which exist only when the local community is large and prosperous.

The economies to be derived from a large-scale concentration of industry can be overstressed; what is important is a scarcity of labour which provides an incentive to industrialists to increase efficiency through substituting capital for labour. It is the scarcity of labour in the Great Industrial Belt which explains the higher productivity which prevails there, not a concatenation of plants. In a large integrated region where full employment prevails, labour rendered redundant by productivity increases is absorbed quickly by neighbouring firms, frictional unemployment can be reduced to a minimum. Managements, in such an environment, can substitute machinery for labour without being hindered by soft-heartedness towards dis-

¹ *The Manchester School of Economic and Social Studies*, Vol. XXI, No. 3 (September 1953), pp. 271-7.

² If London is excluded, then 12% of Britain's total working population work in the major ports, but the ports also account for 29% of total unemployment in Great Britain.

placed labour. Where innovation necessitates the dismissal of labour, the transaction approximates closely to the inhumanity assumed by economic theory. Management can therefore go about the business of hiring and firing labour, safe in the knowledge that the consequence of its actions will not be prolonged unemployment.

In the Great Industrial Belt workmen displaced by technological developments can usually find opportunities for new employment within travelling distance of their homes; a sharp contrast exists in the Development Areas. In the latter, unless workers migrate to the Great Belt, increased unemployment is likely to be a consequence of labour-saving innovation. Barrow and Sheffield may be contrasted: the unemployed in Barrow are relatively immobile because of isolation, but Sheffield is within daily travelling distance of centres of employment such as Rotherham, Barnsley, Doncaster, Chesterfield, etc.

In Development Areas the management-labour relation is more intimate; both sides of industry form part of a relatively small community. When displaced labour cannot quickly be re-absorbed in a region, to render labour redundant requires a degree of ruthlessness on the part of management which leads to misunderstandings and bad labour relations. When under-employment prevails "there is frequently a reluctance on the part of management, except under pressure of intense competition affecting their own survival, to show any enthusiasm for technical improvements which might condemn some of their own subordinates to unemployment . . . and the feeling of being something less than a full citizen."¹

In the Development Areas the productivity drive is hampered by the fear of redundancy which exists in the minds of workmen. In the Great Industrial Belt, where full employment and a rising trend in effective demand exist, this fear is without foundation. In the absence of a national shortage of industrial equipment, or finance, the only obstacles to the introduction of labour-saving devices is a possible reluctance of labour to accept changes of any sort, or possible restrictive practices on the part of certain skills to protect themselves against a fall in their differential rates of pay. It is vital that new industry continues to be introduced into the Development Areas; new industry can create the conditions of labour scarcity essential for the attainment of higher productivity.

Mr. Hobson would appear to be correct in his contention that industries located in the Great Industrial Belt enjoy higher productivity than those located elsewhere. But this may not be due to unique economies which can only exist there. It may be due to the lower rates of unemployment which prevail, a condition which could be reproduced in the Development Areas, through a successful diversification of industry policy. Although gains in productivity are to be expected from locating more industry in the Great Industrial Belt, they are also to be expected from the contrary policy of directing industry to sites outside the belt!

¹ C. T. Brunner "Transport and Productivity," *Journal of the Institute of Transport*, November 1952, p. 4.

Mr. Hobson has drawn attention in a dramatic manner to real dangers inherent in the location-of-industry policy of the Government: that healthy industrial development in the Great Industrial Belt can be discouraged. But the principle should also be established that the policy is not inimical to attaining higher productivity in other important sectors of British industry.

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PARETO AND THE COMPENSATING PRINCIPLE—A NOTE

MR. BAILEY's article on the compensation principle¹ suggests a point concerning Pareto's part in the development of welfare theory which may be of some interest. As Mr. Bailey explains, "Pareto declined to discuss any movement by which one consumer was made better off at the expense of another,"² because he regarded the problem of the optimal distribution of the social product among persons as being beyond the scope of scientific investigation. He rejected the utilitarian approach.

"Ophelimity, or its index, for one individual, and ophelimity, or its index, for another individual, are heterogeneous quantities. They cannot be added together or compared: *No bridge*, as the English say. A sum of ophelimity enjoyed by different individuals does not exist: it is an expression which has no meaning."³

Within these strict methodological limits, Pareto's optimum position, where "no one could be made better off without making someone else worse off"⁴ provides as unequivocal an object for economic policy as may be found, and serves as a starting point for a discussion of compensation movements, which require rather broader assumptions about the distribution of the social product.

However, in one instance Pareto implicitly mitigated his attitude towards changes in distribution in order to extend the application of his "optimum" concept. In doing so, he made use of the idea of compensation. The passage is as follows:⁵

"From the economic point of view, every effective monopoly, every bad determination of the coefficients of production, every bad utilization of the economic goods at the disposal of society removes us from the position of maximum ophelimity. This fact may be expressed in various ways. For example, it may be said that the social organization might be changed in such a way that all members of society could enjoy greater welfare, or at least, that a section could enjoy greater welfare

¹ M. J. Bailey, "The Interpretation and Application of the Compensation Principle," *ECONOMIC JOURNAL*, Vol. LXIV (1954), pp. 39-52.

² P. 40.

³ V. Pareto, *Manuel d'Économie Politique* (Paris, Girard, 1909), p. 265.

⁴ Bailey, *loc. cit.*, p. 40.

⁵ Pareto, *op. cit.*, pp. 502-3.

without harming the rest. Or it might be said that those who suffer from the removal of the social organization from the maximum of ophelimity could, if they were allowed to reach the maximum position, pay a sum such that everyone would be better off with the new organization. It was thus that, in the past, the redemption of certain seigneurial rights was to the advantage of both serfs and landlords."

The idea is introduced in a parenthetical, almost underhand way, with the result that it has escaped attention for many years. Pareto offers no solution to the problems of interpretation which immediately arise, nor did he incorporate the idea into his general formulation. Whatever the reasons for this, they can hardly have been that he was unaware of the interest and importance of this novel criterion of economic policy.

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PROFESSOR WRIGHT ON METHODOLOGY—A REJOINDER

IN the September issue of the *ECONOMIC JOURNAL*¹ Professor McCord Wright takes me to task "for not distinguishing sufficiently in his paper² between a *possible* and a *true* story. I submit, however, that one of the most fundamental principles of scientific business-cycle analysis is that it is never enough merely to show ways in which a cyclical movement *could* occur—granted certain assumptions. The problem is to find out *empirically* and historically which one of these possible stories has *empirically* occurred and is most likely to *recur*" (pp. 622-33. *Italics in the original*, except the second "empirically"). If Professor Wright can "find out empirically" which of a series of alternative hypotheses "has empirically occurred" and thus select the "true story" and not merely a "possible story" he is a better man than the rest of us. No scientist (certainly not in the natural sciences) would claim to be able to *prove* the correctness of an hypothesis by empirical observation. The most that empirical observation can do is to disprove a theory, by showing that it fails to account for the observed phenomena, or else showing that it is based on demonstrably false assumptions. An hypothesis can be rejected also in favour of a simpler one, if the latter accounts for the observed phenomena equally well. But in neither case could it be claimed that the hypothesis finally chosen represents "the truth" or "reality."

The purpose of my cyclical model was to show that given elastic expectations—*i.e.*, a state of affairs where "the facts of the existing situation enter in a sense disproportionately into the formation of long term expectations"³—a cyclical movement is bound to follow, at any rate if there is net saving in the community when production is at its maximum level. I further intended to show that the same assumptions *may*, but not necessarily *will*, generate a trend. The model was also intended to throw light on the factors which

¹ Pp. 622-5. ² *ECONOMIC JOURNAL*, March 1954, pp. 53-71.

³ Keynes, *General Theory*, p. 148.

determine the length of the cycle and of its various phases. I hoped it was obvious that the examples chosen were of a purely expository character and that the necessary assumptions were stated in an extreme form in order to emphasise the essential features.

I can readily believe that it is always possible to introduce such additional assumptions into any particular "model" as would destroy the "*a priori* necessity" of its conclusions. But if these assumptions are merely chosen at random (without any regard to their relevance to actual situations) they do not prove anything for or against an hypothesis. Scientific hypotheses are invented in order to account for the phenomena actually observed, not in order to demonstrate that there "ain't no such animal." Of course I would agree with Professor Wright (if this is what he really intended to say) that such simple analytical models should merely be regarded as a starting point; and they should serve as a guide to, and not a substitute for, empirical research.¹

When Professor Wright says that the model suffers from a "logical weakness" in that business men's expectations would not be elastic (in the above sense) in a purely static or stationary world, he shows a complete misunderstanding of the purpose of an analytical tool. A "static" model of the trade cycle is not intended to "explain" non-existing phenomena of a purely imaginary world: the purpose of the static abstraction, here and elsewhere, is to enable us to isolate the relevant factors from the irrelevant ones *in the world as it exists*. If it can be shown that it is the existence of elastic expectations, and not economic growth as such, or technical innovation, etc., which is responsible for the generation of cyclical movements, it is perfectly legitimate from a methodological point of view to do this by assuming a particular state of expectations in a static framework—without being called upon to say whether that assumption is "realistic" in that particular imaginary situation. (Realism is only a meaningful attribute when applied to reality, not unreality.)²

The same kind of misunderstanding underlies also his criticism of my numerical examples. I would agree, of course, that under the strict assumptions of the numerical example, it is only as a result of a chance constellation of the various parameters that the cyclical movement takes the form of a "short cycle" of a simple pattern (meaning by a "short cycle" one where only a fraction, and not the whole, of the capital stock is renewed in each boom). But since, as I show later, more realistic assumptions concerning service-life remove this particular problem, I cannot see the inconsistency in

¹ My remark that it would not be worth while to introduce certain additional assumptions into the model "at the present state of knowledge" (which seems to have been misunderstood by Wright) referred to our knowledge of the facts of the real world, not to our knowledge of alternative trade-cycle models. It merely intended to say that it is not worth while to introduce "complications" at random until we know which particular "complications" are relevant.

² That I am myself very much aware of the connection between the elasticity of expectations and "dynamic" change is shown by the more extended treatment of the problem of expectations in my "Speculation and Economic Stability," *Review of Economic Studies*, Vol. VII (October 1939), particularly pp. 9-12.

using—deliberately—the *right* figures to produce the required results in an expository example.¹

Professor Wright's strictures thus fail to reveal (to me at any rate) the "internal inconsistency" or the "logical weakness" which he claims—which does not exclude, of course, the possibility that his own model of the trade cycle is far superior to mine, or anyone else's. I can assure him that it was not my intention "to omit all rival accounts" on purpose, or to claim "*exclusive* validity" ² for my theory; and if I had not taken account of his own work on the subject this possibly may only have been because I was not familiar with his books—a defect which I can see I must speedily remedy.

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DEPRECIATION, REPLACEMENT AND REGULAR GROWTH

THE economic profession certainly will be grateful to Professor Domar for having drawn attention (in "Depreciation, Replacement and Growth," *Economic Journal*, March 1953) to the consequences of the replacement lag, which were well known to practice but rather neglected in economic theory except in a famous passage in the *General Theory*. As Domar remarks himself, the subject need not be tied to models such as those presented in his paper. Indeed, in the revision of the Harrod-Domar model of a regularly progressive economy, in Sections III and IV of the paper, certain shortcomings of Domar's approach become apparent; I refer to the implicit assumption that, as in the older model, the regularly progressive economy, in which replacement lags behind depreciation, will necessarily follow an exponential time path. Formally, the problem is not attacked by Domar in its full generality; and from the economic angle a discussion of a most im-

¹ I thought I had met Professor Wright's strictures concerning the initial build-up of the capital stock in the footnote to p. 59 of my paper, where I pointed out that it is only when over-lapping between building and scrapping periods is completely avoided that there will be a "short cycle" which, in the example chosen, meant booms and slumps alternating at five-yearly intervals (though I failed to make explicit that over-lapping could *not* be avoided if the initial build-up of the stock was a continuous process). Otherwise the assumption of a rigidly fixed and uniform service-life will lead to "long cycles" which imply, in terms of the same example, alternating booms and slumps of fifteen years each, when the service-life is twenty-five years; fifteen years of boom followed by twenty years of slump, when the service-life is thirty years and so on. The reason for selecting "the short cycle" of the example was that the fluctuations in the actual world are undoubtedly short cycles (in this particular sense) since only a fraction of the outstanding stock of capital is renewed during each boom, whilst the inevitable over-lapping of scrapping and building periods (as a result of the "echo") which prevents cycles from being "short" is only an acute problem (as Wright agrees) under the artificial assumption of a fixed and uniform service-life. (I completely fail to follow Professor Wright's own arithmetic either in the case of my original example or in the case of his assumption of a thirty-year service-life—but since the correctness or otherwise of his arithmetic is without significance to the points at issue, I do not wish to pursue this further here.)

² Italics in the original.

portant determinant of the development is missing, viz., a discussion of the composition of the initial stock of capital, of what amounts to the same, of the behaviour of the variables during the initial period. The following supplementary remarks may be welcome.

We make the usual simplifying assumption, also made by Domar; constant average lifetime of the capital stock, constant average capital coefficient v , constant saving ratio s and automatic replacement of assets after m years. Then the time path of the system, which it must follow if full utilisation is to be maintained, can be determined from the following difference equation:

$$(1) P_{t+1} = P_t + (G_t - R_t)/v = P_t + (G_t - G_{t-m})/v \quad (t \geq m)$$

where P denoted gross output, G gross investment and R replacement. The gross output $P = Y + D$ (where D denotes depreciation) has to be chosen as starting point rather than the net output or income, because the capital coefficient v now represents the ratio of gross output to operating or gross capital (K_t) and not that of net output to net capital. The presentation in the form of a difference equation has the disadvantage that one must imagine the completion of current investment and replacement as concentrated at one point of time (here at the end of the period t), but nothing essential is lost by this simplification, and the mixed difference-differential equation which would arise from treating investment and replacement as continuous, could not be analysed as easily.

For the reader's sake we give the basic equations which follow from definitions and assumptions ($t \geq 0$):

- 2(a) $P_t = K_t/v = K_t/m + Y_t = Y_t m/(m - v)$
- 2(b) $D_t = Y_t v/(m - v)$
- 2(c) $I_t = Y_t s$, where $I_t = G_t - D_t$ denotes net investment.
- 2(d) $G_t = Y_t(s + v/(m - v))$

Applying the equations (2) to (1):

$$(3) Y_{t+1} = Y(1 + A) - AY_{t-m}, \text{ where } A = s/v + (1 - s)/m$$

Note the $v < m$ because of the productivity of round-about processes; hence $A > 1/m > 0$.

There is a trivial solution $Y_t = \text{constant}$ (which in the present case is zero), indicating a stationary economy. Dividing the characteristic equation of (3) by $(y - 1)$, we obtain:

$$(4) y^m - A(y^{m-1} + y^{m-2} + \dots + y + 1) = 0$$

According to Descartes' rule of signs, this equation has only one positive real root (y_1) equal to Domar's $(1 + r)$, which, if put into (3), yields Domar's (9). Furthermore, it is clear that unity cannot be a root (since $y = 1$ would yield $1/m = A > 1/m$); and since there are combinations of the three coefficients which yield $y > 1$, it is impossible for reasons of continuity that there are combinations such as that $0 < y < 1$. But there are other roots

besides y_1 which Domar did not consider. We may disregard the negative real root, since it arises only from our discontinuity assumption concerning the completion of investment and replacement. But we cannot disregard the complex roots which indicate the possibility of a cyclical path, e.g., for $m = 3$, $s = 0.1$, $v = 2$ we have approximately $y_1 = 1.025$, $y_2 = -0.337 + i\sqrt{0.227}$, $y_3 = -0.337 - i\sqrt{0.227}$. In the complete solution,

$$Y_t = z_1(y_1)^t + \dots + z_m(y_m)^t$$

(where the z 's are constants depending on the initial conditions) $z_2 \dots z_m$ will vanish only if

$$(5) Y_j/Y_{j-1} = y(j = 1 \dots m - 1) \text{ and correspondingly for } P_j \text{ and } G_j.$$

If one of the z_i ($i = 2 \dots m$) is different from zero, cyclical movements may be superimposed on the exponential path $(z_1(y_1)^t)$ —provided, of course, $z_1 = 0$.

This general case will be understood more easily if it is realised that, by fixing the initial conditions $Y_0 \dots Y_{m-1}$, the quantities $K_0 \dots K_{m-1}$ and $R_0 \dots R_{m-1}$ are also fixed, and vice versa. For given Y_t ($t \geq 0$) the equations (2) establish the corresponding quantities P_t , G_t , etc., hence also K_t ; since $K_t - K_{t-1} = G_{t-1} - R_{t-1}$, the R 's are also determined. On the other hand, the R 's clearly depend, for $m > t \geq 0$, on the age composition of K_0 . Hence this age composition determines the initial conditions $Y_0 \dots Y_{m-1}$; and there will be one and only one appropriate age composition of K_0 that satisfies (5). But if (5) is not satisfied, the economy will not grow at the exponential rate Y_1 as apparently concluded by Domar. The reader may convince himself of this fact: by putting $m = 3$, $s = 0.1$, $v = 2$, $R_0 = R_1 = 0$, $R_2 = K_0 = 600$, he will obtain $Y_4 < Y_3$, $Y_5 > Y_4$, $Y_6 > Y_5$, $Y_7 < Y_6$, etc.

In this particular case the cyclical component is dampened. I am unable to prove rigorously that this always will be the case. The Routh-Samuelson stability conditions (P. A. Samuelson, *Foundations of Economic Analysis*, pp. 435-9) refer to the whole movement—(4) above—which is known to be unstable, because $y_1 > 1$. For $m = 3$ the proof is easy and for $m = 4$ we could examine the appropriate quadratic factor in (4), but since in reality m will be larger than four, we have not taken the trouble. However, dampening is likely to materialise if we discard the assumption of a constant average lifetime m , followed automatically by replacement, and allow a utilisation of assets beyond the lifetime entered by the accountant.

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CURRENT TOPICS

IN this issue the format of the ECONOMIC JOURNAL has been changed for the first time since 1904. We hope that the new format will not only save space and paper (it carries about 20% more words on a page) but will also be easier to the eye than that which it supersedes. The somewhat wider setting will at the same time make it easier to print tabular matter, which is of constantly increasing importance in the JOURNAL. In the interest of those who bind their JOURNALS, the size of page has been left unchanged. Since the cost of paper forms a large part of the total cost of producing the JOURNAL, the new format will effect substantial savings, and ultimately, we hope, enable the ECONOMIC JOURNAL to enlarge somewhat the amount of current work in economics that it is able to publish. It may interest some of our readers to know that the new type is Small Pica Baskerville (169-11), set to a width of 29 ems and 1½ point leaded.

May we express our gratitude to Mr. Richard Clay and others on the staff of Messrs. Clays, our printers since 1891, and also to Messrs. Crutchley and Dreyfus of the Cambridge University Press, for their help and technical advice in finding what we hope will be regarded as a very satisfactory new format for the JOURNAL.

WE congratulate Mr. J. R. N. Stone on his election to the new Chair of Finance and Accounting in the University of Cambridge. This research professorship has been established under the terms of the will of the late Mr. P. D. Leake, who left money to provide a chair or chairs for the encouragement of the academic study of accounting and public finance. It will be known as the P. D. Leake Chair of Finance and Accounting.

WE offer our best congratulations to Mr. Oscar Hobson on the conferment of the honour of Knight Bachelor in the New Year Honours List. Mr. Hobson's contributions to financial journalism have been for many years a joy to his readers. For some years past he has served as a member of the Council of the Royal Economic Society.

THE recent death of Professor Charles Rist at the age of eighty has deprived French economics of one of its most distinguished exponents of the older generation. To the end of his life he had continued to exercise a great influence among his younger colleagues, and was serving at his death as the first President of the newly created *Association Française de Science Économique*. He was for very many years the French correspondent of the Royal Economic Society. In England he is best known as author with

Charles Gide of the invaluable *Histoire des Doctrines Économiques*, which for most of an older generation of economists formed a familiar text-book. In the 1920s and 1930s he was French delegate on a number of important economic and financial bodies, and he continued for many years to exercise great influence in the Banque de France and in other circles concerned with the shaping of French economic policy.

WE report with regret the death of E. J. M. Buckatzsch, recently Senior Research Officer at the Oxford Institute of Statistics. He had suffered for many years from illness, which he had borne with quite remarkable courage and fortitude, and he managed, none the less, to make important contributions to economics which will be well known to our readers.

DR. BONN writes:

"Professor Dr. Rudolf Kaulla, who died on September 22nd in Lausanne, was not very well known in this country. But his books, *Die Grundlagen des Geldwertz, Rechtsstaat und Währung, Staat, Stände und der gerechte Preis* were greatly appreciated in Germany and in Switzerland. The University of Lausanne, when conferring on him an honorary degree, phrased this admirably: 'en hommage au vénérable savant dont la doctrine alliant l'histoire à la jurisprudence, a enrichi la science économique de vues originales sur la monnaie, les valeurs, et le juste prix.'"

THE following have been admitted to life fellowship of the Society:

Brennan, G. A.	Metzler, L. A.	Smith, O. D.
Khan, Z. D.	Samuels, L. H.	Valero, S.
Meissner, F.	Shah, M. Y.	

The following have been admitted to fellowship of the Society:

Agrawal, K. J.	Brittan, S.	Gandur, R. J.
Akhtar, M.	Browne, B. A.	Geary, D.
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Amogu, O. O.	Chauhan, P. R. S.	Gomes, L. D.
Arrarte, J. P.	Chosa-Kakari, T. S.	Gray, J. H.
Balasubramanian, S.	Clift, I. L.	Green, V. M.
Banks, E.	Davies, D. G.	Griffiths, O. E.
Belge, M. W.	Davies, G.	Gupta, R. P.
Bell, J. W.	De Barros, P. C.	Hattori, M.
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Kevehazi, E. M.	Rajathuri, T.	Spulber, N.
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Ofori-Atta, E. E.	Shah, R. S.	West, B. R.
Oliver, J.	Shrotri, S. C.	Williams, R. J.
Olokundu, J. O.	Siddiqi, M. R.	Winter, P.
Pang, T. P.	Sinha, B. K.	Yah, L. C.
Polanyi, G. M.		

The following have been admitted to Library membership of the Society:

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 Creighton University College of Commerce.
 Dai- Ichi Bank, Tokyo.
 Kangyo Bank Ltd., Tokyo.
 N. Z. Meat and Wool Boards' Economic Service.
 Peshawar University.
 Tokyo Daigaku Toyo-Bunka Kenkyujo.
 Tokyo Keizai Daigaku Library.
 Waseda University.

RECENT PERIODICALS AND NEW BOOKS

Journal of the Royal Statistical Society

VOL. 117, PART 4, 1954. *Callbacks and Clustering in Sample Surveys: an Experimental Study*: J. DURBIN and A. STUART. *The Phenomenon of Labour Turnover*: H. SILCOCK. *The Relations between Chained Indexes of Input, Gross Output and Net Output*: P. H. KARMEL. *The Mode of a Grouped Distribution*: H. M. FINUCAN. *First International Conference of National Committees on Vital and Health Statistics*.

Applied Statistics

VOL. III, No. 3, NOVEMBER 1954. *Queueing for Medical Care*: N. T. J. BAILEY. *Accuracy in Statistics*: C. D. HUGHES. *The Determination of Single Sample Schemes for Percentage Defectives*: G. HORSNELL. *The Use of Estimates of Absence-proneness for guiding Executive Action*: A. G. ARBOUS and H. S. SICHEL. *Production Functions for the British Industrial Economy*: C. E. V. LESER. *The Construction of Nomograms for Use in Statistics: Part II—The Graphical Analysis of the Results of a Factorial Experiment*: P. LYLE.

Economica

VOL. XXI, No. 84, NOVEMBER 1954. *Economics of Dependence (1952-82)*: F. W. PAISH and A. T. PEACOCK. *Consistency and Consolidation in the Theory of Interest*: R. TURVEY. *Industrial Productivity Growth in Europe and in the U.S.*: A. MADDISON. *The Origin of Ricardo's Theory of Profits*: G. S. L. TUCKER. *Non-Traded Goods and International Factor Price Equalisation*: E. V. MORGAN and G. L. REES.

The Review of Economic Studies

VOL. XXII, No. 57, 1954-55. *The Geometry of Point Rationing*: M. McMANUS. *Expectations, Uncertainty and Inventory Fluctuations*: E. S. MILLS. *The Determinants of Aggregate Consumption*: W. HAMBURGER. *A Synthesis of Engel Curve Theory*: J. AITCHISON and J. A. C. BROWN. *A Note on the Terms of Trade of Nigeria*: E. K. HAWKINS. *Notes on the Adding-up Criterion*: G. D. N. WORSWICK and D. G. CHAMPERNOWNE. *A Note on the Accelerator and Constant Growth*: A. KERVYN. *A Note on Mr. Ichimura's Definition of Related Goods*: R. L. BASMANN. *A Property of Mr. Harrod's Dynamic Model*: P. NEWMAN. *Memo-randum on the Sterling Assets of the British Colonies: A Comment*: A. HAZLEWOOD.

Oxford Economic Papers

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Bulletin of the Oxford University Institute of Statistics

VOL. 16, Nos. 9-10, SEPTEMBER-OCTOBER 1954. *The Structure of Engineering Earnings*: K. G. J. C. KNOWLES and T. P. HILL. *The Shipping Bill for British Imports*: A. ROMANIS.

The Journal of Industrial Economics

VOL. III, No. 1, DECEMBER 1954. *An Appreciation of Sir Henry Clay. Resale Price Maintenance*: SIR HENRY CLAY. *Fuel and Power Policy in Great Britain*: A. L. PLEASE. *The Concept of Steel Capacity*: J. A. MORRIS. *Research and Control in a Modern Supermarket*: D. E. STOUT. *The Accuracy of Data Collected from Firms*: E. RUDD.

Transactions of the Manchester Statistical Society

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VOL. VI, No. 3, JANUARY 1955. *The Law of the Soviet State*: H. J. BERMAN. *Conversations with Soviet Economists*: R. MEEK. *Soviet National Income Statistics*: A. NOVE.

The Banker

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The Bankers' Magazine

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Barclays Bank Review

VOL. XXIX, No. 4, NOVEMBER 1954. *The Rationale of Recovery. Thought for Food. Pakistan.*

District Bank Review

No. 112, DECEMBER 1954. *Trade Drives*: W. A. LEWIS. *American Business Prospects*: R. H. FRY. *Looking at Convertibility*.

Lloyds Bank Review

No. 35, JANUARY 1955. *The Future of the Atlantic Community*: D. McLACHLAN. *Deficit Finance in Asia*: F. BENHAM. *The Problem of the Roads*: G. PONSONBY.

Midland Bank Review

NOVEMBER 1954. *Britain's Manpower, Pre-War and Post-War. The Changing Pattern of "National Savings."* *Business Conditions in Scotland*.

National Provincial Bank Review

No. 28, NOVEMBER 1954. *Britain's Roads—Paralysis or Progress?*: C. T. BRUNNER. *Local Authorities' Dilemma*: T. L. POYNTON.

The Three Banks Review

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Planovo Stopanstvo (Bulgarian text)

- No. 1, 1954. *Draft Resolution of the Bulgarian Communist Party on the Second Five-year Plan. The Economic Aid of the Soviet Union—A Decisive Factor in the Planned Development of Our National Economy*: M. KOLEV. *The Law on the Planned and Balanced Development of a Socialist Economy*: A. PANOV. *The Increase of Livestock-Breeding*: S. NESHEV. *Socialist Accumulation and the Powerful Upsurge of the Bulgarian Economy*: G. FILIPOV. *Planning in Prices*: N. VULEV. *Planning the Turnover of Capital in an Industrial Enterprise*: B. GURDEV. *Planning Major Repairs in Industry*: A. TSETKOV and V. DONKOV.
- No. 2, 1954. *The Resolutions of the VI Party Congress Outline New Perspectives of a General Development of Collective Farms*: P. TRIFONOV. *Certain Measures to Ensure High and Stable Harvests and to Increase the Productivity of Livestock*: S. SEV. *To Raise Labour Productivity in Rural Retail Trade*: KH. KHADZHINIKOLOV. *Planning Turnover Expenses in Rural Trade*: A. CHAUSHEV and N. CHOLAKOV. *Planning Public Health Protection*: B. SHUSTOV. *New Procurement Decrees*: A. MARKOV.
- No. 3, 1954. *A Sharp Rise in the Material and Cultural Welfare of the Working Masses—The Chief Task of the Second Five-year Plan. Basic Tasks of the Coal Industry in the Second Five-year Plan*: B. MECHKOV. *Problems for the Mining Sector in the Second Five-year Plan*: B. PETKOV. *Certain Tasks in Rural Electrification*: M. GYUDZHENOV. *Some Questions in Connection with the Introduction of Ley Rotations*: A. KRISTOV and K. PETKOV. *Some Methodological Problems of Planning Costs and Profits*: I. KHAZAN.
- No. 4, 1954. *Inspection—A Powerful Factor in the Fulfilment of the State Plan. The Nature and Functions of Our Finance in Socialist Construction*: G. PETROV. *Anti-erosion Work—An Important Measure for Our Agriculture*: D. BAKURDZHIYEV. *Building Towards a Socialist Economy in the European People's Democracies*: A. KOZIK. *Planning Raw Materials and Supplies to Industry*: P. OLOVANOV.

Izvestia na Vishia Finansovo-Stopanski Institut (Bulgarian text)

- VOL. VII, No. 2. *The Further Development of Coal Production in Bulgaria*: S. STANEV. *The Law of Planned and Balanced Development—The Basis of Economic Regionalization*: KH. MARINOV. *Report on the Experience of Defective Production*: V. NANKOV. *Analysis of the Costs of Tractor Work in MTS*: T. TOTEV. *For High Quality and Rich Variety in Merchandise and for Polite Service in Shops*: D. SPASOV.

Probleme Economice (Rumanian text)

- No. 9, 1954. *On the Way to a Further Advance of Soviet Agriculture*: C. MURGESCU. *Light Industry in the Struggle for the Fulfilment of the Tasks Set By the August Session of the Party Central Committee*: GH. MAIOR. *The Importance of the Procurement of Agricultural Produce in Strengthening the Ties between Town and Country*: E. DAN. *For a Further Improvement in the Work of Consumer Co-operatives*: L. DAVIDOVICI. *Labour Protection in the Coal Industry*: M. PIRJOL. *On the Role of Productive Relations in the Pre-socialist Order*: P. DAN. *Phenomena of Crisis in United States Agriculture Since the Second World War*: T. ŞATELES. *On the Methodology of Calculating Labour Productivity in Industry*: G. CULCER. *The Distribution of Income in Collective Farms*: V. TOPOR.
- No. 10, 1954. *The Execution of the Great Programme for the Development of Agriculture—a Task for the Entire Nation. The Mobilization of Reserves to Reduce Costs of Production in Industry*: S. ZEIGHER. *Material Incentives—a Basic Factor in Developing the Communal Economy of Agricultural Collectives*: O. PARPALĂ. *The Valuation of Basic Funds and Amortization in Rumanian Co-operative Industry*: L. CZIKO and I. CRISTU. *Some Aspects of the Aggravation of the Pauperization of the Working Class under Conditions of the Militarization of Capitalist States*: I. ADAM. *Long-term Credits—An Important Lever for the Economic Development of Collective Farms*: A. GHEORGHIU.

Economist (Serb text)

JUBILEE NUMBER, 3-4, 1954. *Problems of the Yugoslav Market With Special Reference to Agricultural Produce*: N. ČOBELJIĆ, K. MIHAJLOVIĆ and S. DUROVIĆ. *The Structure and Problems of the Yugoslav Labour Force*: M. MACURA. *A Social and Political Survey of the Employment Problem*: Z. HAS. *Money and Credit and Their Interaction*: M. VUČKOVIĆ. *Economic Problems of the Commune*: J. DAVIČO.

NEW BOOKS

British

BELLAMY (D.). *The Development of the Domestic Load at Home and Overseas*. Paper presented to the Sixth Annual Convention of the British Electrical Power Convention. London: British Electrical Power Convention, 1954. 8½". Pp. 60.

[The author is Chairman of the Yorkshire Electricity Board. He puts the case for increasing the domestic electricity load in the interests both of the consumer and of the supplying authority. Figures are quoted from a case study of electricity use in an estate of 500 houses to suggest that the peak-load problem is less serious than is often supposed. Brief discussion is also included of the prospects for increasing the domestic use of electricity in various foreign countries.]

BIGG (W. W.) (Ed.). *Spicer and Pegler's Practical Auditing*. Eleventh Edition. London: H.F.L., 1954. 9". Pp. 501. 27s. 6d.

[This standard text-book was first published in 1911, and has since been many times reprinted in its various editions. The present edition has been brought up to date and entirely reset in a more modern format.]

BLAGBURN (C. H.). *A Simple System of Economic Analysis of a Farm Business*. Reading: Department of Agricultural Economics, University of Reading, 1954. 9½". Pp. 28. 5s.

[This describes the method that has been evolved by Mr. Blagburn and his colleagues at Reading for assessing the relative efficiency of a farm business and its different aspects. The analysis falls into two parts, relating respectively to output and costs, and the procedure is essentially to compare the performance of the farm studied with the average of farms operating under similar conditions.]

BROWN (A. J.). *The Great Inflation 1939-1951*. London: Oxford University Press for the Royal Institute of International Affairs, 1955. 9". Pp. 321. 30s.

[To be reviewed.]

CARUS-WILSON (E. M.). *Medieval Merchant Venturers*. Collected studies. London: Methuen, 1954. 8½". Pp. ix + 314. 30s.

[To be reviewed.]

CARUS-WILSON (E. M.) (Ed.). *Essays in Economic History*. Reprints edited for the Economic History Society. London: Edward Arnold, 1954. 10". Pp. 438. 45s.

[To be reviewed.]

CASTBERG (F.). *The Norwegian Way of Life*. London: Heinemann, 1954. 9". Pp. 110. 12s. 6d.

[The author of this latest addition to the Way of Life series sponsored by UNESCO is Professor of Constitutional and International Law in the University of Oslo. His book is chiefly concerned with social and political topics, and economic questions are discussed in the text only in relation to political controversies that they have aroused. There is, however, an appendix by Professor Wilhelm Keilhau on the country's economic structure.]

CLEGG (H. A.). *General Union*. A study of the National Union of General and Municipal Workers. Oxford: Blackwell, 1954. 9". Pp. xiii + 358. 27s. 6d.

[To be reviewed.]

CLEMENS (J. H.). *Balance Sheets and the Lending Banker*. A new assessment of counts and accounting ratios in relation to bank advances. Second Edition, revised and enlarged. London: Europa Publications, 1954. 9". Pp. 271. 20s.

[The first edition of this work was noticed in the ECONOMIC JOURNAL of September 1951, p. 682. It is designed primarily as a practical guide to bankers in the task of assessing the financial position of potential borrowers from their balance sheets. The present edition incorporates a number of additions and alterations, including completely new chapters on consolidated accounts and the making-up of a balance sheet and a section on the effects of taxation on the sources of business finance.]

CYPRUS FEDERATION OF TRADE AND INDUSTRY. *Income Tax in Cyprus*. A memorandum presented to His Excellency the Governor. Prepared by C. W. Thacker. Nicosia: Cyprus Federation of Trade and Industry, 1954. 9½". Pp. 95.

[This is a plea for a reduction in the rate of income tax in Cyprus and for amendments in the island's income tax laws which would remove certain anomalies that they at present contain. The author points out that the downward trend in tax rates that has taken place in the United Kingdom since the end of the war has had no counterpart in Cyprus, and that large budget surpluses have accumulated in the last few years. He further suggests that the extreme brevity of the income-law in Cyprus results in injustices to individuals which are avoided in the more elaborately drafted British law.]

DALTON (H.). *Principles of Public Finance*. Fourth Edition, rewritten and reset. London: Routledge & Kegan Paul, 1954. 7½". Pp. v + 255. 10s. 6d.

[To be reviewed.]

DICK (JOHN REID). *The engineer's approach to the Economics of Production*. London: Sir Isaac Pitman, 1952. 8½". Pp. v + 248. 21s.

[Mr. Reid Dick was the managing director of an engineering works and foundry. In this book he attempts to convey to other engineers an understanding of the way in which economic principles might help them to achieve economic as well as technical efficiency. He concentrates therefore on what economists have had to say about the problems of production, and he concerns himself particularly with the application of what he calls the Principle of Efficiency (i.e., the least-cost combination of factors) to production. The subject matter of the book falls into two main parts. In the first few chapters, the author examines the concept of engineering efficiency and shows that there are alternative methods of production exist it is necessary to consider factor prices before the most economical method can be decided upon. In the second half of the book the author considers how each of the main factors of production can be most economically used, and in the course of doing he expounds the theory of rent, the law of variable proportions and so on. The book is intended for an engineering audience, and the exposition of economic principles is frequently illustrated with examples drawn from engineering practice. The author shows a good grasp of economics, although his frequent mention of economic laws is a little disconcerting. His book would prove valuable in inducing engineers to take a wider view of their functions, and particularly to make decisions with economic as well as technical considerations in mind. It is a drawback of the book that at times the author's way of expressing himself is not as clear as might be wished.]

DOWNING (R. J.). *National Income and Social Accounts*. An Australian study. Melbourne: Melbourne University Press (London: Cambridge University Press), 1954. Pp. 58. 6s.

[This provides an introduction to the ideas of the circular flow of incomes and a discussion of the preparation and use of national-income statistics addressed to Australian readers.]

EDEY (H. C.) and PEACOCK (A. T.). *National Income and Social Accounting*. London: Hutchinson's University Library, 1954. 7½". Pp. vii + 222. 8s. 6d.

[To be reviewed.]

HARVEY (J.). *English Mediaeval Architects*. A biographical dictionary down to 1500. London: Batsford, 1954. 10". Pp. vii + 412. 75s.

[This lovely book will enable all those who are fascinated, as one must be, by the tremendous scale of mediaeval investment as well as by the processes and control of mediaeval building to learn at least the names of the chief masters. Those selected for inclusion are: craftsmen described as "master" engaged in the supervision of building operations, who can be assumed to have acted as architects unless there is evidence to the contrary; masters who held certain offices (for example, as mason) under the Crown; craftsmen given the title of "warden"; contractors able to undertake substantial works. It will probably surprise many readers to discover how much is known of the names, lives, incomes and chief works of those responsible for some of the great mediaeval buildings. Many will have lived their lives in Cambridge, for instance, without mentally connecting King's Chapel with the names of Reginald Ely, Simon Clerk, Martin Prentice, William Vertue

or John Wastell. But for the great buildings of the seventeenth and eighteenth centuries the name of the architect is nearly always familiar and associated in our minds with the products of their genius. May one hope that Mr. Harvey's work and that of his collaborators will help to restore credit to these great men to whom we owe so much of the beauty of England.]

HENDERSON (H. D.). *The Inter-war Years, and other papers.* Edited by Henry Clay. London: Oxford University Press, 1955. 9". Pp. xiii + 445. 42s.

[To be reviewed.]

Industrial Management. A course of lectures given at Cambridge University for the Faculty Board of Engineering, 1953. Sheffield: The United Steel Companies, 1954. 8½". Pp. 122.

[This contains seven lectures delivered in 1953 to engineering students in Cambridge by members of the staff of the United Steel Companies.]

THE INSTITUTE OF ACTUARIES. *Yearbook 1954-1955.* London: Cambridge University Press for the Institute of Actuaries, 1954. 8½". Pp. 351. 3s.

[This contains a general account of the activities of the Institute of Actuaries and detailed particulars about its examinations.]

INTERNATIONAL ASSOCIATION FOR RESEARCH IN INCOME AND WEALTH. *Bibliography on Income and Wealth, Volume IV, 1951.* Edited by Phyllis Deane. Cambridge: Bowes & Bowes, 1954. 10". Pp. 82. 37s. 6d.

[This maintains the high standard of thoroughness and accuracy established by its predecessors. Fully annotated references are given to 588 items dealing with income and wealth which were published during 1951 or which were not included in previous issues, although published before 1951.]

INTERNATIONAL ECONOMIC ASSOCIATION. *International Economic Papers, No. 4.* Edited by A. T. Peacock, W. F. Stolper, R. Turvey and Elizabeth Henderson. London: Macmillan (New York: The Macmillan Co.), 1954. 10". Pp. 229. 15s.

[To be reviewed.]

ISAAC (J.). *British Post-War Migration.* National Institute of Economic and Social Research, Occasional Paper No. XVII. London: Cambridge University Press, 1954. 9½". Pp. xv + 310. 30s.

[To be reviewed.]

JEFFERYS (J. B.). *Retail Trading in Britain 1850-1950.* National Institute of Economic and Social Research, Economic and Social Studies, XIII. London: Cambridge University Press, 1954. 9½". Pp. xv + 497. 50s.

[To be reviewed.]

KOCHAN (L.). *Acton on History.* London: André Deutsch, 1954. 8½". Pp. 184. 12s. 6d.

[This interesting essay on Acton's philosophy of history is based on the author's researches among the Acton archives in the Cambridge University Library. The material in these archives is so extensive and so unsystematic that no one reconstruction of Acton's thinking is likely to command universal acceptance, especially since, as Mr. Kochan points out, the elements of inconsistency are unmistakable. The author traces the development of Acton's ideas from his early adherence to Burke to his later conception of the duty of the historian as an inescapably moral one. He suggests that the chief weakness in Acton's ultimate position was his failure to make due allowance for the blurring of the moral responsibility of the individual that is involved when a historical event is the result of the actions of a group or groups rather than of a single person.]

MARRIS (R. L.). *The Machinery of Economic Policy.* Fabian Research Series, No. 168. London: Fabian Publications, 1954. 8½". Pp. 49. 2s. 6d.

[This is a stimulating, provocative and to many readers probably an irritating political pamphlet; the Fabian tortoise on the cover seems peculiarly inappropriate to the many hares which Mr. Marris manages to start. But he asks a series of questions about the machinery appropriate to the formulation and carrying out of a socialist economic policy which certainly require answering. Is the machinery really suitable to a situation in which a quarter of all incomes are generated in the public sector and more than half the investment is in that sector? Does the present system ensure that the public sector acts in the public interest? Is the central direction itself both rightly and effectively directed? In general, Mr. Marris would like to see the central organisation greatly strengthened and its responsibility for general economic direction formally recognised; the ministers

of individual economic departments would remain answerable to Parliament for the technical shortcomings of their departments, but the Chancellor of the Exchequer, reincarnated as Minister of Economic Policy, would be answerable for the general scale of permitted investment or activity. If one is primarily concerned to create a well-informed central organisation as the instrument of a very powerful single Minister, Mr. Marris' suggestions must be taken seriously. But if the objective is to see how a group of individual and more or less equal ministers can share a common responsibility for a central economic policy and for the administration of its various parts, it is less clear that Mr. Marris has found a really workable answer. In the end it is the age-old problem of how far a democracy can and should be at the same time the hegemony of a great leader.]

Moose Fort Journals, 1783-85. Edited by E. E. Rich, assisted by A. M. Johnson. London: Hudson's Bay Record Society, 1954. 9½". Pp. ix + 392.

[The documents here reproduced consist of the journal of John Thomas, the chief in charge at Moose Fort, a post at the Bottom of Hudson's Bay, and the correspondence between Moose Fort and smaller satellite posts. An introduction by Mr. G. P. de T. Glazebrook discusses the history of the post and the general background of the events described in the text.]

MORRIS (S. T.) and LUXTON (H. W. B.). *An Economic and Financial Survey of Farming in the South West of England.* Bristol: Department of Economics, University of Bristol, 1954. 8½". Pp. 96. 5s.

[This is the fifth of a series of reports based on the Farm Management Survey for Cornwall, Devon and Dorset. It contains a detailed account of financial results on a sample of farms in 1951 and 1952, and a more summary statement of financial results on a slightly smaller sample of farms in each year since 1947. Over the period 1947-52 the value of production in the farms in the sample increased by 90%, costs increased by 80% and net farm income increased by 125%.]

MUSSON (A. E.). *The Typographical Association. Origins and history up to 1949.* London: Oxford University Press, 1954. 10". Pp. v + 550. 30s.

[The history of the Typographical Association was commissioned on the occasion of its centenary in 1949. The author has been able to draw on the records of the Association, and he has placed its growth against the technical and economic changes in the printing industry during the past century. The result is a scholarly and interesting account of this corner of social history. Trade unionism was already well established in the printing industry when a number of provincial trade societies, following the failure of previous attempts to amalgamate on a national basis the many town and district associations, established the Association without the London societies. At the end of its first year of existence the Association had 19 branches and 481 members, by 1914, 157 branches and 23,000 members, and in 1949 it had over 200 branches and almost 50,000 members. However, the Association still remains a provincial organisation, with the London letterpress men still preferring to stick to their own unions rather than amalgamate to form a nation-wide body. Mention must be made of the superb quality of the paper, printing and binding of this volume. It must have given all concerned great satisfaction to produce such an excellent example of the printer's craft.]

NATIONAL INSTITUTE OF ECONOMIC AND SOCIAL RESEARCH. *Register of Research in the Social Sciences in progress and in plan and Directory of Research Institutions.* No. 11, 1953-4. London: Cambridge University Press, 1954. 10". Pp. 168. 25s.

[The present issue of this register differs from its predecessors in not seeking to repeat in full information about continuing research projects that were described in previous editions. The reference back is now given instead, for reasons of economy. A substantial proportion of the unusually large number of new research projects reported this year are associated with the Conditional Aid Research Programme.]

NEVIN (E. T.). *The Problem of the National Debt.* Cardiff: The University of Wales Press, 1954. 7½". Pp. 115. 6s.

[To be reviewed.]

THE NUFFIELD FOUNDATION. *Report for the Year Ended 31 March 1954.* London: The Nuffield Foundation, 1954. 8½". Pp. 141.

THE NUFFIELD FOUNDATION. *Report on grants made during the ten years April 1943 to March 1953.* London: The Nuffield Foundation, 1954. 9". Pp. 319.

[These two reports between them provide a comprehensive picture of the work that has been done by this great foundation in its first ten years and of the work which it is doing now and plans to do in the future. The total amount of grants made since 1943 has been £4,208,586. Of this, £925,000 has been devoted to the problems of the elderly; £831,000 to Fellowships and Scholarships; £786,000 to medical research; £560,000 to research in physics; and £463,000 to projects in the social sciences.]

One Man's Vision. The story of the Joseph Rowntree Village Trust. London: Allen & Unwin, 1954. 9". Pp. xi + 149. 10s. 6d.

[This is an account of the development of the village of New Earswick and the ideals of the founder and subsequent administrators of the Joseph Rowntree Village Trust. It also contains some interesting material on more general issues concerning the design of houses and the lay-out of housing estates.]

PEARCE (F. T.). Financial Effects of Labour Turnover. University of Birmingham Studies in Economics and Society, Monograph A4. Birmingham: Faculty of Commerce & Social Science, 1954. 10". Pp. 228. 15s.

[The author proposes certain new methods of measuring the cost of labour turnover and describes with much interesting detail how these methods were applied in four case studies. The losses caused by labour turnover take two forms: increased cost and reduced output. Dr. Pearce argues that to treat the loss from diminution of output solely in terms of increased unit overhead costs, as is sometimes done, leads to an understatement of the real loss, since account must also be taken of the profit foregone. He then draws a further distinction between what he calls special losses and general losses. The former are more obvious: enforced sudden reductions of output when replacements cannot immediately be found for leavers, damage to machinery resulting from the inexperience of a new worker, etc.; but the latter are probably at least as important. They include not only the reduction in output that results from the relatively low efficiency of new workers, but also the cost of keeping the reserve of labour necessary to ensure a steady flow of production in the event of a number of workers leaving at the same time.]

Reserve Fund and Maintenance Funds. Cambridge: University of Cambridge Department of Estate Management, 1954. 8½". Pp. 16.

[This contains figures derived from sample surveys into the size of reserve funds and maintenance funds held in conjunction with agricultural estates. The author argues that since such funds are essential for the efficient administration of property, it is anomalous that the abatement of estate duty allowed for agricultural estates is not extended to them.]

ROBINSON (JOAN). Letters from a Visitor to China. Cambridge: Students' Bookshops, 1954. 9". Pp. 35. 2s. 6d.

[Mrs. Robinson's impressions of life in China to-day are here conveyed with much interesting information, as well as many characteristic asides. Her enthusiasm for the new regime and the spirit that animates it gets across to the reader all the more convincingly for being qualified in a few respects, notably with regard to population policy.]

SOMERVELL (D. C.). A History of the United States, to 1941. Second edition. London: Heinemann, 1954. 9". Pp. vii + 320. 15s.

[This is a re-issue of a book which first appeared in a small edition in 1942, and of which the plates were subsequently destroyed. It is primarily a political history, but the social and economic background is ably sketched in. The book is one that may be recommended to economic students who feel the need for some grounding in American political history as a scholarly and extremely interestingly written introduction to the subject.]

The State and Location of Industry. The Administrative Staff College, Course of Studies Papers. Henley-on-Thames: The Administrative Staff College, 1954. 9". Pp. 24. 2s. 6d.

[This is the seventh Course of Studies Paper to be prepared by the Administrative Staff College primarily for the use of its students. It summarises very concisely the basic information on location of industry policy, and should prove very useful to those coming to the subject for the first time.]

THOMAS (E.). Management in Farming. Newton Abbot: Seale-Hayne Agricultural College, 1954. 8½". Pp. 52. 4s.

[These lectures will be of value not only to practical farmers but also to economists who are interested in obtaining an up-to-date picture of the problems of farm management. The subjects of the four lectures are the means of increasing output per acre; the supply of capital; labour; and the use of standards of cost and output in assessing the efficiency of a farm. Each of these subjects is treated with lucidity and a wealth of illustrative detail drawn from Professor Thomas' great knowledge and experience of the industry. A chief theme to which the author reverts in several of the lectures is the desirability, both in the national interest and in the interests of farmers themselves, of increasing the yield per acre, experience showing that on account of the fixed character of many of the costs of running a farm an increase in yield is not normally accompanied by a proportional rise in costs.]

TINTNER (G.). Mathematics and Statistics for Economists. London: Constable, 1954. 9½". Pp. vii + 363. 30s.

[To be reviewed.]

URWICK (L.). Is Management a Profession? London: Urwick, Orr & Partners, 1954. 8½". Pp. 27.

[In this paper one of the leading writers on management topics in the United Kingdom argues that management should now be regarded as a profession. In particular, he is concerned with gaining recognition for formal professional qualifications in management subjects.]

WOODS (C. A.). The Indian Community of Natal. Their economic position. Natal Regional Survey, Volume 9. London: Oxford University Press, for the University of Natal, 1954. 9". Pp. iii + 102. 25s.

[In Natal, as in East Africa, the economic problems are closely intertwined with the social problems of competition and complementarity between three human groups with very different backgrounds of education and of normal standards of life. In Natal the Indian population is, and has been for forty years, of very much the same size as the European, but is now likely to leave it considerably behind. This study covers not only the trends of total and working population, but also the general economic position of Indians, their incomes, expenditure, housing and social standards, and the health and welfare services available to them. It is clear that poverty is very widespread; "even in the higher groups poverty seems to harass at least 70% of them, and . . . only a sprinkling have reached the level where income can be spent on anything other than the necessities of life."]

Indian

BHOURASKAR (K. M.). Municipal Finance in Certain Leading Indian States. Bombay: Local Self-Government Institute (11 Elphinstone Circle, Fort, Bombay), 1954. 10". Pp. 262.

[This Ph.D. Thesis of the University of Bombay deals with municipal finance in certain Indian States, in the older sense of that word implying the India of the Princes in distinction from the Indian Provinces. The five States covered are Hyderabad, Mysore, Baroda, Indore and Kolhapur. These municipalities were generally, though not always rightly, regarded as economically and socially backward. Dr. Bhouraskar has been primarily concerned to measure the benefits received and the quality of the services rendered against the taxation levied. The general impression that emerges from his study is that in the past the municipalities in the States have performed fewer functions, have had greater freedom as to how they should perform them, and that even in the better States satisfactory standards were rarely achieved.]

CHAKRABARTY (S.) (Ed.). Essays on Banking and Finance. In Honour of H. C. MacColl. Issued as a Supplement to *The Economic Weekly*. Bombay: The Economic Weekly, 1954. 11". Pp. 79.

[Mr. H. C. MacColl held for twelve years the office of Chairman of the Bombay Exchange Banks' Association, and for nearly forty years was engaged in banking in India. These essays cover a wide range of subjects; they are mostly concerned with India, but some deal with subjects as different as the banking trends of the Netherlands, of Italy and of Australia, or the capital market of Western Germany. Indian topics include deficit financing, liquidity problems, the Hundi, the development of exchange banks and the discriminatory restrictions arising from the dollar gap.]

Financial Trends in the Cement Industry. Bombay: Association of Indian Trade and Industry, 1954. 9½". Pp. 57.

[This is an intensive, but very naturally an *ex-parte*, study of the effects of taxation on one growing industry in a period of rapidly rising prices. The analysis of company accounts suggests the conclusion that the book value of the gross capital of the industry increased by Rs. 50 crores during 1937-51, and the net worth by Rs. 21 crores; in terms of 1951 prices, however, the shareholders invested Rs. 27.5 crores (net), but the increase of real assets was only Rs. 17 crores; the residue of about Rs. 11 crores was the "capital erosion" due to the calculation of depreciation for taxation and price-fixing on the basis of historical cost. The authors are naturally led to discuss taxation policy and pricing policy.]

HAZARI (R. K.). The Economics of Estate Farming. Bombay: Indian Society of Agricultural Economics, 1954. 8½". Pp. vii + 73. Rs. 3/-.

[A sub-title describes this as "a plea for agro-industry." The author, who teaches at St. Xavier's College, Bombay, is convinced "firstly, that the ideal system of peasant proprietorship which is usually identified with family farming does not exist in India, and secondly, that the

system, or the lack of it, which we have, is not conducive to happiness and social stability." He advocates estate farming on a co-operative basis. By way of illustration he describes an estate farm at Wachandnagar, near Poona, which covers 17,000 acres, and has apparently made a great financial as well as technical success of large-scale sugar growing and processing.]

Income Tax for the Layman. Second edition. New Delhi: Central Board of Revenue, Government of India, 1954. 9½". Pp. 133.

[A booklet designed to explain in simple language the basic features of the Indian income tax. It deals with the basis of charge, the definitions of income and residence, heads of income, rates and reliefs, assessment and appeals, payment and refunds and various minor aspects of the system. A chapter compares the burdens on incomes of various sizes in India with those in other countries.]

INDIAN NATIONAL CONGRESS. The Seventh Year of Freedom, August 1953–August 1954. New Delhi: All India Congress Committee, 1954. 9½". Pp. 371.

[This annual review issued by the All-India Congress Committee gives a convenient and useful account of Indian economic and political progress, and includes surveys of the financial position, the progress of the Five-Year Plan, of community projects, of food and agriculture, and of welfare generally.]

PETHE (V. and B.). Elements of Economics. Sholapur: Suras Granthamala, 1954. 8½". Pp. 335. Rs. 5/-.

[An elementary text-book designed to cover the syllabus of the intermediate examinations in arts and commerce in various Indian universities. It covers in competent fashion the traditional outlines of the subject.]

PETHE (V.) and GANDHI (V.). Population Crisis in India. Sholapur: Suras Granthamala, 1954. 8½". Pp. 46. 4s.

[A popular statement of the grave dangers of over-population in India, which loses from exaggeration more than it gains from vigour. The authors demand an active and dramatic population policy, to include heavy taxation of persons who marry too early or have excessive families, as well as the legalisation and encouragement of abortion and sterilisation.]

RESERVE BANK OF INDIA. Banking and Monetary Statistics of India. Bombay: Reserve Bank of India, 1954. 11½". Pp. v + 1005.

[This useful new work of reference includes a vast amount of detailed statistical material, covering a long range of years. A series of the numbers of banks of different classes and their deposits gives annual figures since 1870; the liabilities and assets of the Imperial Bank are given for every week since 1921; cheque clearings are given annually from 1900 and weekly from 1935. The detailed tables cover commercial banks, small savings, co-operative societies, cheque clearings, the operations of the Reserves Bank of India, currency and coinage, money rates and security markets, remittances, public finance, insurance companies, gold and silver production and movements. This is an invaluable research tool for any detailed work on India.]

RESERVE BANK OF INDIA. Trend and Progress of Banking in India. Annual Report for 1953 under Section 36(2) of the Banking Companies Act, 1949. Bombay: Reserve Bank of India, 1954. 9½". Pp. 114. 6s.

[This report covers the year 1953. While it is described as a quiet year for Indian banking, it marked the re-activation of monetary policy and the adjustment of the banking system to the disinflationary policy which was started in November 1951.]

WADIA (P. A.) and MERCHANT (K. T.). Our Economic Problem. Fourth Edition. Bombay: New Book Company, 1954. 9". Pp. v + 757. Rs. 8/-.

[This is the fourth, revised, edition of a book first noted in the ECONOMIC JOURNAL of April 1944. It remains, as it was then, an invaluable first introduction to the applied economics of India, much strengthened by discussions of the Indian Five-Year Plan, and by being brought up-to-date throughout.]

American

BAKER (H.) and FRANCE (R. R.). Centralization and Decentralization in Industrial Relations. Princeton, N.J.: Industrial Relations Section, Princeton University, 1954. 9½". Pp. 218. \$4.00.

[To be reviewed.]

BERSH (M.). Steward Training in C.I.O. Unions. Student League for Industrial Democracy, Research Tract No. 2. New York: Student League for Industrial Democracy, 1954. 8". Pp. 39.

[This is one of a new series of tracts on current topics written by university students. It contains a clear and well-documented account of the content and organisation of the training given to shop stewards in CIO Unions.]

BOERICKE (W. F.). Price Fixing, Controls, and Allocation of Non-Ferrous Metals. National Economic Problems, No. 453. New York: American Enterprise Association, 1954. 8½". Pp. 36. \$1.00.

[An indictment of the ill-effects of the American Government's attempts in recent years to control the prices and distribution of non-ferrous metals. These attempts, Mr. Boericke maintains, not merely discouraged the expansion of supply from American sources and involved the authorities in increasingly close control of use but also created an artificial shortage in the United States by setting American prices out of line with world prices.]

BORENSTEIN (I.). Capital and Output Trends in Mining Industries, 1870–1948. Studies in Capital Formation and Financing. National Bureau of Economic Research Occasional Paper 45. New York: National Bureau of Economic Research, 1954. 9". Pp. 81. \$1.00.

[To be reviewed.]

BRANDT (K.). Farm Price Supports—Rigid or Flexible? National Economic Problems, No. 452. New York: American Enterprise Association, 1954. 8½". Pp. 20. 50 c.

[The author pleads for a reduction in the unrealistically high level at which farm prices are supported. He argues that although acreage restrictions and similar expedients may be sufficient in some cases to avoid further stock accumulation even at present prices, this is achieved only at the cost of misallocation of resources and government interference with the production decisions of farmers.]

DALE (E.). Planning and Developing the Company Organization Structure. Research Report No. 20. New York: American Management Association, 1952. 9". Pp. 232. \$4.50.

[This report is the result of a two years' research study into company organisation undertaken by the American Management Association. Some forty companies believed to have efficient organisation structures were visited and information obtained from many more. Numerous experts on organisational problems were also consulted. The resulting book is divided into two parts, *The Dynamics of Organisation* and *The Mechanics of Organisation*. In the first part, the organisational problems that arise at various stages of a company's growth are examined in turn, from the problem of the best division of work, which arises even in very small concerns, to problems such as the delegation of decision making, which arise only in comparatively large ones. In the second part of the book, the methods by which changes in organisation can best be brought about are discussed in some detail. In both parts, the points made are supported by numerous practical examples drawn from business experience. The book as a whole provides a very useful survey of the many problems associated with company organisation and draws attention to what is, as far as can be ascertained, the best practice in this field. Emphasis is placed throughout on the limitations that the personal factor imposes on the indiscriminate application of "ideal" organisation structures to different firms, and it is frankly acknowledged that this whole field is one in which a great deal has still to be learnt.]

DICKINSON (F. G.). Distribution of Physicians by Medical Service Areas. Chicago: American Medical Association, 1954. 11½". Pp. 162.

[This is the result of a major research project that has been carried out over the past six years. Counties or other political boundaries being considered unsuitable for the study of the relation between the supply of medical attention and the demand for it, the country is divided instead into 757 medical service areas, these areas being those in which "the people and only those physicians who provide most of their medical care reside." A great amount of statistical and other material is then presented and analysed relating to the distribution of population and physicians between these areas. One interesting finding is that differences in purchasing power between areas have little or no effect on the ratio between physicians and population. Dr. Dickinson's general conclusions are reassuring, and he does not find evidence of any serious geographical maldistribution of physicians.]

GOULDNER (A. W.). Wildcat Strike. Yellow Springs, Ohio: The Antioch Press, 1954. 9½". Pp. 179. \$3.00.

[The first eight chapters of this book contain a detailed description and analysis of the antecedents and causes of a spontaneous strike that took place in a plant where a group of sociologists,

headed by Professor Gouldner, happened to be making a field-study. The two concluding chapters seek to use the material assembled in the case-study to formulate the "rudiments of a general theory of group tensions," followed by an analysis of the "defences" that may be present in any social system against actual or potential tensions. Professor Gouldner's polysyllabic jargon conceals much shrewd common sense, and his book is well worth reading on that account. But his ambitious theoretical chapters raise certain doubts—and not only about the scientific method implied by his procedure of trying to deduce a general theory from one single case-study amongst thousands that might be made. The central idea of his theory is that each of the two or more individuals or groups that form a social relationship have certain "expectations" about the rights and duties involved by the relationship; and if these expectations are violated, tensions result. A series of reasonable if not on the whole very startling propositions are then put forward to show the circumstances in which expectations are liable to be violated, with resultant tension: for example, where the expectations of two parties (say, management and labour) are mutually inconsistent or misunderstood; or where one party decides that it can afford to override the expectations of the other because of an advantage in power; or in a three-sided relationship where *A* is unable to reconcile what is expected of him by *B* with what is expected of him by *C*; and so on. Now it is fair enough to postulate that tensions will result from the violation of expectations; but surely the fundamental task for sociologists is to explain how particular expectations come to be formed and to develop. A dynamic study of the formation of expectations is lacking from Professor Gouldner's book. To provide a detailed analysis, as he does, of the ways in which *given* expectations may be violated is useful, but surely a less fundamental task. This limitation, which would appear to detract a good deal from the generality claimed by the author for his theory, is closely associated with the explicitly "clinical" approach which he adopts. He is concerned with the diagnosis, cure and prevention of departures from normal in social relationships, rather than with an analysis of the normal itself or with the question whether a normal exists.]

GREAVES (I.). *The Colonial Sterling Balances. Essays in International Finance*, No. 20. Princeton, New Jersey: International Finance Section, Princeton University, 1954. 9". Pp. 21.

[The author considers the exact nature of the funds officially described as sterling liabilities of the United Kingdom to the colonies, in the light of the charge commonly heard that their increase in recent years represents economic exploitation of the colonies by the mother country. She points out that the holding of assets in London is a regular feature of the monetary arrangements of colonial territories, and that such balances were held before the war, though no figures were then published of their amount. Dr. Greaves acknowledges that certain of the monetary arrangements that have caused the balances to increase in recent years may have been unnecessarily conservative, as in the case of sterling held as counterpart against colonial currencies. But for the most part she views the accumulation of balances as the natural and not undesirable consequence of the impact of rising prices and prosperity on territories whose monetary system is centred on London. In addition to rejecting the charge that these balances are the result of exploitation, the author finds little substance in the suggestion that their existence represents a potential threat to the stability of sterling.]

HUTT (W. H.). *The Theory of Collective Bargaining*. New American Edition. Glencoe, Illinois: The Free Press, 1954. 7½". Pp. 150. \$3.00.

[This is an unaltered reprint of a tract first published in 1930 and reviewed by Mr. Dobb in the *ECONOMIC JOURNAL* of March 1931, p. 105. Professor von Mises expresses in a preface his support for the thesis put forward in the book that "not to interfere with the operation of the labor market is the only effective full-employment policy" and that "it is impossible for the unions to raise wage rates for all those eager to earn wages."]

JOHNSON (D. G.). *Agricultural Price Policy and International Trade. Essays in International Finance*, No. 19. Princeton, N.J.: International Finance Section, Princeton University, 1954. 9". Pp. 24.

[The most interesting part of this survey of recent American farm price-support policy and its relation to international trade is the author's assessment of the net effects of the policy as it has so far operated on each of the groups primarily concerned. Farmers, he suggests, have benefited much less than might be supposed. This is partly because the stability engendered by the policy itself has led to an increase in productivity in agriculture, and so has lessened the demand for farm resources; and partly because the increased incomes that come from higher prices are either soon imputed to the factor land or slow down the secular process of outflow of labour from agriculture to industry. The policy which Professor Johnson himself favours to avoid the obvious waste and misallocation of resources current at present is to restrict the purpose of farm price support chiefly to the stabilisation of farm incomes in face of fluctuations in output caused by factors outside human control. Some additional support could be given in the event of a depression, but this is no substitute for more general monetary and fiscal policies in such a contingency. Finally, efforts should be made to overcome the frictions which, chiefly in the south, hamper the movement of labour away from agriculture, notwithstanding the appreciably larger earnings available in industry.]

LESTER (R. A.). *Hiring Practices and Labor Competition*. Princeton, N.J.: Industrial Relations Section, Princeton University, 1954. 9½". Pp. 106. \$2.50.

[This report is based on interviews conducted with the managements of a large number of manufacturing firms in Trenton, New Jersey. Information was sought on methods of labour recruitment and similar problems. The main conclusion which emerges is that the extent of labour mobility between firms is very limited. This is due chiefly to the various forms of premium attaching to seniority within a firm and the common practice of filling higher posts exclusively by promotion from within. The deliberate fostering by management of inter-firm immobility by such policies, as well as by anti-pirating agreements between firms, is, in the opinion of the author, actuated almost entirely by the desire to avoid the costs of labour turnover (wasted training, etc.), and apparently not at all by any desire to depress the general level of wage-rates through restriction of competition. The author regards these turnover costs as real costs. He argues that the immobility which results from them must be accepted as an inherent feature of the labour market, and also as an inherent limitation of the usefulness of public employment exchanges.]

MANHEIM (U. L.). *The Florida Everglades. Their farming prospects*. Miami, Florida: Bureau of Business and Economic Research, University of Miami, 1954. 11". Pp. 60.

[A survey of the future possibilities with regard to total acreage under cultivation and use of land cultivated in the Central and South Florida Flood Control District.]

MARSHALL (M. V.). *Automatic Merchandising. A study of the problems and limitations of vending*. Boston, Mass.: Harvard Graduate School of Business Administration (London: Bailey Bros. & Swinfen), 1954. 8½". Pp. v + 275. \$3.50.

[The author traces the development from the original penny-in-the-slot machine to the very widespread use made of automatic selling in the United States at the present time. He describes the problems of location and servicing with which producers are faced, and he then goes on to analyse certain recent experiments in the mechanical sale of more expensive and less standardised commodities. The results of these experiments have not been very encouraging, and Professor Marshall's conclusion is that automatic selling is likely to remain confined to a relatively small range of low-priced convenience goods. The technical and other inherent difficulties of extending its use are strengthened by the small scale of most of the operators in the business, who have neither the means nor the interest for experimental development.]

MORGENSTERN (O.) (Ed.). *Economic Activity Analysis*. New York: John Wiley (London: Chapman & Hall), 1954. 9½". Pp. 554. 54s.

[To be reviewed.]

PARNES (H. S.). *Research on Labor Mobility. An appraisal of research findings in the United States*. Social Science Research Council, Bulletin No. 65. New York: Social Science Research Council, 1954. 9". Pp. v + 205. \$1.75.

[To be reviewed.]

PHELPS (C. W.). *Financing the Instalment Purchases of the American Family. The major function of the sales finance company. Studies in Consumer Credit*, No. 3. Baltimore, Maryland: Commercial Credit Company, 1954. 9". Pp. iii + 104.

[This is the third of a series of monographs on the business of sales finance companies, sponsored by the Commercial Credit Company. Its two predecessors were noted in the *ECONOMIC JOURNAL* of March 1953, p. 254, and June 1954, p. 438. In the present study Professor Phelps is concerned chiefly to describe the various facilities afforded by sales finance companies and their competitors for the purchase of automobiles and other durables (excluding houses). The author addresses himself largely to the intending consumer.]

PRIMM (J. N.). *Economic Policy in the Development of a Western State, Missouri 1820-1860*. Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1954. 8½". Pp. v + 174. 30s.

[The chief conclusion emerging from this admirably lucid and well-arranged short monograph is the rejection of the notion that the prevailing attitude in Missouri before the Civil War was hostile to state participation in economic activity as a matter of principle. The author reviews the activities of the state in the relief of distress, in the promotion of banking and internal improvements, and in other phases of economic activity, and shows that sectional conflicts were a more important obstacle to effective state action than any objections on grounds of principle. The policies actually adopted were in many cases the result of compromise between conflicting political and economic interests.]

Problems in Anti-Recession Policy. A Supplementary Paper of the Committee for Economic Development. New York: Committee for Economic Development, 1954. 11". Pp. 161.

[This consists of a number of independent papers by economists and business-men on different aspects of the problem of income stabilisation. These papers were prepared as Research Memoranda for the use of the Research and Policy Committee of the Committee for Economic Development in connection with its study of stabilisation problems, which resulted in the publication of its recent statement entitled *Defense against Recession: Policy for Greater Economic Stability* (noted in the *ECONOMIC JOURNAL* of September 1954, p. 656.)]

ROBINSON (L. R.). Operating Results of Limited Price Variety Chains in 1953. Boston, Mass.: Harvard University Graduate School of Business Administration (London: Bailey Bros. & Swinfen), 1954. 11". Pp. 33. 15s.

[This is the twenty-third annual report in its series. The value of sales of chain stores rose 1.5% between 1952 and 1953—an increase about equal to that of total sales of non-durable goods though substantially less than that of all retail sales. The rise in expenses was greater than the rise in sales, so that profits before tax fell by 1.8%. Profits after tax fell by 0.5%.]

ROETHLISBERGER (F. J.) AND OTHERS. Training for Human Relations. An interim report of a program for advanced training and research in human relations, 1951-1953. Boston, Mass.: Harvard Graduate School of Business Administration (London: Bailey Bros. & Swinfen), 1954. 8". Pp. v + 198. \$2.00.

[This describes an experiment carried out at the Harvard Business School over a period of three years in the advanced training in human relations of a small group of graduate students and others. The author discusses the methods of training adopted, their successes and failures and the implications for the study and teaching of human relations generally. One of the basic ideas underlying the work is summed up by Professor Roethlisberger as follows: "Instead of regarding skill human relations as a technique to be learned, we have treated it as a way of learning; as a way of assimilating and ordering experience and improving his relations to his surroundings" (p. 18). The first sight some may feel that to write a book about learning how to learn about human relations savours rather of academic introversion. But neither in style nor in content is the book redolent of the classroom, and much of what the author has to say will be of value to anyone interested in human relations in industry, and in particular to those concerned with the training of foremen and supervisors.]

SANDERSON (F. H.). Methods of Crop Forecasting. Harvard Economic Studies, Vol. XCIII. Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1954. 8½". Pp. vii + 259. 40s.

[To be reviewed.]

THOMSON (J. C.). Balance and Flexibility in Fiscal and Monetary Policy. New York: Committee for Economic Development, 1954. 9". Pp. 18.

[An exposition and defence of the type of fiscal and monetary policy recommended by the Committee for Economic Development in its recent publications. This policy involves full acceptance of budget deficits and surpluses as instruments of stabilisation policy, but prefers where possible the use of automatic stabilisers to that of discretionary changes in tax rates or government expenditure.]

TOSTLEBE (A. S.). The Growth of Physical Capital in Agriculture, 1870-1950. Studies in Capital Formation and Financing. National Bureau of Economic Research, Occasional Paper 44. New York: National Bureau of Economic Research, 1954. Pp. 92. \$1.25.

[To be reviewed.]

WALD (H. P.) and FROOMKIN (J. N.) (Eds.). Papers and Proceedings of the Conference on Agricultural Taxation and Economic Development, held under the auspices of the International Program in Taxation, Law School of Harvard University. Cambridge, Mass.: Law School, Harvard University, 1954. 10½". Pp. iii + 439. \$4.50.

[This contains papers by individual authors on problems of agricultural and other taxation in under-developed countries generally and in particular areas. Reports are also included prepared by working groups set up at the conference to consider the main issues on which research is needed in connection with different aspects of agricultural taxation.]

WRIGHT (D. McCord). A Key to Modern Economics. New York: The Macmillan Co., 1954. 8½". Pp. vii + 520.

[To be reviewed.]

French

ANTOINE (J. C.). L'Échange et la Durée. Contribution à une théorie générale des taux d'intérêt. Paris: Armand Colin, 1953. 10". Pp. 114. 400 frs.

[M. Antoine criticises current theories of the rate of interest for their static character and presents his own interpretation in terms of what he calls a theory of stocks and not one of flows. He concludes with a section on statistical applications. The first part of M. Antoine's study is devoted to an outline of basic concepts. He goes on to examine the nature of loans and the structure of interest rates.]

ANTOINE (J. C.). Introduction à l'Analyse Macro-Économique. Les origines. Paris: Presses Universitaires de France, 1953. 9". Pp. 290. 1,000 frs.

[This is the first part of a study of the development of economic thought from the Mercantilists to modern macro-economic theory. This volume ends with an introduction to modern thought via the *General Theory*. It is an example of the avidity with which French economists are making up for the lost years by exhaustive reading of the literature of economics.]

GUGLIELMI (J.-L.) and PERROT (M.). Salaires et Revendications Sociales en France 1944-1952. Paris: Armand Colin, 1953. 10". Pp. 248.

[The authors examine, with the aid of an exhaustive study of the trade-union press between 1944 and 1952, the development of wage-claims in France during that period. They attempt to establish also a picture of the wages "philosophy" of the trade-union movement in France. There is an Appendix containing statistics of movements in wages and other relevant figures, and another in which are charted the activities and claims of the unions. MM. Guglielmi and Perrot draw attention to the importance in the post-war claims of the level of the real, rather than the money wage. This was reflected, in part, in a division of opinion among the labour federations at specific times on the proper policy to pursue: pressure for higher wages or agitation for stabilisation of the cost of living. The authors make great play of this development and of the importance of a "vital minimum" wage; what they say is of great interest. It bears the defect, however, of being clothed to a considerable extent in rather general, semi-philosophic phraseology.]

German

GOLLNICK (H.). Die Nachfrage nach Nahrungsmitteln und ihre Abhängigkeit von Preis- und Einkommensänderungen. Eine ökonomische Untersuchung. Berlin: Paul Parey, 1954. 8". Pp. 110. DM. 5.

[To be reviewed.]

HEINRICH (K.). Strukturwandlungen und Nachkriegsprobleme der Wirtschaft Spaniens. Kiel: Institut für Weltwirtschaft, 1954. 9". Pp. 139. DM. 12.

[This is a statistical account of the lethargic progress, if not complete stagnation, of the Spanish economy from 1935 to 1952. Even though it did not suffer from the Second German War, the figures show rather clearly that not until 1951 did Spain regain the production levels it enjoyed before the Civil War.]

WEISE (H.). Das britische Einkommensteuerrecht in wirtschaftlicher Sicht. Kiel: Institut für Weltwirtschaft, 1954. 9". Pp. 194. DM. 16.

[Taxation is such an involved subject that, however tempting the thought, it is in practice rather difficult to learn from the experience of other countries. Succumbing to the temptation, Dr. H. Weise in the first part of this study attempts to provide German students with a thorough (and, on the whole, complimentary) account of the United Kingdom system of taxes, together with a discussion of some of the points raised before the Royal Commission on Taxation. The second part considers the economic effects of the various taxes; in particular, the effects on price formation, inflation and incentives. The treatment here is too brief to be altogether satisfactory.]

Swiss

BÖRLIN (M.). Die volkswirtschaftliche Problematik der Patentgesetzgebung, unter besonderer Berücksichtigung der schweizerischen Verhältnisse. S. Gallen: Polygraphischer, 1954. 8½". Pp. vii + 236. Fr. 15.50.

[This is a discussion of the relative economic advantages of various types of patent laws, particularly in their bearing on the development of monopolistic situations.]

SCHAUMANN (K.). Die schweizerischen Finanzforderungen im gebundenen Zahlungsverkehr mit dem Ausland. Mitteilungen aus dem Handelswissenschaftlichen Seminar der Universität Zürich. Zürich: Schulthess, 1954. 9". Pp. v + 185. Fr. 14.50.

[Ever since Switzerland was spared the Thirty Years War its growth as a centre of confidence in a world of trouble has proceeded almost without interruption; and so has its growth as a centre of

international finance. The present study is concerned primarily with the last twenty-five years and gives an account of the effects on Swiss finance of the international credit crisis of 1931, the subsequent exchange agreements and the difficulties of the war and post-war periods. It is a remarkably fascinating story in which "hot money" and "free" exchange rates play their well-known parts. The emphasis throughout is on the delicate measures that Switzerland has had to take in order to ensure its own economic stability without at the same time losing the advantage derived from being a world financial centre.]

Dutch

GORIS (H.). Price-Determining Factors in American Tobacco Markets. Contribution to Economic Analysis, V. Amsterdam: North-Holland Publishing Company, 1954. 8½". Pp. 109. 20s.

[To be reviewed.]

GOUBITZ (E.). To and Fro. Human Relations in American Industry seen through Dutch Eyes. The Hague: Contactgroep Opvoering Productiviteit, 1954. 10". Pp. 70 f. 1.75.

[This is the record of a trip to America undertaken by a Dutch consultant in personnel management. The first and third sections of the report consist of a general comparison of problems of industry and labour in Holland and the United States. The author's freshness of approach lends interest to these sections, although the conclusions are mostly fairly familiar. The second section contains a very useful survey of the chief lines of research that have been and are being undertaken in the United States on problems of human relations in industry.]

KOVCK (L. M.). Distributed Lags and Investment Analysis. Contributions to Economic Analysis, IV. Amsterdam: North-Holland Publishing Company, 1954. 8½". Pp. 111. 20s.

[To be reviewed.]

TINBERGEN (J.). Centralization and Decentralization in Economic Policy. Contributions to Economic Analysis, VI. Amsterdam: North-Holland Publishing Company, 1954. 8½". Pp. 80. 13s.

[To be reviewed.]

Danish

JENSEN (A.). A Distribution Model Applicable to Economics. Copenhagen: Munksgaard, 1954. 10". Pp. 99.

[This mathematical monograph shows how many common statistical distributions can be developed from the operation through time of a Markoff process or a Markoff chain. In the second half of the work the formal application of the theory to certain economic models is sketched. Dr. Jensen's object is to develop a tool of analysis which can be used to deal with economic problems possessing an important stochastic element. Four main classes of problems are considered: propagation problems, market equilibrium, the theory of risk and traffic programming. The monograph will be a valuable source of ideas and techniques to the mathematical economist anxious to pay adequate attention to the non-deterministic character of the real world.]

Italian

VITO (F.). L'Economia a Servizio dell'Uomo. I nuovi orientamenti della politica economica e sociale. 4th edition. Milan: Società Editrice Vita e Pensiero, 1954. 8". Pp. 399. Lire 900.

[In this fourth edition of his work, Professor Vito has added a substantial new section dealing with the special problems of social and economic policy in Italy. Among the issues here discussed are the problem of employment, emigration, the economic activities of the state and agrarian reform.

VITO (F.). Le Fluttuazioni Cicliche. 5th revised edition. Milan: Società Editrice Vita e Pensiero, 1954. 8". Pp. 257. Lire 650.

[The fifth edition of this work has been revised to take account of recent publications bearing on the central thesis put forward in its original version as well as in other writings by Professor Vito. This thesis is that the slump comes about because investment in the boom is financed by force saving and that the ploughing back of undistributed profits is the main form which this process takes at the present time. The author argues that recent evidence of the importance of internal sources of finance for investment calls for a reappraisal of traditional policies of credit control.]

Finnish

AF HEURLIN (L. O.). The Economic Theory of Agricultural Production. Helsinki: Academia Scientiarum Fennica, 1954. 9½". Pp. 130.

[To be reviewed.]

Indonesian

BANK INDONESIA. Report for the year 1953-1954. Djakarta: Bank Indonesia, 1954. 11". Pp. 190.

[Almost the whole of this document is devoted to a survey of economic developments in Indonesia in the course of the year. Foreign-exchange reserves continued to fall, but the excess of imports over exports was less than in the previous year, and it is suggested that the development of export and import-substitute industries and encouragement of foreign investment may, if combined with prudent fiscal policy and close control over imports, enable the country's external balance of payments to be established on a more satisfactory footing in the not too distant future.]

Official

BRITISH

MINISTRY OF FOOD. Domestic Food Consumption and Expenditure, 1952. Annual Report of the National Food Survey Committee. London: H.M. Stationery Office, 1954. 9½". Pp. 102. 4s.

[The National Food Survey for 1952 was the first one to cover all the months of the year and so to make possible study of seasonal movements. Detailed discussion of seasonal movements is one of the features of this year's issue of the report. Among other new material included is an analysis of the relation between the number of children in the family and expenditure on all food and on individual items of food. An interesting finding here is that the addition of children to a family leads to a very much smaller proportional increase in the consumption of protective foods than in the consumption of carbohydrates.]

AMERICAN

COMMISSION ON FOREIGN ECONOMIC POLICY. Report to the President and the Congress, January 1954. Washington, D.C.: U.S. Government Printing Office, 1954. 9". Pp. 94. 35 c.

COMMISSION ON FOREIGN ECONOMIC POLICY. Minority Report, January 1954. Washington, D.C.: U.S. Government Printing Office, 1954. 9". Pp. 94. 15 c.

Staff Papers presented to the Commission on Foreign Economic Policy, February 1954. Washington, D.C.: U.S. Government Printing Office, 1954. 9". Pp. 531. \$1.75.

[The two reports represent the majority and minority reports of the Randall Commission, on the basis of which President Eisenhower has recently recommended to Congress the extension of the Trade Agreements Act. The Staff Papers form an exceedingly valuable study of the post-war dollar problem, of the extent of United States foreign aid and foreign investment, of the special problems of agriculture and of the instability of raw material prices, of United States dependence on imported materials, and of the history and economic effects of United States tariffs. There are in addition valuable discussions of the problems of United States adjustment to increased imports and of currency convertibility and the adequacy of foreign monetary reserves.]

AUSTRALIAN

BUREAU OF AGRICULTURAL ECONOMICS. Australian Clothing Consumption Survey. General Report. Canberra: Bureau of Agricultural Economics, 1954. 10". Pp. 82.

[From May 1950 to February 1951 information on ownership and acquisition of clothing in Australia was collected from a sample of 6,000 people. This is believed to be the most comprehensive survey of clothing habits yet undertaken for any country. Particulars are given of the number and type of garments, and their weight and wool content, owned and acquired by men, women, boys and girls in each of the States in the year studied. Analysis is also given of the effect on clothing habits of domicile, marital status, number of dependants, age, occupation and income.]

INTERNATIONAL

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT. Ninth Annual Report, 1953-1954. Washington, D.C.: International Bank for Reconstruction and Development, 1954. 11". Pp. 71.

[The total amount of loans made by the Bank in the year 1953-54 was \$324 million, the highest reached so far. Transport and electric-power facilities each absorbed about a third of this amount. The first chapter of the report describes the procedure adopted by the Bank in the preparation and execution of projects which it supports.]

INTERNATIONAL LABOUR OFFICE. Vocational Guidance in France. Geneva: International Labour Office, 1954. 9½". Pp. 134. 6s.

[The first part of this report contains an account of the organisation of the services providing vocational guidance in France, and the second deals with the methods of guidance adopted. Most of the work done has so far been in the guidance of juveniles, the guidance service to adults having been confined chiefly to the disabled. The scope of the service has expanded considerably since the end of the war, and finance is the chief limitation on further growth at the present time.]

INTERNATIONAL MONETARY FUND. Annual Report 1954. Washington, D.C.: International Monetary Fund, 1954. 9". Pp. ix + 200.

[This year's report contains a long survey of developments in the international balance of payments in 1952, 1953 and the first quarter of 1954. This is preceded by an introductory chapter in which the authors welcome recent movements towards fuller currency convertibility and discuss the conditions for further progress along the same lines.]

INTERNATIONAL TIN STUDY GROUP. 1954 Statistical Year Book. The Hague: International Tin Study Group, 1954. 11". Pp. 260. 55s.

[This is the third biennial issue of this useful year book: in the intervening years the Study Group publishes a Statistical Supplement (1955 issue included in the price). Section I gives a summary of the International Tin Agreement, and Section II reviews production, consumption, etc., during the last two years. Section III summarises government regulations, and the detail is not of much interest to the economist, but Section IV on the tinplate and canning trades may cause him to open his eyes unless he happens already to be well informed on these subjects. Then comes the core of the book in Sections V–XI, which review by continents the production and trade in tin, tin metal, tinplate, etc., in almost every country of the world, except the U.S.S.R. though some notes are given in an appendix. Section XII contains tables of the prices of tin and tin manufactures. A Year Book should be essentially a reference book, and if few economists, and not many business-men, will be interested in the tin statistics of the Azores or the West Indies, or even of some more important countries, such a compilation is well worth the labour and cost involved, and on the really important producing and consuming countries the compilation is as valuable as it is well done.]

ORGANISATION FOR EUROPEAN ECONOMIC CO-OPERATION. Statistics of National Product and Expenditure, 1938, 1947 to 1952. Paris: O.E.E.C., 1954. 11". Pp. 310. 10s.

[This volume, for which we have to thank Dr. Milton Gilbert and the staff of the National Accounts Division of O.E.E.C., under the direction of Dr. G. Stuvell, presents the statistics of the national product and expenditure of all the O.E.E.C. Member Countries, the United States and Canada "on as comparable a basis as has been found feasible," and it gives in addition corresponding estimates for the O.E.E.C. Countries combined. It makes the difficult tasks of international comparison very substantially less than they have been in the past.]

UNITED NATIONS. Economic Survey of Latin America, 1953. Prepared by the Secretariat of the Economic Commission for Latin America. New York: United Nations Department of Economic Affairs, 1954. 11". Pp. 246. 17s. 6d.

[The year 1953 saw a continuation of the decline in the pace of industrialisation and growth of output in Latin America that was apparent in some degree in 1952. According to the statistic prepared by the Economic Commission for Latin America, output per worker declined slightly in 1953, and there was a sharp reduction in both public and private investment, though not in consumption. These contractionary tendencies were largely the result of deflationary policies pursued by governments in order to correct the balance of payments difficulties that had arisen in preceding years as a consequence of rapid growth in income combined with a high marginal propensity to import. In contrast to industry, production in Latin American agriculture increased during the year substantially—in Argentina spectacularly. This was largely due to climatic factors but it reflected also the greater attention given recently to agriculture by the governments of several states. The report contains a wealth of interesting and well-arranged information on these and other trends during the year, both in Latin America as a whole and in individual countries.]

UNITED NATIONS. Yearbook of International Trade Statistics 1953. New York: United Nations Department of Economic Affairs, 1954. 11". Pp. 481. \$4.50.

[The 1953 edition of this invaluable Yearbook follows in the main the same pattern as earlier issues. The world and regional indices of the quantum of trade showed a handsome increase—world export trade (excluding the iron curtain countries) rose from 134% of the 1948 base to 143%. The analysis for so many countries according to the United Nations Standard International Trade Classification has been an heroic achievement. One remains puzzled as to why the analysis on world basis is not extended to give us indices of the world volume of exports in a few broad categories distinguishing, for example, manufactures, materials and foodstuffs. Some knowledge of the trends in these categories is almost a necessity.]

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ECONOMIC THEORY AS A GUIDE TO POLICY: SOME SUGGESTIONS FOR RE-APPRAISAL¹

THE relation between economic theory and policy is a fundamental question which has so far evaded a consensus of opinion among economists. In spite of the impressive progress made in recent decades in clarifying economic problems and the ever-expanding volume of valuable research in many fields of economics, considerable uncertainty continues to prevail about the extent to which theoretical analysis can be useful for the formulation of economic policy and about the best way in which it should be applied to the solution of practical problems.

A number of important contributions to economic thought in the last twenty years or more have inspired the student with a feeling of confidence in the progress of economics, and the research worker with a clear and definite notion about the fields of investigation promising the most fruitful achievements. A reader of Professor Robbins' *Nature and Significance of Economic Science* finds the path of an economist clearly mapped out. Mr. Harrod's presidential address on "The Scope and Method of Economics"² and Dr. Lange's essay under the same title³ represent in their respective ways a very positive and confident view about the nature and method of economic research. In the more specific field of application of economic theory to policy, the work of Professor Meade, although not presenting clear-cut solutions, strongly conveys the notion that economic analysis can be used as a direct guide in formulation of economic policy. The publication and development of the Keynesian income theory or the present impressive expansion of the input-output analysis belong to the great creative manifestations of economic thought appearing to open before economics new horizons of unlimited progress. But, on the other hand, there is the powerful wave of scepticism and doubt, perhaps ultimately creative, but at present denying the validity of many hopes engendered by various new ideas and

Note: The editors deeply regret to have to announce the death of Mr. H. Tyszyński, which occurred on February 28th after a short illness.

¹ The author is grateful to Dr. M. Ezekiel, Professor A. Hanau and Mr. A. G. Leeks for helpful suggestions to improve the original manuscript; he also wishes to thank Professors C. P. Kindleberger, W. Arthur Lewis and V. Marrama for valuable comments of a general nature. Needless to add, the responsibility for the views expressed in this article is entirely his own.

² Published in the *Economic Journal*, September 1938.

³ *Review of Economic Studies*, 1945–46, Vol. XIII (1), No. 33.

concepts, and throwing uncertainty on widely established notions. What is left of the promise of new welfare economics after Dr. Little's *Critique* and Dr. Arrow's *Social Choice and Individual Values*? The recent doubts about the validity or usefulness of important econometric methods,¹ the outcome of the debate on factor-price equalisation,² the criticism of the well-known "proposition in taxation,"³ all seem to lend strength to Professor Bronfenbrenner's view that we are back in the "wilderness" and in a period of "antithesis."⁴

Recent exchanges of ideas among eminent economists on the method and scope of economics⁵ are an indication of the renewed interest in the fundamentals of our science. In the field of applied economics the greatly increased activities and responsibilities of governments⁶ and the development of specialised international organisations dealing with economic problems have enhanced the importance of advice by economists in an impressive way; professional views of economists are gradually gaining in status also in large private industrial undertakings and in financial concerns. Nevertheless, policy-makers are often puzzled about the multiplicity and divergence of advice they are at times getting from the economists. On the other hand, the increase in the number of graduates in economics actively engaged on attempts to solve problems of the "real world" has brought theory face to face with policy much more closely than ever before. The question: "How useful is economic theory in helping to solve concrete economic problems?" has ceased to be just one of the "awkward questions" asked of lecturers by students, and is of serious concern to a great many economists in various walks of life.

The purpose of the present article is to discuss some current ideas on the relation between economic analysis and economic policy and to suggest some lines of approach to a possible re-appraisal of this problem. First, three major concepts of the relationship between economic theory and policy will be briefly reviewed. Secondly, an attempt will be made to survey the recent progress in some leading channels of economic thought closely concerned with providing guidance for economic policy. Finally, certain tentative conclusions will be drawn with reference to the most useful links between analytical research and the consideration of practical problems.

¹ Cf. D. J. Morgan and W. J. Corlett, "The Influence of Price in International Trade: A Study in Method," *Journal of the Royal Statistical Society*, Part III, 1951; Guy H. Orcutt, "Toward Partial Redirection of Econometrics," and Comments, *Review of Economics and Statistics*, August 1952.

² Cf. S. F. James and I. F. Pearce, "A Comment on Factor Price Equalisation," *Review of Economic Studies*, 1951-52, Vol. XIX (2), No. 49.

³ I. M. D. Little, "Direct versus Indirect Taxes," *ECONOMIC JOURNAL*, September 1951, and R. K. Davidson, "The Alleged Excess Burden of an Excise Tax," *Review of Economic Studies*, 1952-53, Vol. XX (3), No. 53; W. J. Corlett and D. C. Hague, "Complementarity and the Excess Burden of Taxation," *Review of Economic Studies*, 1953-54, Vol. XXI (1), No. 54.

⁴ See M. Bronfenbrenner, "Contemporary Economics Resurveyed," *Journal of Political Economy*, April 1953.

⁵ E.g., D. H. Robertson, *Utility and All That and Other Essays*, and Lionel Robbins, "Robertson on Utility and Scope," *Economica*, May 1953.

⁶ This remains true in spite of the current trend to a more liberal economy in many countries.

I

Among current ideas on the relation between economic theory and policy three main concepts can be distinguished. The essence of one approach is that theory can only be applied to specific problems, as they arise. This *ad hoc* approach, so forcefully expressed in Mr. Johnson's review-article on Professor Meade's first volume of the *Theory of International Economic Policy*,¹ was to a large extent implied in Professor Robbins' *Nature and Significance of Economic Science*.² Although Robbins did not specifically discuss in his essay the possibility of formulating a theory of economic policy, his analysis of the relation between economic theory, realistic empirical studies and economic policy provides a definite view of the rôle of economic analysis in the process of formulating policy. First, there is the basic dichotomy between "pure theory" and policy advice. The former is of general validity, since it contains rigorous deductions from premises based on common experience which is clearly discernible, while the latter amounts to the demonstration of implications of certain value judgments taken over from other social sciences or given by some political authority. Empirical studies bring the theory much nearer to the specific problem in hand: they help to decide upon the applicability of particular theoretical propositions and the selection of additional assumptions; moreover, by providing the factual content they may enable us, in certain cases, to make a correct prediction as to the direction of economic change. These considerations, however, are relevant, according to this view, only to a particular moment and to a particular situation. The continuous changes in basic economic data very substantially limit the power of economists to predict, and the theory, even enlivened by empirical studies, cannot give more than a limited guidance to economic policy.

Mr. Johnson strongly denies the possibility of establishing a body of policy recommendations applicable to broad categories of economic situations. In his view the only legitimate way of using theory as guidance to policy is "within the context of a particular problem occurring in a particular environment."³ Owing to the complexity of causal relationships in economic phenomena, economic theory can, according to his view, hardly provide any general solutions to policy problems. Theory can specify certain critical values of economic variables or constants on which the solution of a problem might depend, but in order to measure the magnitudes involved (even to estimate them in a qualitative sense), "a detailed specification of the environment to which theory is to be applied" is required; thus "the rôle of economic theory in the solution of practical problems is extremely limited: the important (and more difficult) part of the task becomes the problem of measurement, however it is performed."⁴ In view of its tendency to simplify problems economic theory can even, in certain circumstances, become "a handicap rather than a help."⁵

¹ Harry G. Johnson, "The Taxonomic Approach to Economic Policy," *ECONOMIC JOURNAL*, December 1951.

² The arguments summarised here are mainly contained in Chapters V and VI of the book.

³ H. Johnson, *op. cit.*, p. 828.

⁴ *Ibid.*, p. 827.

⁵ *Ibid.*

Basically, the *ad hoc* approach to the relation between economic theory and policy can perhaps be viewed in the following terms. The policy-maker concerned with economic problems should regard economic theory as a book of reference containing the implications of various events and alternative courses of action in the highly artificial world of simplifying assumptions. The more realistic the assumptions in relation to the problem under consideration, the more helpful economic analysis becomes, but, since real problems are so complex, by itself it can hardly provide solutions. It is not possible to formulate a body of prescriptions or principles that could be called a theory of economic policy on the basis of economic theory alone, for there is necessarily something subjective and "unscientific" about a theory of economic policy. The only proper function of economic theory in matters of policy is to act as an aid—one may hope as a major aid, but never as a unique basis—in finding solutions to specific problems.¹

Opposed to the above concept is the traditionally "prescriptive" approach of "political economy." This approach was clearly explained by Mr. Harrod in his "Scope and Method of Economics,"² where he expressed the view that there was a basic dichotomy within economic theory itself.³ On the one hand, there are the causal laws of economics, which in view of their generality can be used for policy guidance only to a very limited extent, and, on the other hand, the body of economic prescriptions based not so much on outside conventions as on a fundamental "economic criterion." The economic criterion implies that individuals, whether acting as consumers or as sellers of labour services, ought to be, in so far as possible, in a preferred position. Prescriptions based on this criterion are usually elaborated with a model of pure competition as an ideal objective, and it is the aim of economic advice in the field of policy to facilitate the expression of individual preferences.⁴

Starting from such general premises based on a widely acceptable "value judgment," a theory of economic policy can be built which will consist not only of a method of approach or technique of analysis of economic problems, but also of a system of explicit or implied prescriptions intended to guide policy decisions in various circumstances. Thus Professor Pigou had formulated a comprehensive theory of economic policy in his *Economics of Welfare* on the assumption of the desirability of maximising the national dividend by means of the "equi-marginal" principle as applied to the social net product, and suggested certain measures in the field of income distribution based on a further, widely accepted though subjective, assumption of diminishing

¹ Broadly speaking, the *ad hoc* approach appears to be implied also in Professor Milton Friedman's recent essay, "The Methodology of Positive Economics," which is mainly concerned with the problem of the significance of theoretical hypotheses; he stresses, however, the need for a more systematic investigation of the "limits of validity" of the various hypotheses and, in general, of the criteria for their applicability to concrete problems (Cf. Milton Friedman, *Essays in Positive Economics*, in particular pp. 30-43). In his methodological reviews of Lange's *Price Flexibility and Employment* and Lerner's *Economics of Control* he strongly criticises "taxonomic theorizing" and policy prescriptions based on purely formal analysis (Cf. *op. cit.*, Part IV).

² Cf. p. 195 above, footnote 2.

³ *Ibid.*, pp. 386-7.

⁴ *Ibid.*, pp. 389-92.

marginal utility of income. Professor Meade's *Introduction to Economic Analysis and Policy* is largely based on similar assumptions. Professor Lerner, in *The Economics of Control*, developed a whole system of rules for a controlled economy designed to bring about conditions that would approach a competitive equilibrium with an equalitarian distribution of income. More recently, in his *Theory of International Economic Policy*, Professor Meade discusses the implications of various policies on the basis of the twin objectives of full employment without inflation and the achievement of an equilibrium in the balance of payments; while no rules or direct advice are formulated, a significant measure of prescription is implied in the analysis.

Another concept of the theory of economic policy, which we may describe as the "econometric approach," was developed by Dr. Tinbergen in his recent theoretical study of economic policy.¹ This concept hardly contains any prescriptions for action. Although at the beginning of the study the objective of economic policy is described in terms of maximisation of individual, collective or social utility functions,² the major part of the analysis is in terms of given targets (which are the interpretation of the "general interest" by the political authority), and centres on the determination of the magnitude of "instruments," appropriate to the existing institutional framework and structural relations, designed to achieve the desired specific objectives. While stress is laid on the argument that economic policy must form a "coherent entity" and that "the unit to be considered is the totality of all measures in execution at a given moment or proposed to be taken simultaneously,"³ there is no discussion of the optimum allocation of resources, distribution of income or criteria for economic improvement. On this approach, the theory of economic policy amounts in fact to an analysis of the technique by which economic theory can be brought to bear on policy decisions. More specifically, it amounts to an investigation of the methods of constructing and applying econometric models in order to provide guidance for policy decisions.

The relative significance of these three concepts of the relation between economic analysis and policy may be more clearly examined in the light of the progress recently attained in those channels of economic thought which are directly concerned with economic policy, viz., (a) modern welfare economics; (b) econometric research, including input-output analysis and programming; (c) recent attempts at formulating principles of economic growth.

II

While it is a characteristic feature of modern welfare economics that direct prescriptions are avoided, the declared purpose of this branch of economics is to provide guidance for policy as closely as is consistent with

¹ J. Tinbergen, *On the Theory of Economic Policy* (first study in the series *Contributions to Economic Analysis*, Amsterdam, 1952).

² *Ibid.*, pp. 1-5.

³ *Ibid.*, p. 68. The importance of non-economic factors is also emphasised.

general standards of objectivity. Although Professor Pigou, in *Economics of Welfare*, clearly rejects the idea of economics being a "normative science,"¹ his investigations of economic causes of welfare in fact prescribe economic policy by implication. The main difference between Professor Pigou's concepts and the "new" welfare economics of Hicks, Kaldor or Bergson amounts to a divergence of views about the major assumptions of the Pigovian analysis rather than to a disagreement about the "normative" implications of welfare economics. In a way, the "recommendatory force" of the postulates of the "new" welfare economics has been considered as much stronger than that of Professor Pigou's.² The concept of welfare economics formulated by Professor Hicks in his study of its foundations was that of a theory of economic policy free from subjective value judgments.³ Professor Scitovsky defines welfare economics as "that part of the general body of economic theory which is concerned primarily with policy,"⁴ and in Dr. Little's view the prescriptive nature of welfare economics is clearly apparent, since its object is "to find out what is the best thing to do in various situations."⁵

Few people would contend that Professor Pigou's discussion of the divergence between social and private marginal products, of remedies for monopoly, of wages or of rationing and subsidies is not useful for the consideration of important issues of economic policy. The criticism of his work, on the other hand, is based on the view that his welfare criteria rest on assumptions which—like diminishing marginal utility of income, broad similarity in capacity for enjoyment between individuals, or a general correspondence between an increase in "economic welfare" and "total welfare"—cannot be tested, and are in fact subjective, though perhaps widely accepted, value judgments. Although Professor Pigou's conclusions as to the broad validity of his assumptions are reached only after a detailed discussion and hedged at each step with qualifications, a system of analysis is none the less constructed which, as Professor Hicks put it, consists of a chain of reasoning with important "weak links"⁶ and cannot be considered as a truly objective basis for economic policy.

The great promise of the "new" welfare economics was to provide criteria of general, or even universal, validity on the ground of which one could decide whether a course of action was "desirable" or "undesirable" from the economist's point of view. The essence of this new approach was the principle of "potential compensation" as formulated by Mr. Kaldor⁷

¹ A. C. Pigou, *The Economics of Welfare*, pp. 5–10.

² This was emphasised by A. Radomysler in his article "Welfare Economics and Economic Policy," *Economica*, August 1946, and is quoted with approval by I. M. D. Little in his *Critique* on p. 80.

³ Cf. J. R. Hicks, "Foundations of Welfare Economics," *ECONOMIC JOURNAL*, December 1939, pp. 696–8 and 712.

⁴ T. Scitovsky, "The State of Welfare Economics," *American Economic Review*, June 1951, p. 303.

⁵ I. M. D. Little, *A Critique of Welfare Economics*, p. 83.

⁶ J. R. Hicks, *op. cit.*, p. 698.

⁷ N. Kaldor, "Welfare Propositions in Economics," *ECONOMIC JOURNAL*, September 1939.

and later developed by Professor Hicks.¹ According to this well-known view, the economist is completely objective and "scientific" in advocating a change in economic institutions or regulations if the change is "efficient" in the sense that gainers could over-compensate the losers² (or more precisely, as shown by further contributions in this field, that "the potential losers could not profitably bribe the potential gainers to oppose the change").³ While the problem of the actual compensation of losers is considered a political question on which the economist in his own professional capacity can hardly give advice,⁴ Professor Hicks expressed the hope that in a world where many small economic changes are the rule no major undesirable redistribution of income is likely to occur as the result of improvements in "efficiency" alone.⁵ Broadly, two analytical tools have been envisaged to form, on these assumptions, the basis for policy criteria: (i) a developed and refined Paretian system of "optimum conditions" of exchange and production, and (ii) a re-formulated concept of the "consumer's surplus." A somewhat different approach from that of the "compensation principle" is represented by the concept, developed by Professors Bergson and Samuelson, of the social (or economic) "welfare function," conceived as the relationship between, on the one hand, individual preferences, and ideas about an optimum distribution of income, and, on the other, the collective level of welfare (or satisfaction) of society.⁶ This concept is also intended to separate the problem of "efficiency" of the economic system from that of the distribution of income. For any given distribution of income, the economist can suggest improvements based on the "optimum" conditions of exchange and production, but the determination of the final optimum involves a collective (or perhaps a dictatorial) judgment of an ethical nature about the most desirable distribution of income.

The searching *Critique* by Dr. Little⁷ of these new formulations of the basic concepts of welfare economics questioned the soundness of their theoretical foundations, concluding that neither the "compensation principle" nor the concept of a social (or economic) "welfare function" was capable of by-passing the major ethical problem of distribution of income.⁸ Hence, according to Little, the criterion for a desirable economic change must include besides the "efficiency" requirement (based on the reformu-

¹ J. R. Hicks, "Foundations of Welfare Economics," *ECONOMIC JOURNAL*, December 1939.

² Cf. Kaldor, *op. cit.*, p. 550, and Hicks, *op. cit.*, p. 706.

³ Cf. I. M. D. Little, *op. cit.*, pp. 98–105. This definition was developed in order to avoid a possible contradiction in the more simple criterion as shown by Professor Scitovsky in an article in the *Review of Economic Studies*, November 1941. In a recent article Dr. Mishan provides a proof that a contradiction of this nature can be completely avoided only with a movement from a Paretian "sub-optimum" to a Paretian "optimum" (cf. *Journal of Political Economy*, August 1952).

⁴ Cf. N. Kaldor, *op. cit.*, pp. 551–2.

⁵ J. R. Hicks, "Rehabilitation of Consumers' Surplus," *Review of Economic Studies*, February 1941, p. 111.

⁶ Cf. P. A. Samuelson, *Foundations of Economic Analysis*, pp. 221–8; A. Bergson, "Socialist Economics," in *Survey of Contemporary Economics*, p. 417; T. Scitovsky, "The State of Welfare Economics," *American Economic Review*, June 1951, p. 311.

⁷ I. M. D. Little, *A Critique of Welfare Economics*.

⁸ *Ibid.* Chapters VI and VII.

ated compensation principle) the condition that actually the change "should not result in a bad redistribution of welfare." Moreover, it is also "a matter of judgment and opinion" whether or not in a particular case the factual assumptions on which the propositions of welfare economics are based (*e.g.*, unchanged population, consistency of individual choice or absence of external economies) are sufficiently realistic to warrant the application of these postulates to the problem under consideration.¹ A systematic survey of the various simplifying assumptions underlying welfare propositions, and some detailed attempts at applying them to practical problems, lead Dr. Little to emphasise their very limited usefulness as a guide to policy. Thus in his view: "Economic welfare is a subject in which rigour and refinement is probably worse than useless. Rough theory, or good common sense, is, in practice, what we require."²

Another difficulty of the concepts of present-day welfare economics has been stressed by Professor K. J. Arrow in his *Social Choice and Individual Values*. His main interest is in the nature of the social welfare function itself, or more precisely, in the rule by which individual preferences can be translated into collective choices between social alternatives.³ This concept of the welfare function is closely related to policy problems. Dr. Arrow's main theorem states, however, that, excluding interpersonal comparisons, there is no "rule," for more than two alternatives, that would enable us to pass from individual preferences (including both tastes and social valuations) to social choices and would be, at the same time, both logically consistent and neither "imposed" nor "dictatorial."⁴ Arrow shows further by means of logical deductions that the usual assumptions of welfare economics about individuals judging different social states according to their own consumption-savings-leisure position are insufficient to disprove this theorem.⁵ Finally, he expresses the opinion,⁶ which seems to be shared by Professor Scitovsky,⁷ that the possible way out of his dilemma lies in some form of uniformity among individuals in preferences for social alternatives (as distinct from tastes). Mr. Weldon, in a review-article,⁸ looks for a solution of the problem to some form of Professor D. Black's hypothesis about "single-peaked" preferences (which states that individuals, while differing in their first choices, are none the less agreed about the ordering of the remaining alternatives if the first choice is given).⁹ In his view, however, a satisfactory proof of such a nature of social preferences would have to be based on the notion of cardinal "utility," and, ultimately, for "any substantial advance" in

¹ Cf. I. M. D. Little, *op. cit.*, in particular pp. 117-20 and 270-2.

² *Ibid.*, p. 272.

³ The difference between this concept of the social welfare function and the one usually attributed to Bergson is discussed by Dr. Little in his review-article on Arrow's book ("Social Choice and Individual Values," *Journal of Political Economy*, October 1952).

⁴ Cf. Arrow, *op. cit.*, pp. 46-60.

⁵ *Ibid.*, pp. 61-4.

⁶ *Ibid.*, p. 89.

⁷ Cf. T. Scitovsky, *op. cit.*, p. 314.

⁸ J. C. Weldon, "On the Problem of Social Welfare Functions," *Canadian Journal of Economics and Physical Science*, November 1952.

⁹ *Ibid.*, pp. 461-2; K. J. Arrow, *op. cit.*, pp. 75-80; T. Scitovsky, *op. cit.*, pp. 313-14.

welfare economics it would be "necessary to permit interpersonal comparisons."¹

The issue of cardinal utility and interpersonal comparisons, in connection with a discussion of the whole field of welfare economics, was forcefully raised a few years ago by Sir Dennis Robertson in his Manchester lectures on "Utility and All That."² In his view, the reinstatement of "utility" measurable in principle, as well as of the notion of diminishing marginal utility of income, would clarify thinking and extend the area in which strictly economic analysis could be carried on. Sir Dennis believes, however, that while this would tend to render economics more useful for policy purposes, actual decisions would have to be based ultimately on sound judgment.

Looking back at the post-war debate on welfare economics, one cannot register much progress in the efforts of the new welfare analysis towards attaining its major purpose of providing a direct, objective, and therefore uncontroversial, basis for policy prescriptions. The rules for an "optimum" allocation of resources, which at best can be accepted only as necessary conditions for the maximisation or improvement of "economic welfare," are by themselves too abstract and too general to be of significant help for the solution of policy problems. Whether or not considerations of income distribution, or more generally of equity, can be divorced from problems of allocative efficiency in recommendations for measures of economic policy,³ there are a great number of factual assumptions, as Dr. Little has clearly shown,⁴ which have to be fulfilled before the achievement of the "optimum" conditions can be considered as "desirable." The marginal-cost controversy with respect to pricing in nationalised undertakings,⁵ and the very limited sense in which the well-known proof of the superiority of direct over indirect taxation appears to be valid,⁶ are forceful illustrations of the obstacles in the path of welfare economics as a guide to policy. On the other hand, it is doubtful whether the concept of basic "economic conventions," like diminishing marginal utility of income, would be particularly helpful for relating economic theory to policy more closely. Even the most widely acceptable assumptions of this nature, like Mr. Harrod's "economic criterion,"⁷ are not entirely free from certain relativity and subjective value judgments. A greater conceptual clarity appears to spring from the recently restated argument of Professor Robbins about a welfare economics clearly distinct from the strictly scientific "pure theory," and discussing the "logical implications of certain conventions" of a political or philosophical nature.⁸ While attempts at formulating some widely acceptable ends, and other value judgments, and then developing rules for an ideal economic

¹ J. C. Weldon, *op. cit.*, p. 463.

² Published in *Manchester School*, May 1951, and included in *Utility and All That and Other Essays*.

³ For an interesting discussion of this point, cf. *inter alia*, T. Scitovsky, *op. cit.*, p. 308-10.

⁴ See, *e.g.*, Dr. Little's discussion of the principle of equality between marginal cost and price, *op. cit.*, pp. 136-7 and 150-4.

⁵ *Ibid.*, pp. 180-210.

⁶ Cf. studies referred to in footnote 3 on p. 196.

⁷ Cf. p. 198 above.

⁸ Cf. Lionel Robbins, "Robertson on Utility and Scope," *Economica*, May 1953, in particular p. 109.

system are in danger of lacking sufficient realism and concreteness, such a system, as long as the basic value premises are accepted, can nevertheless exercise a considerable influence on economic policy as an expression of its ultimate goals.

III

Whether in its attempts to provide numerical estimates of the various parameters relating economic variables, which according to theoretical analysis are of major importance for policy decisions, or in its endeavours to test theoretical hypotheses regarding economic relationships, econometric research is closely connected with the application of economic theory to policy. Its special importance in this respect springs from a characteristic combination of deductive theory and empirical research. It is the essence of econometric models that the set of precise economic relations they represent can be tested against factual data of the real world to prove or disprove their validity. In fact, the theoretical hypothesis and empirical tests form the two fundamental parts of econometric research. While some models of a general nature, designed mainly to explain certain empirically ascertained features of the economic system, *e.g.*, the instability of economic growth,¹ cannot be immediately tested for reasons such as the inadequacy of statistical material or of known statistical methods, their validity ultimately depends on empirical tests. Until appropriate tests can be devised, such models remain in the nature of "qualitative" hypotheses, despite the precise mathematical form of the equations in which they are expressed.²

The propositions of welfare economics, as restated in the last fifteen years, do not lend themselves to econometric analysis, since they cannot be empirically tested.³ Econometrics has emerged from attempts to quantify the demand functions and agricultural production functions, as well as from statistical investigations of economic fluctuations. The Keynesian "macro-economic" theory, with its aggregate consumption function and the multiplier, provided great opportunities for an expansion of econometric research and brought it much more closely to actual policy decisions. The scope of econometric analysis, however, even in its more direct relation to national policy, is usually limited to a framework of given quantitative targets as well as given "instrument" variables.⁴

Although econometric investigations have grown at an impressive rate, and considerable improvements in methods have been attained, the results so far have been in many ways disappointing.⁵ The lack of success of fore-

¹ Cf. Mr. Harrod's model of a growing economy in *Towards a Dynamic Economics*, or Professor Hicks' model of cyclical fluctuations in *A Contribution to the Theory of the Trade Cycle*.

² For a discussion of the concept of qualitative mathematical statements see G. L. S. Shackle, "Economics and Sincerity," *Oxford Economic Papers*, March 1953.

³ Cf. I. M. D. Little, *op. cit.*, pp. 118-20.

⁴ Cf. the brief discussion of Dr. Tinbergen's essay on p. 199 above.

⁵ This sense of disappointment is well reflected in Professor Orcutt's words: "At present it is not even possible to furnish the policy-maker with accurate short-run forecasts of most important economic variables for even a single course of policy action, let alone for each of several alternative courses of policy action." (Cf. G. H. Orcutt, "Toward Partial Redirection of Econometrics," *Review of Economics and Statistics*, August 1952, p. 195.)

casts on the basis of income-consumption models,¹ as well as the apparent failure of investigations into elasticities of demand for exports,² have underlined the need for improving the tools of the econometrician and for a more modest assessment of his possibilities. Mr. Stone, in his Newmarch Lectures on "The Role of Measurement in Economics," drew attention to the three major difficulties which econometrics was facing in attempting to formulate conclusions useful for economic policy. First, there is the problem of postulates, namely, whether in social sciences the validity of initial assumptions can be confirmed by testing theorems derived from them, especially if one does not consider that basic postulates of economic theory form a "set of irreducible axioms."³ Thus accidental statistical uniformities can be erroneously taken for causal relationships. Secondly, there are the omitted variables which for various reasons cannot be included in an econometric model, but the strength of which may be of crucial importance for a particular policy problem; attempts to overcome this difficulty by introducing "error terms" (or rather "disturbance terms") with a random distribution do not, in fact, remove the implied obstacles to accurate forecasting.⁴ Finally, there are changes in the values of parameters and in the form of structural relations over time, which may or may not be important for a forecast needed in connection with a specific policy problem.⁵

Further light on the difficulties of formulating econometric models of more direct use for the solution of policy problems was thrown by the 1952 discussion in the *Review of Economics and Statistics* on the desirability of a "partial redirection of econometrics."⁶ Professor Orcutt, suggesting the redirection, urged that econometricians should relate their work more closely to actual policy requirements and that, in view of the difficulties of more ambitious forecasting, they should concentrate their work on problems the solution of which is not only useful in principle, but actually feasible. This would involve, according to his argument, the focusing of attention on the impact on the economic system of those "instruments of adjustment" which can actually be used for the desired purpose of control, and on time-lags between their application and impact; moreover, this would also necessitate a very careful identification and study of exogenous variables⁷ and their

¹ Cf. M. Bronfenbrenner, "Contemporary Economics Resurveyed," *Journal of Political Economy*, April 1953, p. 168, and Tom E. Davis, "The Consumption Function as a Tool of Prediction," *Review of Economics and Statistics*, August 1952; Davis stresses, however, the more promising features of a consumption function the estimation of which takes account of the force of acquired consumption habits. The varied Western European experience with forecasts of national income and its main components for governmental use is discussed in U.N. *Economic Bulletin for Europe*, First Quarter, 1953.

² See D. J. Morgan and W. J. Corlett, *op. cit.*

³ R. Stone, *The Role of Measurement in Economics*, pp. 12-15.

⁴ *Ibid.*, pp. 3-4 and 32-3. ⁵ *Ibid.*, pp. 33-5.

⁶ G. H. Orcutt, "Toward Partial Redirection of Econometrics," and Comments by Professors Koopmans and Georgescu-Roegen and Dr. Tinbergen, *Review of Economics and Statistics*, August 1952.

⁷ *I.e.*, variables influencing the system, or set of equations, but themselves determined outside this framework.

interrelations.¹ Professor Georgescu-Roegen appeared rather isolated in the view implied in his arguments that the main purpose of econometric models was to help analysis and estimation in general rather than to assist policy more directly.² According to Professor Koopmans, while limits to scientific analysis for forecasting economic developments may still be far away, the main purpose of econometric models, in view of the existence of such limits, was to determine for the benefit of policy-makers which "dials and levers" in the economic world were "sufficiently fast and predictable in their effects."³ Similarly, Dr. Tinbergen regarded as the most useful field for econometrics the solving of "variation problems," i.e., the repercussions on the economic system of a change in data, such as the tracing out of effects on an economic variable of a change in controllable parameters.⁴

In his recently published study *On the Theory of Economic Policy*⁵ Tinbergen discusses the methods of estimating the required values and relative efficiency of "instrument variables," such as the extent of devaluation or tax rates, which it is feasible to use within a certain political framework as means of attaining the desired policy targets. In his view, the difficulty presented by the multiplicity of relationships can for certain problems be overcome by an analysis in two stages: (i) an econometric macro-economic model; (ii) a partial and rather qualitative analysis, which would take into account also non-economic factors, designed to decide more detailed matters.⁶ While stressing the limitations of scientific treatment of the implications of policies concerned with changes in structural economic relations, Tinbergen urges a gradual extension of empirical economic research beyond the realm of economic behaviour "under circumstances of small quantitative variations" in economic variables.⁷

A field of economic policy where a partial use of econometric methods, in conjunction with various qualitative estimates, has been consistently applied for a long period is to be found in the annual forecasting of demand and prices of farm products by the United States Department of Agriculture. A recent appraisal by several authors⁸ of this outlook work after thirty years of experience, while stressing its substantial shortcomings and imperfections, points to its value for policy purposes and to the possibilities for future improvements. It is shown that these forecasts were a great improvement over

¹ G. H. Orcutt, *op. cit.*, pp. 195-200; great difficulties in using statistical methods for the analysis of exogenous variables, however, were stressed in the discussion, in particular by Professor Georgescu-Roegen who expressed the opinion that "statistical inference will confirm the choice of any model provided the latter follows, be it only in general lines, the map of the data" (*ibid.*, p. 211).

² *Ibid.*, pp. 208 and 213.

³ *Ibid.*, p. 201.

⁴ *Ibid.*, p. 205.

⁵ Cf. p. 199 above.

⁶ J. Tinbergen, *On the Theory of Economic Policy*, pp. 64-7. ⁷ *Ibid.*, pp. 72-3.

⁸ See James P. Cavin, "Forecasting the Demand for Agricultural Products," *Agricultural Economics Research*, July 1952; J. D. Baker and D. Paarlberg, "How Accurate Is Outlook?" *Journal of Farm Economics*, November 1952, and "Outlook Evaluation—Methods and Results," *Agricultural Economics Research*, October 1952; Karl A. Fox, "Factors Affecting the Accuracy of Price Forecasts," *Journal of Farm Economics*, August 1953; M. Ezekiel, "Agricultural Situation and Outlook Work, National and International," *F.A.O. Monthly Bulletin of Agricultural Economics and Statistics*, June 1954.

random guessing about the direction of change, and gave, on the whole, better estimates than simple projections of short-term trends. On the other hand, the continued substantial variation in accuracy of forecasts from year to year is emphasised as one of their major weaknesses. An interesting study by Dr. K. A. Fox of the possibilities of agricultural price forecasts in general, based on *ex-post* estimates from statistical demand functions,¹ shows a satisfactory minimum range of error for retail prices of a substantial number of products, but not for farm prices of most commodities; it is argued, however, that such errors can be reduced by more refined methods. On the other hand, pre-war structural relations of demand for farm products in the U.S.A. appear to have continued broadly unchanged in post-war years.

The youngest branch of econometrics, "linear programming" or "activity analysis," has developed in close association with practical questions, and appears to have proved its direct usefulness for economic policy in the field of certain short-period "micro-economic" problems.² While in certain essential respects its method is closely linked to Leontief's "input-output" model, providing a *tableau économique* of the whole set of relations between the different industrial sectors of a national economy,³ these two econometric tools differ substantially in purpose and nature. Their common basic assumption is that in each productive process, or "activity," factors are combined in fixed proportions, but it is only the "input-output" model which generally assumes that there is only one way of producing the output of a given industrial sector (or, in other words, that at a given time each industrial sector can use only one combination of inputs per unit of output).⁴ Linear programming, on the other hand, is concerned with the allocation of resources in the sense of selecting in given circumstances the economically most "efficient" process or combination of processes of production; in its "maximisation" approach, however, it assumes, unlike marginal analysis, that technically possible variations in factor proportions are limited by a given number of processes, each of which requires a fixed combination of factors, not admitting substitution and independent of the scale of output.⁵

Both linear programming and input-output analysis are in a stage of rapid development, and any attempts at considered appraisal of their potentialities appear to be premature. Nevertheless, a few general points, on the basis of recent contributions to the subject, might be usefully noted. While linear programming bears a certain resemblance to the "efficiency" analysis of welfare economics, and the similarity of the theoretical conclusions

¹ Cf. Karl A. Fox, *op. cit.*

² Cf. J. Chipman, "Linear Programming," *Review of Economics and Statistics*, May 1953; R. Dorfman, "Mathematical, or 'Linear', Programming: A Non-mathematical Exposition," *American Economic Review*, December 1953; K. S. Lomax, "Allocation and Programming in Modern Economics," *Manchester School*, September 1953; G. Morton, "Notes on Linear Programming," *Economica*, November 1951.

³ See W. W. Leontief, *The Structure of American Economy 1919-1939*.

⁴ See in particular R. Dorfman, *op. cit.*, pp. 824-5, and K. S. Lomax, *op. cit.*, p. 187.

⁵ Hence production functions, transformation curves and product isoquants are no longer smooth curves and become broken lines. (See J. Chipman, *op. cit.*, p. 106; R. Dorfman, *op. cit.*, pp. 799-801 and 806-7.)

of the two types of maximisation has been stressed,¹ in its applied studies it has hardly concerned itself with problems of national economic policy. Moreover, its application to the efficient utilisation of resources of a whole country has in principle very serious limitations; in particular, the compatibility of "efficiency" with any degree of unemployment has been given emphasis.² The main significance of programming appears to consist of its ability to provide concrete numerical solutions for certain short-period production or transportation problems confronting a single planning unit. Attempts to introduce dynamic elements into the programming technique and to relax the assumption of given prices facing the planners may substantially extend the range of problems for which this technique is suited.³ So far as the input-output model is concerned, recent progress has gone largely in the direction of describing changes in the structure of national economy, partly by the comparative-statics approach showing structural changes between different dates, and partly by introducing a dynamic element in the shape of capital coefficients relating changes in stocks of capital equipment to changes in the flow of output.⁴ The very serious limitations on using the dynamic system for more direct types of prediction have been stressed by Leontief himself,⁵ and while he expresses the hope that by means of a "multi-phase" technique the model may become useful for tracing out alternative courses of policy, he underlines the considerable obstacles encountered in following this approach.⁶ An interesting effort has also been made to go beyond the framework of input-output tables and to investigate, on the one hand, factors determining input coefficients on the basis of engineering data, and, on the other, elasticities of substitution in consumption by more conventional methods of statistical correlation, but on the basis of a new model.⁷ According to Leontief, the main challenge of the input-output approach consists of its major attempt to widen "radically and effectively" the empirical basis of economics, and of its preference for direct observation whenever possible; these features distinguish it from econometric models based on statistical inference.⁸ In the field of practical application the input-output technique has been recently used as an aid in appraising the implications of a contemplated increase in the national income of Italy, for the output and capacity of various industries and for import requirements.⁹

On the whole, the various tools of econometrics have provided a considerable amount of useful information about certain structural relations of economic systems as well as actual solutions of some specific policy problems largely of a technical nature. While these tools have not as yet proved sufficiently reliable to provide a major guide for policy decisions, and certain

¹ Cf. R. Dorfman, *op. cit.*, p. 824, and J. Chipman, *op. cit.*, p. 117.

² See J. Chipman, *op. cit.*, pp. 115-17.

³ Cf. R. Dorfman, *op. cit.*, pp. 822-3.

⁴ See W. W. Leontief and others, *Studies in the Structure of the American Economy* (1953).

⁵ *Ibid.*, p. 62.

⁶ *Ibid.*, pp. 72-6.

⁷ *Ibid.*, pp. 13-15 and Chapters 8-12.

⁸ *Ibid.*, p. 5.

⁹ See U.S.A. Mutual Security Agency, *The Structure and Growth of the Italian Economy*, Rom 1953 (a study prepared under the direction of Professor H. B. Chenery and Mr. P. G. Clark).

inherent limitations on their power accurately to estimate the consequences of alternative courses of policy must be recognised, great promise attaches to the further development of econometric methods.

IV

The pioneering work on the formulation of a theory of economic growth is the third type of analysis which appears particularly important in connection with a discussion of economic theory as a guide to policy. Few economists would presumably disagree with the well-established argument¹ that changes in basic economic data, *i.e.*, population, technology and political or legal framework, cannot be studied in economic terms alone, and that the prospects of formulating a universal theory of economic development by means of a combined effort of social sciences are very doubtful.² Nevertheless, the gradual shift of interest in the field of policy in post-war years from cyclical fluctuations to structural maladjustments underlines the importance of studies of long-term processes. Research has been proceeding here in two separate channels. Efforts are made, on the one hand, to find certain uniformities underlying various aspects of economic growth by means of strictly empirical statistical studies, notable examples of which are Colin Clark's *Conditions of Economic Progress*, Professor Kuznets' studies of secular changes in the composition of the American national product³ and the work of Professor Lewis on long-term movements in the terms of trade.⁴ On the other hand, there is the extension of pure theory to dynamic problems, a major contribution in this field being Mr. Harrod's study⁵ analysing the process of economic growth, within the first-approximation framework of given population and productivity,⁶ on the basis of a fundamental equation from which certain meaningful theorems, *e.g.*, about the equilibrium growth of income, can be derived; the hypothesis itself, although rich in policy implications, appears to be too general for direct statistical testing. From the point of view of our present discussion, efforts to combine, or bridge, these two independent approaches to the study of economic growth are of particular interest.

Econometric models of a dynamic nature, based on the "sequence (or process) analysis," are not as a rule concerned with problems of long-term

¹ Cf. L. Robbins, *The Nature and Significance of Economic Science*, pp. 131-5.

² See, however, for pioneering ideas on a theory of growth based on an "inter-science" approach (including biology as well as social sciences), K. E. Boulding, "Toward a General Theory of Growth," *Canadian Journal of Economics*, August 1953; it is unlikely that this type of analysis can go farther than to outline some interesting similarities between the empirical knowledge collected from different fields of science.

³ S. Kuznets, *National Product Since 1869*.

⁴ W. Arthur Lewis, *World Economic Survey, 1919-1939*, Part III, and "World Output, Trade and Prices, 1870-1960," *Manchester School*, May 1952.

⁵ R. F. Harrod, *Towards a Dynamic Economics*; see especially pp. 77-100.

⁶ More precisely, while allowance is made for growth in population and increase in productivity, both variables are considered as determined outside the system, and, moreover, technological progress is assumed to be "neutral" (*i.e.*, leaving relative marginal productivities of capital and labour unchanged).

economic change.¹ On the other hand, Professor Rostow's recent book, *The Process of Economic Growth*, represents an important attempt to formulate a theory of long-term economic development on the dual basis of deductive reasoning and wide factual background. A major concept of this study is co-operation between economics and other social sciences by means of a clearly defined division of the field of research rather than by an integrated attack on problems of economic growth.² Thus within a defined framework economics would proceed with its own methods, while the determination of some crucial factors influencing the economic system would have to be studied by other social sciences. This approach is broadly similar to the above-discussed concept of exogenous variables in econometric models.³ There is, however, the important difference that it is not some crucial economic variables, like autonomous investment, which are considered as "exogenous," but a number of slowly changing socio-psychological parameters, such as "propensities" to seek material advance or to accept innovations, or the propensity to consume. Moreover, the choice of exogenous factors is essentially based on the general consideration of what can and what cannot be studied in economic terms rather than on analytical convenience or on consideration of the factual background of a specific policy problem.

Many economists are likely to disagree with Rostow's actual choice of the propensities and, moreover, as Professor Hicks has pointed out in his review,⁴ the system lacks precision and does not provide an econometric model. If one considers it, however, as an endeavour to give some broad guidance⁵ for the direction, or angle of vision, of economic research, within a delimited field, in a co-operative effort of social sciences to study the problems of economic development, the usefulness of his approach is more clearly apparent.

Professor Samuelson, in concluding his *Foundations of Economic Analysis*, expressed the hope that "further development of analytical economics along the lines of comparative dynamics" will at some future date be helpful for the consideration of various questions including "even . . . the majestic problems of economic development."⁶ While considerable progress may be expected from the perfecting of econometric tools, it would hardly be justified to contemplate accurate forecasts of the consequences of alternative policies for economic development, and, even less, of the course of the development itself. At any rate for some time to come, it seems that econo-

¹ As Professor Baumol put it: "Characteristic of this approach is that the span of time involved in the problems considered is rarely more than a few years" (W. J. Baumol, *Economic Dynamics*, p. 6).

² Cf. W. W. Rostow, *The Process of Economic Growth*, in particular pp. 7-9; the main argument of Rostow is summarised on pp. 10-19 of his book.

³ Cf. p. 205 above.

⁴ Cf. J. R. Hicks, review of W. W. Rostow's *The Process of Economic Growth* (*Journal of Political Economy*, April 1953).

⁵ A basic concept of this nature is the postulate that an "optimum" rate of growth principally depends on the relation between rates of growth in sectors of the economy and the overall rate of growth. (See W. W. Rostow, *op. cit.*, in particular pp. 16-17 and Chapter IV.)

⁶ P. A. Samuelson, *Foundations of Economic Analysis*, p. 355.

mic analysis in this field¹ can assist policy only in three alternative, or perhaps complementary, ways: (i) the tracing out of implications of certain simplified relationships attempting to isolate some basic features of economic growth; (ii) empirical search for uniform features or "constant" relationships in the various aspects of economic growth, provided care is taken to distinguish between accidental statistical uniformities and relations that can be causally explained; and (iii) empirical research designed to test certain broad theoretical propositions, e.g., the crucial importance of structural unbalance in the generation of long-term trends in the terms of trade,² without, however, the precise framework of econometric models. It may well be that the last method will prove most fruitful in this field.

V

Our brief survey of the progress recently made in the three channels of theoretical economic research closely connected with policy appears to strengthen the view that there is need for re-appraising the appropriate function and the potentialities of theory as a guide to economic policy. Is the "theory of economic policy" a valid concept at all, and if so, what is its correct meaning? Can it form a broad basis for specific prescriptions and policy decisions? Should it be regarded as the objective "basis of an art," as in the approach of Professor Pigou,³ or must it be limited to the study of the technical methods with the help of which the economist can deal with concrete policy problems as they occur and are submitted for his opinion? A thorough discussion of these problems among both "theoretical" and "applied" economists may considerably contribute to the elucidation of the issues involved, and perhaps lead towards a substantial measure of agreement on answers to these questions.

Great efforts are being made to bridge the gap between theory and policy, and to provide and test tools of analysis that would be of real use for policy decisions. Since, however, research in this field seems to proceed in separate channels, a comparative study of the methods used appears highly desirable. And, in this connection, it is not only the concept of meaningful theorems, the need of which was so forcefully expressed by Professor Samuelson in his *Foundations*,⁴ that is important. Besides the question of whether the validity of theorems can be tested in principle, there is the essential problem of whether they are actually useful for the formulation of policy.⁵ Thus considerably more light could be thrown on the proper relation between economic theory and policy by a fundamental comparative review of modern welfare economics, of the methods of econometrics (including input-output analysis and programming) and of the pioneering work on the theoretical

¹ Apart from the more specific and historical analysis designed to trace the process of economic development of individual countries, like the well-known study of the economic development of India by Dr. Vera Anstey.

² Cf. W. W. Rostow, *op. cit.*, Chapters VI and IX.

³ Cf. A. Pigou, *op. cit.*, p. 5.

⁴ P. A. Samuelson, *op. cit.*, pp. 4-5.

⁵ Cf. W. W. Leontief and others, *Studies in the Structure of the American Economy*, pp. 3-4. No. 258.—VOL. LXV.

analysis of long-term economic development, all from the aspect of their relative usefulness, actual or potential, as a guide to economic policy. Some fifteen years ago, Mr. Harrod, in his presidential address, mentioned above,¹ on the "Scope and Method of Economics," emphasised the need for the methodologist to "occupy the rear and not the vanguard" of research, and to appraise what has been done or is being done rather than to lay down the direction of research for the future.² Some of the lines of research the development of which he then expected have now, it appears, progressed sufficiently far to warrant a comparative re-appraisal of methods, and the pressing problems of policy seem to require that this should be done on the basis of the approach just outlined.

If a comprehensive discussion of these issues leads to a widely accepted concept of the relation between theory and policy in economics, a very valuable contribution will be made to the clarification of the rôle of the economist in framing economic policy and, indirectly, to the guidance of future research. The purpose of the suggestions made below is to provide, by means of tentative conclusions from our survey of various important current ideas on these problems, a possible starting point for further discussion:

1. It would seem reasonable to acknowledge that it is impossible to find objective criteria for ascertaining the desirability of a given economic policy, and that the importance of modern welfare economics is essentially of an educational nature.

The need of certain judgments of value in appraising alternative courses of action in the economic field, as well as of a certain subjective interpretation of the factual environment within which a given policy is framed, appears to be inevitable. The "economic criterion,"³ which assumes that within the institutional and physical limitations it is desirable that individuals should be in a "preferred position" is in itself an opinion, though undoubtedly one that commands a very wide acceptance. The concept of "efficiency criteria,"⁴ forming the basis of the "optimum" conditions of exchange and production and leading to the compensation principle, not only gives rise to the controversy about the possibility of by-passing in this way ethical considerations of the distribution of income, but also lacks sufficient concreteness, as Dr. Little has clearly shown, to provide a true basis for the guidance of policy. Even in the very convincing classical example of the repeal of Corn Laws,⁵ quite apart from the question of redistribution of income, the reduction of the price of wheat is certainly not the only point to be considered; there is the change in the terms of trade, in government revenue and in diversification of resources, which in a final balance would have to be taken into account.

¹ Cf. p. 198 above.

² R. F. Harrod, "The Scope and Method of Economics," *ECONOMIC JOURNAL*, September 1938, pp. 383-6.

³ Cf. p. 198 above.

⁴ In the Pareto-Hicks formulation of overcoming "obstacles" created by physical factors and promoting individual advancement short of the point at which it adversely affects another person.

⁵ Cf. N. Kaldor, *op. cit.*, p. 550.

Professor Lutz, in his recent inaugural lecture at the University of Zürich,¹ showed that there are possible ways in which political beliefs can affect even the "explanatory science" of economics and not only the "normative science" of political economy. While, however, in pure theory this unconscious bias through the choice of subjects, premises or variables is likely to be exceptional, the necessity of some subjective notions in discussing problems of economic policy can hardly be denied. In this connection Professor Robbins' concept of "conventions" taken from outside the scientific framework of economics in order to treat policy problems usefully² is clearly relevant. Nevertheless, the concept of "optimum conditions" is not devoid of purpose. Its educational value is great, not merely for training in consistent and logical thinking about basic economic relations, but also as a means of developing a necessary professional approach to economic policy. It enables the economist to look at such fundamental policy questions as price fixing or price stabilisation, war-time allocations or special measures to safeguard the balance of payments in a significant way not apparent to laymen, although it cannot provide him with useful criteria for formulating specific advice.

2. Theories of economic policy conceived as systems of explicit or implied recommendations for choice between alternative courses of action have, nevertheless, a certain limited usefulness, provided the underlying value judgments are clearly stated.

The view that there are no real prospects for shaping a useful objective framework for policy advice on the basis of a further development of modern welfare economics does not imply that the only valid concept of the relation between theory and policy is the *ad hoc* approach, of referring to the accumulated body of analytical principles for assistance in the solution of a concrete specific problem as and when it develops. A system of explicit or implied prescriptions, based on deductions from certain general premises containing some broad value judgments, can often be more helpful for policy formulation than specific rigorous theorems, meaningful in principle but inapplicable in practice. But it is important that assumptions involving subjective views or "conventional" opinions, however widely acceptable, should be recognised and explicitly defined as such by the author, and that this "unscientific" content should be reduced to a minimum. In no case should the impression be conveyed to the layman that such prescriptions are considered in some sense as unique or universal, to be identified with economics itself. With these qualifications, discussion of the implications of general types of policy in a given field, based on certain simplifying assumptions and combined with an attempt at appraising their respective efficiencies and their desirability on the ground of widely accepted criteria, as exemplified, for instance, by Professor Meade's *Balance of Payments*, is certainly a useful,

¹ A detailed summary of the lecture was published in *Neue Zürcher Zeitung*, December 17, 1953.

² Cf. L. Robbins, "Robertson on Utility and Scope," *Economica*, May 1953, pp. 109-10, and p. 203 above.

though limited, concept of the theory of economic policy. Its significance derives largely from the fact that only in this way can one get a comprehensive view of the issues involved in a whole field of economic policy. It does not, however, "set the tools" for the consideration of specific problems, since it is too general for that purpose.¹ Similar observations *a fortiori* appear to apply to studies with a more explicit recommendatory force.

3. What, on the other hand, appears to be a particularly fruitful concept of the theory of economic policy is a comparative study of the usefulness of different analytical methods for the consideration of major representative problems of economic policy.

Particular importance attaches to the concept of theory of economic policy centred on the analysis of the appropriate methods by means of which economic theory can be brought most usefully to bear on the consideration of specific policy problems. While Mr. Johnson's strictures on the "taxonomic" approach to economic policy appear unduly severe, there is certainly much substance in his view that the application of economic theory to policy "can most usefully be done within the context of a particular problem occurring in a particular environment."² Nevertheless, the concept of theory of economic policy developed below may prove to a large extent complementary rather than rival to the approach discussed in the preceding paragraph. Dr. Tinbergen has limited his concept of the theory of economic policy to the consideration of the techniques by means of which certain types of econometric models can be applied to policy problems, and to the appraisal of the significance and limitations of this method.³ This approach could usefully be widened. The starting point would be a statement of certain specific but typical policy problems of current importance, *e.g.*, structural maladjustments in balances of payments, or the process of economic development of under-developed countries with an economy of a certain structure, rather than a very general policy objective such as the maximisation of social welfare by economic methods, or the assurance of a steady rate of growth of an economy in conditions of full employment without inflation. And the purpose would be a comparative review of different methods of analysis that could be applied to these problems in order to select the most appropriate combination of economic tools. For some aspects of current problems "input-output" analysis or "programming" may be more useful; for others, econometric models based on "period analysis" or the statistical measurement of demand functions; still for others, empirical statistical studies of long-term movements without the rigour of econometric models and with only a very general theoretical framework. A study of the proper combination of such methods for the analysis of representative major problems of current policy, with due awareness of non-economic considerations,

¹ Professor Meade's theory of international economic policy, for instance, does not in fact set the course clear for actual consideration of particular issues which he mentions in the Preface to his study, *e.g.*, the dollar shortage, or the depreciation of sterling.

² Cf. p. 197 above.

³ Cf. p. 199 and p. 206 above.

seems highly desirable. While concrete, particular problems have always some specific features of their own, there is sufficient similarity between current economic problems to render this type of research useful. Such studies would differ from the *ad hoc* approach by the systematic nature of their investigations and by the representative character of the policy problems considered. In no way would this approach restrict the freedom of the "tool-making" research attempting to develop new analytical methods, but it would tend to provide such new tools with significant tests of their applicability, and may well stimulate certain very important methodological investigations. While a theory of economic policy conceived in these terms cannot provide unique solutions for actual policy problems, it can go a long way towards increasing the usefulness of economic analysis.

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NATIONAL INCOME AT FACTOR COST OR MARKET PRICES?

It has become customary to prepare estimates of the national income both at market prices and at (so-called) factor cost. The difference between these two estimates of any component of the national income is equal to the total net indirect taxes on the items in question (*i.e.*, total indirect taxes *less* total subsidies). Both concepts are well established by usage, but the national income at factor cost, which traces back to Bowley, Stamp, Flux and even earlier, has the longer pedigree. It is not until the fifth of the series of White Papers on the national income of the United Kingdom,¹ which appeared in April 1945, that we find official estimates of the national income at market prices, as well as at factor cost. And it is not until several years later that the two estimates appear, in these publications, on an equal footing. There is probably still a widespread feeling that the national income at factor cost, which has a solid tradition behind it, is the more important concept; and that there is something rather fanciful about including indirect taxes in the valuation of goods which are subject to duty, as well as the full cost of government activity, which is financed, in part, from the yield of indirect taxes. The incidence of indirect taxes is arbitrary and very uneven; and so it is understandable that they should be regarded as having a disturbing influence which needs to be removed in order to get a better picture of the underlying realities. The simple device of deducting the whole of net indirect taxes from expenditure is assumed to give a result which is practically unaffected by the peculiarities of indirect taxes.

The arbitrary character of all national income estimates had, however, already been exposed by Hicks,² who showed that, if the national income were to be given a welfare connotation, all goods and services ought to be valued at their market prices; and that, if it were to have a productivity connotation, it would be appropriate to value everything at factor cost. Each method of valuation therefore appeared to have its appropriate function, although Hicks also showed that a strict interpretation of either set of estimates involved a number of rather drastic assumptions, which were considerably harder to justify on the productivity side than on the welfare side.

The justification of market prices, in the welfare context, rested on the assumption that consumers' expenditure was distributed over different commodities in such a way that the marginal utility of each item was proportional to its price. For any one consumer, this was a tolerable assumption; and the fact that such an interpretation would, strictly speaking, apply only at the margin (*i.e.*, for comparisons of relatively small changes

could perhaps be glossed over, since national income statisticians had always emphasised that the total as such had little, if any, real meaning;¹ while a large change in the total national income, or in its composition, would imply that in any case the whole situation had changed. Government expenditure, admittedly, gives rise to awkward problems. Some of the services provided by the Government are directly for the benefit of the community (defence, health services, etc.) and do not directly contribute to the production of commodities sold in any market. To assume that services of this kind, because there are no markets for them, make no contribution whatever to welfare hardly seems fair. In such cases an arbitrary assessment has to be made and costs appear to be the nearest substitute for market prices; some consolation being gained from the belief that, in a democracy, consumers could raise their voices if they felt expenditure was too high or too low.

Any services that are provided by the Government partly for the benefit of industry (law and order, education, upkeep of roads, etc.) present a more difficult problem, to which there is no generally acceptable solution. It is possible to adopt either of two points of view, which have not usually been clearly distinguished. On one view, it can be assumed that, just as the consumer is not charged a price for services provided by the Government directly for his benefit, so he is not charged for any services provided by the Government that are incorporated in the products of industry. It can be argued that no measure of welfare is available in either case; and that costs can therefore be used as a substitute for market prices in the valuation of all government services, including those provided free to industry. The alternative—and possibly more behaviouristic—view is that the consumer is able to compare the market prices with the welfare to be derived from all commodities that are sold on the market; and that he regards the market price as the relative welfare measure of the whole commodity, including any services which may be incorporated in it, whether or not these services form part of its cost. On this view it is permissible to use costs as a measure of relative welfare only in the cases of those final goods and services that do not find their way into any market. There appears to be no way of judging which of these two views is nearer the truth; and which treatment is followed is therefore largely a matter of choice.²

Investment is another problem. Though not contributing directly to current welfare, it can be regarded as representing so much potential welfare, set aside for the future; a serviceable link again being provided by relative costs. A rather more serious limitation, not mentioned by Hicks, is that the assumption about a single consumer can be generalised to consumers as a whole only on the further assumption that the distribution of incomes remains

¹ Cf. Sir Arthur Bowley, writing from a practical point of view, in the Introduction to his *Wages and Income since 1860*: "The essence of these studies is not the obtaining of absolute totals, but the measurement of changes. Absolute totals depend on the definitions of such classes as income (individual and national), wages, earnings, unemployment, occupation. . . . In each case there is an element of arbitrariness in definition or classification."

² Except that in practice it is very difficult to disentangle those services provided by the Government that are used by industry from those which directly benefit the community.

¹ *An Analysis of the Sources of War Finance and Estimates of the National Income and Expenditure in the Years 1938 to 1944*, Cmd. 6623.

² "The Valuation of Social Income," *Economica*, 1940.

unchanged; in order to get a valid general measure of the change in real income, the change has to be the same for everybody. To the extent that these assumptions were approximately fulfilled, it was possible to give some limited meaning, in terms of welfare, to estimates of total national expenditure at market prices.

On the productivity side the case looked rather worse. The total value, at factor cost, of all goods and services produced could be given meaning, in the productivity sense, only on the assumption that the marginal product of each factor was proportional to its price. One could, again, gloss over the fact that comparisons should properly be restricted to marginal changes; and that the aggregate as such had very little significance. Substantial changes in the composition of the aggregate would in any case reduce the validity of any comparisons.

Difficulties arise again over services provided by the Government. Those that directly benefit the community can be valued at cost, without too seriously violating the general assumptions. But those which are freely available to industry place us in a dilemma analogous to that discussed in the welfare context. Such services do not form part of producers' costs; there is no market price with which to compare their marginal productivity; and so from one point of view it would be reasonable to omit them altogether. On the other hand, scarce factors are (presumably) used in producing them; and so from another point of view it would be reasonable to value such services at the actual cost of the factors used. But, as there is no means of relating the marginal productivity of these factors to that of other factors either treatment is arbitrary, and it is impossible to demonstrate that one is better than the other.

The assumption that the prices of all factors are proportional to their marginal products, which is borrowed from a world of perfect competition, was, of course, recognised to be a tall assumption to make of the world in which we live. But, unless this assumption can be taken as at least a crude approximation to reality, the factor cost aggregate would seem to lose its whole *raison d'être*.¹

Much of what has so far been said would, by now, be fairly generally accepted. What appears to have been overlooked is that the definition given to factor cost, in national income and expenditure estimates, is not the same as the definition of factor cost implied in the foregoing argument. As used in national income work, the term factor cost is synonymous with cost and may fairly be said to be a misnomer for—factor *rewards* or factor *income*. The income received by a factor of production will differ from the total cost of the factor if the purchase price includes any indirect tax (or if it is reduced by a subsidy). It is obvious that proportionality between the price and the marginal product of a factor must apply to the actual price paid, *i.e.*, to the

¹ A fuller statement of the limitations of market-price and factor-cost aggregates, as well as an account of the practical methods of estimating changes in the real domestic product of the United Kingdom, may be found in the present writer's "Some Problems in the Measurement of National Income," *Income and Wealth*, Series IV (Bowes & Bowes, Cambridge).

market price of the factor. The market price, in this context, must mean *the price paid by the purchaser*, not the price received by the seller. An entrepreneur who is deciding the proportions in which to combine different factors and materials will not be concerned with how much of the price of each is accounted for by wages, how much by monopoly profits, or how much by indirect taxes. How the payment he makes for a particular factor or material is apportioned between other people cannot possibly concern him. On the assumptions which we are making—and which we have to make in order to give any real meaning to the factor-cost aggregate—the entrepreneur merely has to see to it that the marginal product of each factor is proportional to its price. Different factors are therefore compared with each other in terms of their market prices. The last £1 spent on any one factor should yield the same return as the last £1 spent on any other factor; and this must apply to all entrepreneurs, at all stages of production. For present purposes no distinction need be made between materials and factors, since materials incorporate the factors used at earlier stages. In the aggregate, therefore, the valuation of the national product (or national expenditure) at factor cost should include all payments, including indirect taxes, which are directly attributable to factors or materials used up in production. It follows that all indirect taxes should be included, except those which are levied *after* the final stage of production, and which cannot therefore affect the proportions in which different factors or materials have been combined in the production process. An indirect tax paid by retailers on goods sold direct to consumers should be excluded, since it would not form part of the cost of any factor. But an indirect tax paid at any intermediate stage of production could affect the proportions in which different factors are combined, at that stage, and should therefore be included. The argument applies equally to subsidies, which can be regarded as negative indirect taxes.

Our conclusion is that, except for any indirect taxes that may be imposed after the final stage of production (*i.e.*, when there is no further processing to be done), national expenditure at market prices is in fact equal to national expenditure at factor cost, if the latter is correctly defined. Since this conclusion may seem paradoxical, it is worth considering one or two examples.

Suppose that a decision is made to encourage home agriculture by means of a subsidy payable on agricultural labour. Under competitive conditions, more labour will then be attracted into agriculture and, as a result, its marginal product will fall; so will its market price. At the same time the marginal products and hence the price of labour in other industries will rise. After these movements have taken place, and a new "equilibrium" is established, the ratio between the market price and the marginal product of labour should again be the same in all industries. The orthodox treatment, which gives increased weight to agriculture after the introduction of the subsidy, would be justified only if the marginal product of labour employed in agriculture rose simultaneously with the rise in its (so-called) factor price; but there is no reason to expect it to do so.

Now consider a second example which illustrates the difference between

tax (or subsidy) imposed at some intermediate stage and one imposed after the final stage of production. Suppose that a subsidy of so much per unit of output (*e.g.*, a fixed proportion of the price) is imposed on all the products of some agriculture. The effect will be similar to that of a sudden increase in the demand for agricultural products. Their prices, excluding the subsidy,¹ will tend to rise. Labour will be attracted into agriculture by the offer of higher wages. The marginal productivity of agricultural labour, relatively to that of other labour, will in effect be raised at one go by the arbitrary decision—implicit in the subsidy—to attribute an increased value to agricultural products; thereafter it will fall and the marginal productivity of labour in other industries will rise, consequent on the movements of labour, until proportionality between the prices and the marginal products of labour in all industries is restored.

This second example shows that, if agricultural products are sold direct to the final consumer, they must be valued, for productivity purposes, at their prices *excluding* subsidy,¹ otherwise we shall not get the proportionalities right. But any which are used as materials by other industries must be reckoned into the gross output of those industries at their prices *including* subsidy.¹ When the subsidy is imposed, the cost of the materials to the industry using them will fall; the cost of labour, relatively, will rise; and so there will be a tendency to use less labour with a given quantity of materials. Hence the marginal productivity of labour relative to materials in this industry will rise, and vice versa. This alteration in relative marginal productivities will be reflected in the altered market prices. Thus the proportionality conditions will hold good only if output is reckoned in terms of the *market* values of the labour, materials, etc., incorporated in it.

That productivity should change as a result of the imposition of a tax, or subsidy, may seem odd. Is this not precisely what we are trying to avoid? Alas, it is easier said than done. Any substantial alteration in prices must alter the position of equilibrium and the relations between prices, marginal products and marginal utilities, and therefore makes any kind of comparison that much more difficult. The introduction of a tax, or subsidy, is no different in this respect from a change in the terms of trade, or the distribution of incomes, or tastes, or the degree of monopoly in different industries or any other "exogenous" influences. We cannot restore the equilibrium of a bygone age by valuing everything *ex-tax*. We are obliged to take a particular date as the starting point for any comparison; and, on the assumption that equilibrium then prevailed, the comparison must be based on the prices in terms of which equilibrium at that date was established. This means, as the foregoing argument has shown, that for productivity problems we must value all goods at their market prices—except in cases of indirect taxes imposed after the very final stage of production, which should be excluded.

Our argument so far has applied to the gross national product as a whole

¹ By the price excluding subsidy we mean the higher of the two prices (what is usually called factor cost) and by the price including subsidy the lower of the two prices.

If, however, we wish to consider the contributions to the gross domestic product of different industries, it is fairly easy to show that the usual concept of net output (sometimes called value added) is the one to use. A particular industry is concerned with the selling values, excluding any indirect taxes, of its products and with the purchase prices, including any indirect taxes, of the materials and factors used in production. The operative force, causing any tendency to expand or contract, will be the relation between the so-called gross output of the industry, *i.e.*, the selling value of its products excluding indirect taxes, and its input, *i.e.*, the cost of materials, etc., including any indirect taxes. It follows that the difference, which is defined as the industry's net output, correctly represents the *relative* contribution of the industry to the gross domestic product, in either the welfare or the productivity sense—but in the latter case only on the usual assumption of perfect competition. We thus reach the paradoxical conclusion that the relative contribution of each industry to the gross domestic product is correctly measured in terms of factor rewards (usually called factor costs), even though the gross domestic product is itself measured at market prices.¹

In just the same way, the *proportions* of the national product attributable to different groups of factors are correctly measured by factor incomes; but the total of factor incomes will not (if there are any indirect taxes) provide a correct measure of the gross national product, in either the welfare or the productivity sense. That the national income, in either of these senses, cannot be identified with the sum of the incomes of the factors engaged in producing it may, again, seem paradoxical. The paradox is explained by the fact that income is not "realised" until it is used in the purchase of goods and services, which are invariably bought at market prices. There is no mechanism which ensures that the income, as opposed to the cost (in the sense defined above), of each factor of production is proportional to its marginal product.

How does all this affect the national income statistician? If no indirect taxes were imposed after the final stage of production,² the only aggregate in which we would be interested, either for welfare or for productivity purposes, would be the one based on market prices. If indirect taxes were imposed on any goods after the very final stage of production,³ we would also be interested, for productivity purposes, in a total which excluded all such indirect taxes. If, in addition, we wanted to know the contributions of different industries to the gross domestic product, we would require estimates of the net output of each industry, in the usual sense of the term (*i.e.*, excluding indirect taxes); and if we wanted to know the shares of the total

¹ It is perhaps this paradox, more than anything else, which has stood in the way of a clear understanding of the problem. And yet the conclusion is not as paradoxical as it seems, for there is no real reason why the relative and the absolute measure of an industry's contribution to the gross domestic product should be the same.

² Distribution is, of course, assumed to be part of the production process.

³ In the United Kingdom the only taxes of this kind are those which represent the price of a privilege, not of a good or service, *e.g.*, licences on motor vehicles used for private purposes and marriage, dog and gun licences.

product attributable to different factors, we would require estimates of factor incomes, as ordinarily defined.

For comparisons over time, it is important, of course, to be able to express the gross domestic product in real terms, *i.e.*, at constant market prices. But for the subdivision by industries it is sufficient to have estimates of the net output of each industry at current prices; similarly, for the subdivision by factors, it is sufficient to have estimates of factor incomes at current rates.

In practice there are two general methods of estimating the gross domestic product in real terms: the expenditure method, based on estimates of expenditure at constant prices on all types of final goods and services; and the output method which makes use of figures of production, classified by industries. It is easier, as a rule, to estimate the expenditure on a particular item at market prices than at (what is usually called) factor cost; the price indices of final goods and services are, in fact, generally based on market prices. But the output method depends on estimates of the changes in the net output of each industry, which can more easily be estimated net of indirect taxes; and any detailed allocation of indirect taxes by industries is bound to be very arbitrary. We do not know, when a good is produced, whether it is destined for the home market, where it may be subject to purchase tax, or for export. And, if a tax is collected (as it often is) *between* two stages of production, how can it sensibly be allocated to either? Thus the output method enables us to estimate the contribution to the gross domestic product of each industry; but in general it is only by the expenditure method that we can estimate the gross domestic product as a whole, which—as we have seen—is required at market prices. The expenditure method can also be used to estimate the gross domestic product net of indirect taxes; but, apart from the interest in indirect taxes *per se* and in the study of flows, such estimates would be useful only because they can serve as a check on the estimates of net output obtained by the production method.

We are therefore able to simplify the demands which we make on the national income statistician. He need not be asked to estimate the contributions of each industry at market prices, which are not in fact wanted. We do not actually require him to estimate the gross domestic product as a whole, or its subdivision by categories of final expenditure, at what is usually called factor cost, which to avoid ambiguity we would prefer to call factor rewards. And he is not required to estimate the net products of different industries, or the incomes of different factors, at constant prices. Since there are two relatively independent methods of estimating the gross domestic product net of indirect taxes, he may, nevertheless, find it useful to prepare the two estimates, which would serve to check each other and indirectly, therefore, to ensure consistency between the three (or four) sets of estimates which *are* required. These are: the gross domestic product, and its subdivision by categories of final expenditure, at current and constant market prices (including, as well as excluding, indirect taxes, if any, imposed after the final stage of production); the output of each industry at current

prices, net of indirect taxes; and the incomes, at current rates, of different types of factors.

The foregoing argument has important implications, hitherto unnoticed, on the treatment of imports and exports. The importance, for purposes of welfare analysis, of having estimates of the national product, or national expenditure, at market prices is not in dispute. But we have seen that such estimates¹ are also relevant to productivity problems. The reason why market prices are appropriate, from either point of view, is that these are the prices which the purchasers—whether of goods and services, or of factors of production—actually pay. These prices will differ from the prices which the sellers—of goods, services or factors—receive, wherever there are indirect taxes.

In estimating the gross domestic product by the expenditure method, we make use of the equation:

$$\begin{aligned} \text{gross domestic product} \\ = \text{consumption} + \text{home investment} + \text{exports} - \text{imports} \end{aligned}$$

and make separate estimates of the four terms on the right-hand side of this equation. If we require the gross domestic product at market prices, each of these four terms must be estimated at market prices; and the market price must in all cases be the price paid by the purchaser, since (as already noted) this is the operative price when the substitution of one commodity for another is being considered. It follows not only that all indirect taxes, such as customs and excise duties, purchase tax and subsidies (regarded as negative taxes), must be included in the value of all consumer goods,² but also that any customs duties, for example, must be included in the value of imports. Indeed, since the estimates of home consumption at market prices will include the customs duties on imported consumer goods, these duties must be included in the value of imports if the above equation is to hold good. Unless customs duties are included in the value of imports, the gross domestic product will be shown as rising (falling) whenever we import more (less) of the goods that attract customs duties, even though the output of every domestic industry is unchanged. For the same reasons, the value at market prices of any change in the volume of stocks should include any customs duties on the stocks in question.³

It has been suggested that customs duties can, alternatively, be regarded as part of the price of importing the goods in question, and hence as part of the

¹ With the qualification, mentioned above, about taxes levied after the final stage of production.

² Remembering that any indirect taxes that are imposed after the final stage of production should be included for purposes of welfare analysis, but *excluded* for purposes of productivity analysis.

³ Duties not actually collected until the goods are released from bond should also be included in the value of stocks, to preserve consistency with the figures of consumption. In most cases importers are, in fact, legally liable to pay customs duties as soon as the goods arrive in port. In consequence, the total amount of customs duties attributed to any one year would not (necessarily) agree with the amount actually collected in that year. The same is already true of other taxes (*e.g.*, income tax). In such cases the differences—called additions to tax reserves—tend to cancel out over a period of years.

importer's contribution to the gross domestic product. But the customs duty is paid by, not to, the importer, on the goods which he purchases. There can be no case for treating part of the *input* of an industry as part of its net *output*. There is, in short, no reason to treat customs duties differently from other indirect taxes.

The value of exports at market prices should not, however, include customs duties levied by the importing countries. From the point of view of the country which produces them, exports form part of final expenditure, and any customs duties which they may attract when entering other countries are imposed after the final stage of production. In accordance with the preceding argument, such duties should therefore be excluded from the value of exports, if we are considering problems of productivity. If, on the other hand, we are considering problems of welfare within a given country (and it is scarcely possible to make valid welfare comparisons between different countries), exports do not have any direct effect; it is only *via* the imports purchased in exchange that they contribute to the welfare of the country's inhabitants. Hence any customs duties imposed by the importing countries should not, even for purposes of welfare analysis, be included in the value of exports. When considering the contribution of imports to welfare, any customs duties which they attract should, of course, be included.

There is, to be sure, a slight "inconsistency" in the treatment here suggested, in as much as there would be a windfall increase in the total gross domestic product of two countries which decided to amalgamate, and yet to maintain the customs barriers formerly existing between them. But it seems quite safe to ignore the various complications which would result from such a very remote contingency.

Central Statistical Office.

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CHANGES IN SCOTTISH INCOMES, 1924-49

FOR many years the rate of increase of population in Scotland, allowing for the net loss by migration, has been less than that of the United Kingdom, and Scotland's share of the total population has been falling. The nineteenth-century ratios of 12 and 13% had declined to 11% by 1921 and to 10% by 1951. The distribution of the working population has reflected these changes: in 1921 Scotland supplied more than 11% of the working population of the United Kingdom, but by 1951 her share had fallen to less than 10%.

Scottish economic experience has diverged from that of the United Kingdom in several other important fields. Unemployment has been higher in Scotland and, until recently, fluctuated with greater violence: in the 1930s about 15% of the United Kingdom's unemployed were located in Scotland, and in the 1940s the proportion was about 20% of a smaller total. Industrial productivity and earnings have been lower in Scotland: analyses of the Censuses of Production show that industrial productivity in Scotland was 5-10% lower than in England and Wales and, though the evidence is incomplete, Scottish earnings have probably averaged 5-10% less than United Kingdom earnings.¹ On the other hand, Scotland's share of the movable property of the United Kingdom is much higher than information about income from work would lead us to expect. The values of estates passing on death, given in the Inland Revenue Reports, show that Scotland owns about 12% of United Kingdom property other than land and buildings.

The present survey² has the limited objectives of the earlier national-income studies, and attempts to measure how these and other factors have been reflected in the movements of Scottish incomes and in income per head of population.

DEFINITIONS AND METHODS

Scotland is not a sovereign state and cannot be said to have a national income in a strict sense. The phrase "Scottish national income" is merely a convenient way of saying "Scotland's share of the United Kingdom national income" or "the aggregate of incomes received by or attributable to individuals ordinarily resident in Scotland."³

The components of the Scottish national income cannot all be defined in the same way as those of the United Kingdom national income:⁴ the

¹ Cf. *The Scottish Economy*, ed. A. K. Cairncross (Cambridge, 1954), Chapters 6 (by C. E. V. Lewis) and 11 (by D. J. Robertson).

² Preliminary estimates have been published in *The Scottish Economy*, Chapter 5.

³ Since Scottish merchant seamen and members of the Armed Forces are normally resident in Scotland, their incomes are included in the Scottish national income no matter where they happened to be stationed.

⁴ The definitions used are those of the Blue Book, *National Income and Expenditure, 1946-1951* (H.M.S.O., 1952). The remuneration of shop-assistants is included in the aggregate of salaries.

differences are due to conceptual difficulties or the nature of the statistic material. These differences concern company profits, net income from abroad, the incomes of public corporations, the profits received by the central government and the payment of national debt interest, all of which require special treatment. Neither is it possible to prepare separate Scottish figures for every United Kingdom component: no adjustments are made for stock appreciation, because estimates are not always available for the United Kingdom, and professional earnings and the profits of "other sole traders and partnerships" cannot be separated from the trading profits of companies except in the most recent years.

Estimates of the main constituents of Scottish national income are given in Table I. The components involving special difficulties are all included

TABLE I
Scottish Incomes, 1924-49
£ million

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Year.	"Scottish national income." ¹	Wages.	Salaries.	Forces' income.	Employers' National Insurance contributions.	Agricultural income. ²	Professional earnings, profits of other sole traders and partnerships. ³	Income from property.
1924	430	142	70	8	3	29	—	178
1925	420	140	72	7	3	30	—	168
1926	400	130	72	7	4	30	—	157
1927	420	139	74	7	4	29	—	167
1928	430	141	75	7	4	28	—	175
1929	425	140	77	7	4	28	—	169
1930	400	131	76	7	4	26	—	156
1931	355	117	72	7	4	22	—	133
1932	335	115	72	6	4	19	—	119
1933	355	116	74	6	4	18	—	137
1934	375	124	76	6	4	19	—	146
1935	390	131	78	7	5	20	—	149
1936	425	140	84	7	5	20	—	169
1937	455	153	87	8	5	21	—	181
1938	455	158	90	9	5	21	57	115
1939	495	169	94	13	6	24	—	189
1940	605	196	98	41	6	34	—	230
1941	725	230	117	66	7	43	—	262
1942	810	258	119	90	7	50	—	286
1943	865	273	120	116	7	53	—	296
1944	895	277	122	137	7	54	—	298
1945	855	253	128	138	7	53	—	276
1946	810	270	140	58	8	53	101	180
1947	885	301	148	41	11	57	110	217
1948	970	354	166	27	16	65	108	234
1949	1015	376	179	26	20	71	109	234

¹ No adjustments were made for stock appreciation.

² Including wages, salaries and rent.

³ Included in "income from property" except in 1938 and 1946-49.

⁴ The trading profits of companies, the trading surpluses of public corporations and profit of other public enterprises, non-agricultural rent, net income from abroad and net receipts of national debt interest. Professional earnings, etc., are included in most years. Further details are given in the Appendix.

in "income from property" (column 9). The remaining components (columns 3-8) are defined in the normal way and presented only statistical difficulties.

The sources and the methods used are outlined in an Appendix, but a general description may be given at this stage. The first step was to obtain continuous series of the components of United Kingdom national income. Official data are available for the period 1938-49. For the earlier years, the results published by Sir Arthur Bowley¹ were amended to conform with the C.S.O. definitions and estimates and with the figures of wages and salaries prepared by Miss Chapman.²

Scottish shares can be estimated in two different ways: first, by independent estimates based on purely Scottish figures; and, secondly, by applying suitable factors to United Kingdom components. The first method is the more satisfactory one, but it is possible to use it for only some of the Scottish components. Fortunately this method was practicable for much of the calculation in the important categories of wages, salaries and agricultural income. The values of the other Scottish components were obtained by estimating factors that could be applied to the United Kingdom totals to determine Scottish shares. In three cases it is easy to find suitable factors, and the second method produced satisfactory results: Scotland's shares of the income of the Armed Forces and of employers' National Insurance contributions were assumed equal to the proportions of Scots in the Forces and in the totals of insured employees; and, in a few years, Scottish professional earnings, etc., were obtained from the United Kingdom totals by applying factors derived from assessments on individuals and firms in Schedule D. The remaining Scottish component—income from property—presented formidable difficulties to both methods of calculation. Only in the case of non-agricultural rent was it possible to make a satisfactory division; the other components all raised special difficulties which are discussed in the next section and in the Appendix.

The survey did not go beyond existing sources of material. These sources were never as full as would be desirable since many records have never been kept or processed. Because of the nature of the problem and the methods and materials used, it is difficult to assess the precise margins of error in the Scottish totals. In general, though the absolute Scottish figures are uncertain, the trends revealed in Table I are unlikely to be seriously misleading, and the estimates should give a fairly dependable picture of the distribution of Scottish income among the different categories.³

CONCEPTUAL AND OTHER DIFFICULTIES

The political and economic integration of Scotland and the rest of the United Kingdom makes it impossible to use C.S.O. definitions for every

¹ *Studies in the National Income, 1924-1938*, ed. Sir Arthur Bowley (Cambridge, 1942).

² *Wages and Salaries in the United Kingdom, 1920-1938*, Agatha L. Chapman (Cambridge, 1953).

³ The supply of official statistics relating to Scotland has greatly expanded in the post-war years, and this has benefited the accuracy of the later estimates. It is unlikely that much can be done to improve the accuracy of the pre-1946 estimates.

category of Scottish income. Wages, salaries, Forces' income, agricultural income, professional earnings, etc., rent and local authority trading profits—covering 70–80% of the Scottish national income—are defined in the normal way; but the trading surpluses of public corporations, central government profits, national debt interest, company profits and net income from abroad, all of which are included in the omnibus category of income from property, have to be defined specially for Scotland.

Scotland's national income, defined as her share of United Kingdom national income, must include part of the profits of public corporations and the central government; on the other hand, some of the interest paid on the national debt must be debited to Scotland.¹ But there are no accepted political formulæ defining Scotland's shares of these profits and her responsibility for the payment of national-debt interest. The formula adopted for the estimates in Table I was to attribute the receipts and payments to individuals on a population basis. This arbitrary method of allocation does not provide unambiguous estimates of Scottish income; but it cannot be very different from any scheme of division that might be agreed politically and, given the objectives of this inquiry, it is desirable to allow for these items in the aggregate of Scottish national income. Though the net amounts involved have not been very large—in 1949 only 2% of the Scottish aggregate came from these items—they have effects on comparisons between Scotland and the rest of the United Kingdom, and these effects will vary with changes in the relative importance of public profits and the size and distribution of holdings of the national debt.

The C.S.O. defines the trading profits of companies as the profits, before tax, of all companies, other than agricultural companies, operating in the United Kingdom. Scotland's share may be interpreted either as the profits of all non-agricultural companies operating in Scotland or as the proportion of the United Kingdom total attributable to individuals, ordinarily resident in Scotland, on the basis of their ownership of the securities of companies operating in the United Kingdom. The first interpretation accords with the normal definition, but the second does not. The conventional practice would be to measure the profits of companies operating in Scotland and at a later stage, as part of the calculation of net Scottish income from other countries, to make estimates of Scottish receipts and payments of company profits from and to the rest of the United Kingdom; but there is no prospect, failing a vast inquiry, of obtaining dependable estimates of these three variables. The second interpretation by-passes these problems and does two jobs at once; we do not need to measure profits earned in Scotland, and the net flow of profits to or from Scotland is allowed for automatically in the calculation. For these reasons, the unorthodox interpretation was used for

¹ In effect, Scottish payments of national-debt interest are deducted from Scottish receipts of such interest, surpluses being added to and deficits being subtracted from the totals of other kinds of Scottish income.

It is only for the whole of the United Kingdom that internal payments of national-debt interest can count as transfer income. People in Scotland might choose to hold their wealth in the form of government debt, directly and indirectly, to a greater extent than people in England.

estimating Scotland's shares of United Kingdom company profits. This method of division means that "company profits" in the Scottish national income do not represent the profits earned by companies operating in Scotland; thus Scottish profits may rise when companies operating in Scotland are doing badly and fall when they are doing well. Another consequence is that the Scottish national income is credited with part of the undistributed profits of companies operating in other parts of the United Kingdom, and that part of the undistributed profits of companies operating in Scotland is attributed to individuals not normally resident in Scotland.¹ The gains and losses involved are unlikely to balance, so that, relative to the accepted definitions, the Scottish national income tends to be over-stated or under-stated. In fact, it seems likely that Scottish income will be inflated slightly by this exchange because of the relatively high proportion of capital in the possession of individuals in Scotland.

The sources available for estimating Scotland's shares of United Kingdom company profits are not particularly good. The annual estimates were prepared, in the main, by applying factors reflecting Scottish ownership of the relevant types of capital to the United Kingdom totals. The factors were derived from the analyses of estates given in the Inland Revenue Reports. These factors put undue weight on the successes and failures of the past and, since a moving average is used to obtain factors for individual years, damp down year-to-year fluctuations in Scottish income. But no alternative method of division is practicable at present, and this technique is implicit in one of the recommendations of the Catto Committee on Scottish Financial and Trade Statistics.²

It has already been stated that it is impossible to measure Scotland's "net income from abroad" in conformity with C.S.O. practice. "Net income from abroad" is, therefore, defined as Scotland's share of net United Kingdom income from abroad; it excludes flows of income between Scotland and England.³ The calculations were similar to those for company profits, the sums involved being attributed to individuals: for national-debt interest paid to foreigners Scotland's responsibility was taken to be the same as her share of the United Kingdom population; for the other payments and receipts, factors reflecting the ownership of capital were applied to the United Kingdom totals.

The discussion may be summarised. National-debt interest and the profits of public corporations and the central government have to be treated arbitrarily; the estimates of company profits do not isolate profits earned by companies operating in Scotland; and net property income from abroad does not include the flows of property income between Scotland and the rest of the United Kingdom. In addition, undistributed profits in the United

¹ "Undistributed profits" is used in the sense of additions to dividend reserves, additions to tax reserves, and saving and provision for stock appreciation.

² Cmd. 8609 (1952), p. 12, para. 30.

³ It has been attempted to allow for these internal flows of property income in the treatment of the other components, e.g., in the cases of company profits and national-debt interest.

Kingdom are allocated on the basis of ownership of company securities. The differences in the definitions of company profits and net income from abroad, though they lead to estimates that are not comparable with the United Kingdom components, largely offset each other or are offset by the methods of calculating other types of Scottish property income, and have, apart from the difficulty with undistributed profits, little or no effect on the comparability of the aggregates of Scottish and United Kingdom income. Thus it is only the difficulties caused by national-debt interest, public profits and undistributed profits that prevent the Scottish aggregates from being directly comparable with the United Kingdom aggregates. The increasing importance of national-debt interest and public profits helps to justify their inclusion in the Scottish totals. The treatment of undistributed profits may be defended on the grounds of the simple objectives of the inquiry into the economic integration of Scotland and England and the free movement of capital within the United Kingdom. In fact, these conceptual differences do little to impair the comparability of the Scottish and other (normally defined) national incomes; they affect less than 10% of the Scottish national income, and the material or statistical difficulties are probably more important.

INCOME IN SCOTLAND AND THE UNITED KINGDOM

In this section income in Scotland is compared with income in the United Kingdom. Though the comparisons are based on ambiguous Scottish aggregates, the picture should not be unreliable.

Fig. 1 records the movements of money national income, in aggregate and per head of population, in Scotland and the United Kingdom. The income-per-head curve shows that, in the period 1924–49, income per head has been lower in Scotland, fluctuating between 87 and 96% of the United Kingdom average. There was a movement in Scotland's favour during the war, but the position was not held in the post-war years. The national income curves show that income has been more variable for Scotland than for the United Kingdom. Between 1929 and 1932 Scottish income fell 122% compared with 15% for the United Kingdom, and between 1944 and 1946 the respective falls were 9 and 4%; on the other hand, in the period 1939–44, Scotland outpaced the rest of the country with an increase of 98% compared with a general increase of only 86%.

Over the whole period the national-income curves show a small decline in the relative economic importance of Scotland—a decline that was to be expected because of the movement of population—and the income-per-head curve also suggests a small relative deterioration. Between 1924 and 1949 the increase in the Scottish national income was 136%, compared with 152% for the United Kingdom, and Scotland's share of United Kingdom income fell from 10.4 to 9.6% (cf. Fig. 2). This fall was slightly greater than the decline in Scotland's share of United Kingdom population, so that income per head fell from 96 to 93% of the United Kingdom average. But the fi-

are not very big and, in view of the nature of the Scottish figures, these conclusions must be presented with caution.

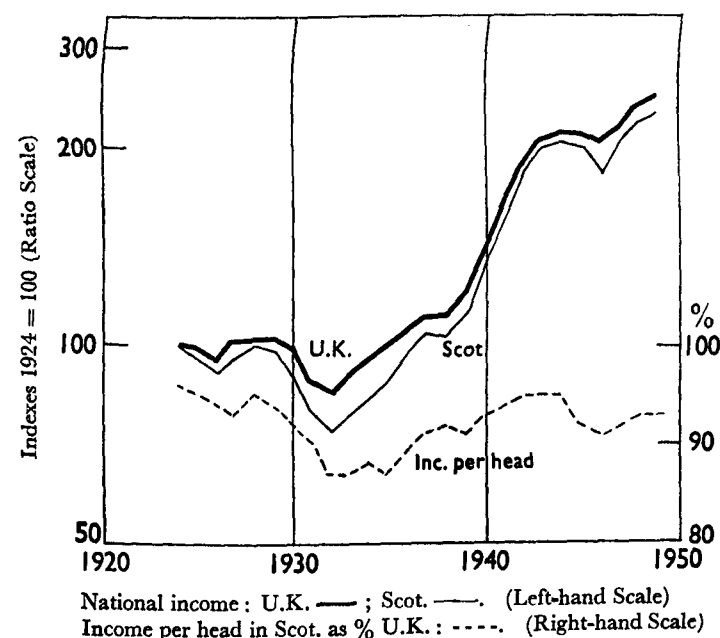


FIG. 1.—Income and income per head, Scotland and the U.K., 1924–49

Table II compares the composition of the Scottish and United Kingdom national incomes. Between 1924 and 1949 changes in the distribution of income, among the classes of wages, salaries and property income, were

TABLE II
Income by Distributive Shares, Scotland and the United Kingdom, 1924–49

Year.	Wages. ¹		Salaries. ²		Property income. ³	
	Scotland, %.	United Kingdom, %.	Scotland, %.	United Kingdom, %.	Scotland, %.	United Kingdom, %.
1924	37	38	17	20	46	42
1929	38	38	18	22	44	40
1932	39	39	22	26	39	35
1938	39	39	21	24	40	37
1944	46	46	17	20	37	34
1949	43	44	19	23	38	33

¹ Item (3) and parts of items (5), (6) and (7) of Table I.

² Item (4) and parts of items (5), (6) and (7) of Table I.

³ Items (8) and (9) and part of item (7) of Table I.

imilar in both countries. But whereas wages absorbed more or less the same proportions of both aggregates, the shares of salaries in the Scottish total were lower by 3–4 percentage points, and the shares of property income,

including "mixed income,"¹ were greater by the same amount. The Scottish deficiency in salaries was compensated, in part, by a relatively high proportion of "mixed income": in 1946-49 salaries averaged 18-19% and "mixed income" accounted for 14-16% of Scottish income, whereas, in the United Kingdom, salaries absorbed 22-23% and "mixed income" only 12-14%. The methods of calculation may have contributed to the emergence of this phenomenon, but there is little doubt that real differences in the proportions of salaries and "mixed income" do exist.²

In Fig. 2 the Scottish national income and its major constituents are

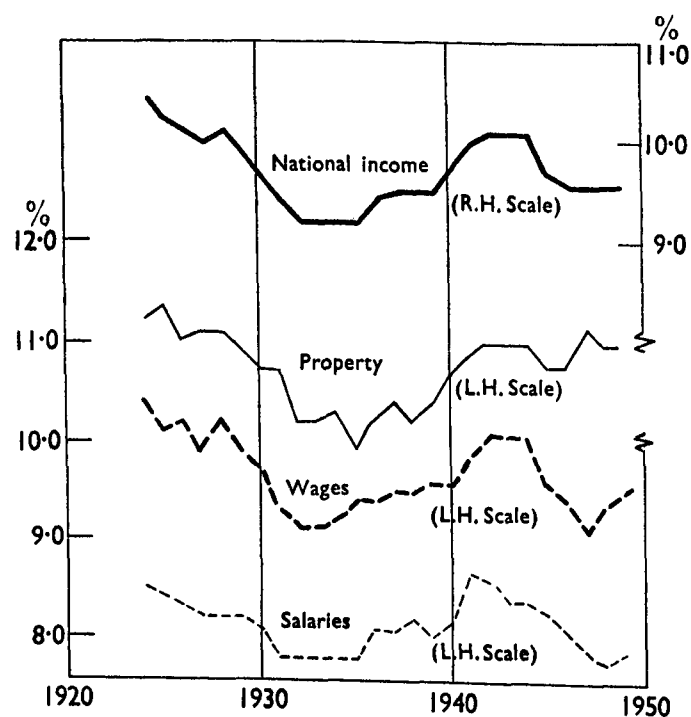


FIG. 2.—Scottish incomes as percentages of U.K. incomes, 1924-49

shown as percentages of their counterparts in the United Kingdom. Scotland received a relatively large share of United Kingdom property income—averaging 10.7% over the period 1924-49—and relatively low shares of wages and salaries—averaging 9.7 and 8.1%, respectively. The trends in these three classes are of special interest. Scotland's share of United Kingdom national income has been falling since the 1920s, but the

¹ Item (8) and part of item (7) of Table I.

² The low proportion of salaries is partly due to the Scottish tendencies to organise production in relatively small units with few salaried managers and clerks and to employ women where England employs men. The concentration of head office staffs, the Civil Service and the highest salaries in most occupations in the south of England also exerts some influence. Some of the causes of the high proportion of "mixed income" are mentioned on p. 234.

downward movement is not equally strong in each class of income. Scotland's share of property income has fallen only slightly, but salaries have dropped from 8.5 to 7.9% and wages have fallen from 10.4% in 1924 to 9.5% in 1949. These movements in wages and salaries, and the current trend of Scottish population, may foreshadow a widening gap between income per head in Scotland and the United Kingdom.

The most important question suggested by these comparisons is why income per head should be lower in Scotland than in the United Kingdom. This problem is discussed in the concluding section.

RELATIVE INCOME PER HEAD OF POPULATION

Between 1924 and 1949 Scottish income per head fluctuated between 87 and 96% of the United Kingdom average; for the last five years of the period the ratio was 92%. An outline of the causes of difference may be given using the data for 1949. The Scottish national income in that year was £1,015 million, made up of wages and salaries (£630 million), "mixed income" (£145 million) and property income (£240 million).¹ Scotland's share of wages and salaries was low (9.0%), but her shares of "mixed income" (10.9%) and property income (11.0%) were high in comparison with her share of United Kingdom population (10.4%).

The Scottish deficiency in wages and salaries was due to her relatively low proportion of such workers, a higher rate of unemployment and a lower level of earnings. Including the Armed Forces, Scotland supplied only 10% of the total of United Kingdom employees in 1949, and the heavier incidence of unemployment—3% in Scotland compared with 1.5% in Great Britain—further reduced Scotland's proportion of the active labour force. Earnings, the remaining factor, appear to have been about 8% less than the average for the whole country.

The most important of these three factors in 1949 was the last one—the lower level of earnings in Scotland that has persisted throughout the period 1924-49. It is not possible to make a comprehensive analysis of this phenomenon, but some of its causes may be mentioned.² Differences in the industrial structures of Scotland and the United Kingdom have some effect; but even when these differences are eliminated there is still a definite tendency for earnings in Scotland to be lower than in the corresponding industries in England. To some extent this is due to the fact that the elimination does not go far enough; though she may not specialise in low-paying industries, Scotland tends to specialise in low-paying sections of industries, e.g., in engineering and textiles. Another cause is the Scottish practice of employing more women and fewer men than in England and, for

¹ With reference to Table I, wages and salaries consist of items (3) and (4) and parts of items (5), (6) and (7); "mixed income" consists of item (8) and part of item (7); and income from property consists of item (9) and part of item (7).

² Cf. Phyllis Deane, "Regional Variations in United Kingdom Incomes from Employment, 1948," *J.R. Statist. Soc.*, Vol. CXVI, Part II, 1953, and D. J. Robertson, *The Scottish Economy*, Chapter 11. I have also been privileged to see an unpublished paper on this subject by C. E. V. Leser.

what remains, a major factor must be the fact that industrial output per head is 5–10% lower in Scotland than in England.¹

The Scottish share of "mixed income" was relatively high at 10.9% of the United Kingdom total. Scotland appears to have had both a relatively high number of such incomes and higher average earnings.² To some extent, this reflects Scotland's specialisation in agriculture. Another factor is the Scottish tendency, compared with England, to organise production in relatively small units, thereby reducing the number of salaried managers and clerks and increasing the total of "mixed income."³

In 1949 Scottish income from property, excluding "mixed income," was £240 million or 11% of the United Kingdom total. Property income per head of population exceeded the United Kingdom average by about 6% and, with the assistance of "mixed income," brought income per head in Scotland to 93% of income per head in the United Kingdom, compared with a ratio of 87% from wages and salaries alone. The relatively large share of 11% is very much dependent on the reliability of the estimates of United Kingdom capital owned by individuals in Scotland.

According to the values of estates passing on death, analysed in the Inland Revenue Reports, Scotland owns about 12% of United Kingdom capital, excluding land and buildings. Since Scotland's share of the United Kingdom national income is of the order of 9–10%, this result is something of a paradox. A full examination of the reasons for the high proportion of capital in Scottish ownership cannot be undertaken here, but some possibilities may be indicated. Legal rules and administrative practices do not seem to be important. Inclusion of land and buildings lowers the Scottish proportion, but there is still much to be explained. The fact that a nine-year moving average of the Scottish share of Great Britain's movable capital shows a downward trend, falling from 12.5% in 1924 to 11.7% in 1949, suggests that the Scottish figures may reflect fortunes made in the past and that they may be only beginning to come into line with the economic results of more recent years.⁴

Wages, salaries, "mixed income" and property income combined to bring Scottish income in 1949 to 9.6% of the United Kingdom national income. This share was divided among 10.4% of the United Kingdom population, so that income per head in Scotland was 7% less than in the United Kingdom. The main factors responsible for the difference were, in order of importance, the lower levels of income from work, the lower proportion of occupied persons in the total population and the higher rate of

¹ C. E. V. Leser, *The Scottish Economy*, p. 74.

² In 1950/51 the number of individuals and firms assessed in Scotland on trading profits was 177,590 or 10.5% of the United Kingdom figure of 1,696,767. "Net true income" in Scotland averaged £565 per assessment, 9% more than the United Kingdom average of £520. Cf. *95th Report of Commissioners of Inland Revenue*, Cmd. 8726 (1953).

³ H. W. Singer and C. E. V. Leser, "Industrial Productivity in England and Scotland," *J.R. Statist. Soc.*, Vol. CXI, Part IV, 1948, p. 317.

⁴ Other possible explanations refer to Scottish frugality, the higher Scottish death-rate, the fact that emigrants come home to die, bringing their wealth with them, etc.

unemployment. The full effects of these factors were partially offset by Scotland's relatively high shares of "mixed income" and property income.

The relative importance of the causal factors differs in other years. In 1932, for example, unemployment was more important than in 1949; and in the 1920s the Scottish working population had a smaller load of dependants on its back. This second point is worth emphasising. In 1949, other things being equal, the difference in the ratio of occupied to total population in Scotland and England would have caused real income per head in Scotland to be about 3% less than in the United Kingdom.

Neglecting the less-reliable war-time estimates, the gap between income per head in Scotland and England has not shown many signs of closing; in fact, the evidence suggests that it may be increasing. But the differences and changes revealed are not very large, and it is doubtful whether one should stress the differences or, bearing in mind the margins of error of the present figures and the wider regional differences in other countries, lay emphasis on the similarities.

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APPENDIX

Only the principal sources and methods are described in this Appendix, and details are not given of many of the smaller adjustments used to improve the accuracy of the estimates. Some general remarks may be made before discussing the individual components.

(a) The main sources of United Kingdom figures were Bowley,¹ Miss Chapman,² Cmd. 7099, the Blue Book *National Income and Expenditure, 1946–1951*, and the *89th Statistical Abstract*.

(b) The estimates of population for Scotland and the United Kingdom include members of the Armed Forces serving away from their countries of origin and merchant seamen at sea.

(c) The estimates for the components have all been adjusted to a calendar-year basis, even though this is not specifically stated, e.g., agricultural income, income in Schedule D.

The individual components may be examined in the order in which they are given in Table I.

1. *Wages*. Two series were prepared for 1924–40.

(a) The 1931 wage-bill was estimated on the basis of Bowley's United Kingdom wage-bill (*Studies*, pp. 68–74): the numbers of wage-earners in different industries were obtained from the 1931 Population Census; and the ratio of Scottish to United Kingdom annual wage-earnings was guessed from Census-of-Production figures of net output per head in 1924, 1930 and 1935 and some information about wages particular industries. With 1931 as base, wage-bills for other years were estimated using indexes of

¹ *Studies in the National Income, 1924–1938*, ed. Sir Arthur Bowley (Cambridge, 1942).

² *Wages and Salaries in the United Kingdom, 1920–1938*. Agatha L. Chapman (Cambridge, 1953).

the earning-strength of Scottish wage-earners and of average annual earnings. An earnings-index was calculated for Great Britain from information about wage-rates and wage-earnings, and adjusted for Scotland in the light of the Census-of-Production changes in net output per head relative to Great Britain and occasional information about Scottish wages.

(b) The United Kingdom wage-bills, calculated by Miss Chapman for 1924-37 (*Wages and Salaries*, p. 41), were spliced to the subsequent official estimates. The aggregates of United Kingdom wages below the exemption limits were calculated by deducting wages assessed in Schedule E. The Scottish shares of these aggregates were estimated from the numbers exempt from tax in Scotland and the United Kingdom, allowance being made for the relative levels of earnings. Annual Scottish wage-bills were obtained by adding these sums and Scottish wages assessed in Schedule E.

Series (a) and (b) were averaged, and wages in the Armed Forces and agriculture were deducted to provide the estimates of Table I.

For 1945-49 the P.A.Y.E. figures of total remuneration for the United Kingdom, which comprise wages and salaries above certain limits, were subtracted from the C.S.O. totals of wages and salaries (including the Armed Forces), to obtain estimates of the sums excluded from P.A.Y.E. Scotland's shares of these sums were estimated as in (b), and aggregates of Scottish wages and salaries were obtained by adding (i) Scottish remuneration under P.A.Y.E., (ii) Scotland's share of wages and salaries excluded from P.A.Y.E. and (iii) allowances for the earnings of non-industrial Civil Servants, the Armed Forces and merchant seamen assessed under P.A.Y.E. but not allocated by country. These aggregates were divided between wages and salaries in accordance with wages estimates in series (a)—continued for 1941-49—and preliminary estimates of Scottish salaries (described in 2 (a) below). Wages in the Armed Forces and agriculture were deducted to obtain the estimates of Table I.

For 1941-44 estimates were interpolated on the basis of series (a) for these years and the final estimates for 1936-38 and 1945-47.

In addition to wages in the Armed Forces and agriculture, wages in Table I exclude the earnings of shop-assistants.

2. *Salaries.* Two series were prepared for 1924-40.

(a) To Scottish salaries assessed in Schedule E were added the earnings of shop-assistants and other salaries below the exemption limits. The unassessed earnings of shop-assistants were estimated in a manner similar to that of Bowley (*Studies*, pp. 75-8). Other salaries below the exemption limit were derived from Scottish "residual income," which was estimated on the same lines as those used by Bowley (*Studies*, pp. 78-80).

(b) This series was based on the United Kingdom salary-bills prepared by Miss Chapman for 1924-37 (*Wages and Salaries*, p. 47), which were spliced to the subsequent official estimates. The methods of calculation were similar to those described for series (b) of Scottish wages.

Series (a) and (b) were averaged and, subject to minor adjustments, provided the estimates of Table I.

For 1945-49 Scottish salaries were estimated from the P.A.Y.E. figures. Series (a) was continued in a rough way by various devices for 1941-49 and used, in conjunction with the series (a) estimates of wages, to divide the aggregates

tween wages and salaries. For 1941-44 the method used was similar to that described for wages. In all years salaries were adjusted to exclude the Armed Forces and agriculture.

3. *Income of the Armed Forces.* The United Kingdom totals were taken from Miss Chapman for 1924-37 (*Wages and Salaries*, p. 166), and from the official national-income figures for 1938-49. The Scottish shares were assumed to be equal to the proportions of Scots in the Armed Forces, allowance being made for the lower earnings of women.

4. *Employers' National Insurance Contributions.* The United Kingdom totals were taken from Miss Chapman for 1924-37 (*Wages and Salaries*, p. 242) and from the official figures for 1938-49. The Scottish shares were assumed to be equal to the proportions of Scots in the totals of insured employees.

5. *Agricultural Income.* This is equal to the net output of Scottish agriculture, including wages, salaries and rents. Official figures of gross Scottish agricultural output were available for 1924-25, 1930-31, 1936-37 and all subsequent years. Estimates for missing years were interpolated with the help of United Kingdom gross output and statistics of acreage, livestock and employment in Scotland. The net output totals were obtained by deducting (a) the values of feeding-stuffs, stores, seeds and fertilisers imported by Scotland, and (b) payments for machinery repairs, fuel, maintenance and miscellaneous charges. The deductions were based on some official Scottish figures and on estimates by Bowley (*Studies*, pp. 99-100) and J. H. Kirk¹ for the United Kingdom.

6. *Professional Earnings and "Profits of Other Sole Traders and Partnerships."* This component can be isolated only in 1938 and 1946-49, when United Kingdom estimates are available. The Scottish shares were assumed to be equal to the Scottish proportions of the trading profits of "individuals and firms" assessed in Schedule D. The proportions were calculated from the figures of "net true income" excluding income from agriculture and horticulture.

7. *Income from Property.* Continuous series, on current definitions, cannot be prepared for the different types of property income. Thus, one system of classification was used for 1924-37 and a second—based as far as possible on accepted national-income practice—was adopted for 1939-49. Estimates for 1938 were made in both ways.

1924-38. A partial break-down of the aggregates of property income is given in Table III. There is a considerable amount of over-lapping among the individual components: for example, some non-agricultural rent is included in "miscellaneous incomes," and national-debt interest is found in each of four classes.

(a) *Non-agricultural rent.* These estimates consist of Scottish Schedule A "Actual Income" from the ownership of lands, houses, etc. Agricultural income was estimated, using the technique suggested by Bowley (*Studies*, p. 101), and deducted. Income below the exemption limits is excluded.

(b) *Income from British, etc., government securities.* This is "Actual Income" in Schedule C, consisting of some income from abroad and some national-debt interest; it excludes income below the exemption limits. The Scottish shares of United Kingdom "Actual Income" were assumed to be equal to the percentages of the net capital values of British estates, credited to

¹ *Journal of the Agricultural Economics Society*, June 1946.

Scotland in the analyses of personalty in the Inland Revenue Reports. A nine-year moving average of these percentages was applied to the United Kingdom totals, net of 2% for Northern Ireland.

(c) *Profits from businesses and professions and certain interest.* This is predominantly "Actual Income" in Schedule D, the major items being the trading profits of companies, local authorities, professional persons and "other

TABLE III
Income from Property, Scotland, 1924-38
£ million

Year.	Non-agri- cultural rent.	Income from British, Dominion and foreign govern- ment securities.	Profits from business, pro- fessions and certain interest.	Miscellaneous income.	Deduction for national-debt interest.
	(a)	(b)	(c)	(d)	(e)
1924	14	17	146	36	-35
1926	14	16	127	36	-36
1928	14	18	136	40	-33
1930	16	19	112	40	-31
1932	17	18	89	25	-30
1934	16	17	101	35	-23
1936	16	16	122	38	-23
1938	17	16	122	40	-23

sole traders and partnerships," and national-debt interest not taxed at source: income from agriculture is excluded, but some profits below the exemption limits are included. Scotland's shares of Schedule D "Actual Income" for the United Kingdom, plus profits taxes excluded from assessment, were calculated in the same manner as in (b). The non-salary element of Scottish "residual income" was added. The resulting series was adjusted to take some account of the movements of an index of profits earned in Scotland because, though they do not represent profits earned in Scotland, the estimates of Scottish profits in Table III consist, to the extent of at least 40%, of profits so earned.¹

(d) *Miscellaneous income.* This consists of residues of property income not included in (a), (b) or (c)—the income of charities, income below the exemption limits and not otherwise included, interest on National Savings Certificates, a deduction for income due to foreigners and Scotland's share of central government property income. The amounts involved were small, only £10-15 million in each year. But another, more important, item is included. Scottish property income for 1938, estimated by the preceding methods, differed from the estimate prepared in accordance with the methods used for 1939-49. The pre-1938 totals were adjusted on the basis of the latter estimate; the amendments involved annual increases of £20-25 million, which were included in "miscellaneous income."

(e) *National-debt interest.* Scottish receipts are covered in (b), (c) and (d). In each year some debt interest was deducted, Scotland's shares being

¹ The index is described in *The Scottish Economy*, ed. A. K. Cairncross (Cambridge, 1954), pp. 58-60.

calculated by applying population ratios to the totals of national-debt interest.

1938-49. Details of the components of property income in this period are given in Table IV. The definitions used are, as far as possible, those of current C.S.O. practice.

TABLE IV
Income from Property, Scotland, 1938-49
£ million

Year.	Non-agri- cultural rent.	Trading profits of companies.	Public property income.	Net income from abroad.	Net national- debt interest.
	(i)	(ii)	(iii)	(iv)	(v)
1938	23	68	4	19	1
1940	24			206 ¹	
1942	22			264 ¹	
1944	22			276 ¹	
1945	21			255 ¹	
1946	22	143	8	8	-1
1947	23	173	5	16	-
1948	23	175	15	23	-2
1949	23	174	16	24	-3

¹ Professional earnings and the profits of "other sole traders and partnerships" are included.

(i) *Non-agricultural Rent.* Estimates of agricultural rent were deducted from the C.S.O. figures of the rent of land and buildings. Scotland's shares of the residues were assumed to be equal to her proportions of United Kingdom "net true income" from houses, etc., in Schedule A.

(ii) *Trading Profits of Companies.* For 1938 and 1946-49 the trading profits of companies for the United Kingdom were reduced by 2% for Northern Ireland; the Scottish shares of the residues were calculated by applying factors derived from the Inland Revenue personalty statistics. The factors were taken from a nine-year moving average, and were intended to reflect Scottish ownership of the types of property to which company profits are attributable. The preliminary Scottish estimates were adjusted to take some account of the movements of the index of profits earned in Scotland (cf. 7 (c)).

(iii) *Public Property Income.* In 1938 and 1946-49 Scotland's shares of the trading surpluses of public corporations and the profits of other public enterprises were obtained by applying population ratios to the United Kingdom totals. (No serious error is caused by allocating the local authority income included in this way.)

(iv) *Net Income from Abroad.* Scotland's shares of United Kingdom property income from abroad, net of receipts by Northern Ireland, were estimated on the basis of factors from the personalty statistics. Payments of property income by the United Kingdom were divided, roughly, between national-debt interest and other payments. Scotland's contributions towards debt interest paid abroad were calculated on the basis of population; her shares of other payments, after allowing 2% for Northern Ireland, were obtained by applying the factors used to determine Scotland's shares of trading profits in (ii).

(v) *Net National-debt Interest.* In 1938 and 1946-49 Scotland's payments were calculated by applying population ratios to the totals of debt interest net of payments within the central government and the National Insurance funds. Scottish receipts were estimated by applying factors derived from the personalty statistics to the net totals of debt interest less receipts by foreigners and Northern Ireland. Table IV shows Scottish payments net of Scottish receipts.

Categories (ii)-(v), 1939-45. Separate United Kingdom figures for the different categories were not available; only aggregates of professional earnings, etc., income from farming, the trading profits of companies, public property income and net income from abroad have been published (Cmd. 7099, p. 34). These aggregates were brought into line with the officially-revised figures for 1938 and 1946. Estimates of the Scottish proportions of the main classes of income included were prepared for each year: population ratios were used for public property income; estate duty statistics were the main source of the estimates for trading profits and net income from abroad; and it was assumed that the Scottish proportions of professional earnings, etc., moved steadily between the known proportions of 1938 and 1944—proportions calculated from assessments in Schedule D. The factors for each year were combined in a weighted average, the weights being based on the estimated movements of these classes of income from 1939 to 1945. The annual averages obtained were applied to the revised United Kingdom totals, net of estimates of United Kingdom income from farming, to arrive at preliminary Scottish estimates. These estimates were amended to take some account of the index of Scottish profits. Finally, additions and deductions were made for national-debt interest received and paid by Scotland, allowance being made for interest already covered in net income from abroad.

EXTERNAL ECONOMIES AND THE DOCTRINE OF BALANCED GROWTH

THE object of this paper is to examine an argument advanced by some of the most distinguished writers on the theory of economic development, to consider to what extent and under what conditions it is valid, and to point to some of its implications.

The argument in question runs roughly as follows. In underdeveloped countries there is little incentive to invest capital in the introduction of modern efficient methods of large-scale production in individual industries producing goods for domestic consumption because the markets for the respective industries are too small. Since, however, the adoption of such methods in any one such industry would increase the demand for the products of the other industries, the incentive would be much greater if investments in a wide range of consumer-goods industries were undertaken, or at least considered, in conjunction. The adoption of investment projects which, though unprofitable individually, would be profitable collectively would, it is implied, be a good thing. This argument is frequently referred to as the "doctrine of balanced growth."

Certain elements in the doctrine are adumbrated in Allyn Young's celebrated article on "Increasing Returns and Economic Progress."¹ The doctrine itself is set forth briefly in Professor Rosenstein-Rodan's "Problems of Industrialisation of Eastern and South Eastern Europe"² and more fully in Chapter 1 of Professor R. Nurkse's *Problems of Capital Formation in Underdeveloped Countries*. The argument as presented in the present paper, however, does not purport to reproduce exactly the views of any of these writers. In the first place they differ to some extent among themselves, and secondly, my presentation is either, as outlined above, too rough and ready, or else, as expounded below, too pedantically precise, to mirror faithfully the explicit thought of any one of them. What I have tried to do is to reconstruct the logical presuppositions of a doctrine which, with certain variations noted below, is common to Rosenstein-Rodan and to Nurkse.

We must now attempt to analyse the argument under discussion into its explicit and implicit elements. These are as follows:

- (a) The installation in any one of a wide range of home market industries in an underdeveloped country or region of a new plant capable of operating at a unit cost lower than that of existing production in the industry might be financially unprofitable because of the smallness and inelasticity of the market for the industry within the country or region in question;³

¹ ECONOMIC JOURNAL, December 1928. ² *Ibid.*, June-September 1943.

³ "... the small size of a country's market can discourage or even prohibit the profitable application of modern capital equipment by any individual entrepreneur in any particular industry" (Nurkse, *op. cit.*, p. 7).

(b) if demand for the product of such an industry were increased the installation of the new plant would become more profitable or less unprofitable;

(c) any increase in output, involving a reduction in unit cost of production, in a typical consumer-goods industry will tend to increase real income and hence real demand for the products of most other consumer-goods industries and thus to increase the profitability of installing more efficient plants in the latter provided, however, that interest rates do not rise too much;^{1, 2, 3}

(d) it follows that the installation of more efficient plants of the type described in each of a wide range of consumer-goods industries, though unprofitable if undertaken separately, might be profitable if undertaken jointly.²

Moreover:

(e) The joint installation of such plants, if profitable, would be desirable (*i.e.* would tend to increase real national income); and

(f) because of its effects on the incentive to install efficient new plants in other industries the installation of a single plant, though unprofitable, might tend to raise real national income.

The rather odd-sounding proviso about interest rates at the end of step (c) in the argument has to be introduced into my scheme to take account of the fact that Rosenstein-Rodan and Nurkse usually describe the inter-industry relationships dealt with under (c) and (d) above as affecting not the profitability—net of interest—of installing efficient new plants but the “inducement to invest” or “marginal efficiency of investment,” *i.e.*, the return on the capital invested in such new plants, including interest as well as profits. Now anything which enhances the rate of return on a new plant will enhance its profitability also, provided that the relevant interest rate does not rise “too much,” *i.e.*, provided that the supply of capital is not “too inelastic.”

Let us now consider various steps in the argument in greater detail. Step (a) is clearly valid. In a country of low *per capita* income and/or scattered population and/or poor communications the demand in a given region for the output of even a generally consumed manufactured product may be so small that the output (at minimum unit cost) of a single modern

¹ “Although the initial displacement may be considerable and the repercussions upon particular industries unfavorable, the enlarging of the market for any one commodity produced under conditions of increasing returns generally has the net effect . . . of enlarging the market for other commodities” (Allyn Young, *op. cit.*, p. 537). “The industries producing wage goods can thus be said to be complementary” (Rosenstein-Rodan, *op. cit.*, p. 206).

² “Where any single enterprise might appear quite inauspicious and impracticable a wide range of projects in different industries may succeed because they will all support each other in the sense that the people engaged in each project now working with more real capital per head and with greater efficiency in terms of output per man hour will provide an enlarged market for the products of the new enterprise in the other industries” (Nurkse, *op. cit.*, p. 13).

³ Our authors would not confine the scope of this interaction to consumer-goods industries. They do, however, emphasise its applicability as between such industries, and it is on this, as we shall see, particularly vulnerable application that I wish to focus my criticism.

plant whose installation is under consideration would exceed the total previous output of the product in that region. The particular demand curve for the output of the projected new plant, though elastic over the range of output for which it is displacing previous production, might be highly inelastic and steeply downward sloping for higher outputs. The unit cost curve of the new plant, even though it lies, for larger outputs, below the unit cost of pre-existing production, may lie, for smaller outputs, above that unit cost, and for all outputs may lie above the demand curve for the plant. Under these conditions it would not be profitable to install the new plant.

Step (b) in the argument is likewise a valid one. If the particular demand curve for such a plant as has been described should be raised, *while cost conditions remain unchanged*, the effect would obviously be to reduce the loss associated with its operation, possibly to turn the loss into a profit.

The qualification is, however, all important. If, the raising of the demand curve were to be accompanied by a raising of the unit-cost curve the outcome might well be different. For a rise in the cost curve, taken by itself, would tend to reduce the profits, or increase the losses, of operating the plant, would reduce the scale of the plant's output if it were in operation and might make it unprofitable to install the plant at all.

We come now to the central question, with which step (c) in the argument is concerned, as to the circumstances in which the installation of a low unit-cost plant in one industry will increase the profitability of a similar installation in another industry.

In a closed economy any increase in the supply of any consumer good A, the supply of other such goods remaining unchanged, will tend to increase the prices of each of the latter products relative to that of A, though in the case of close substitutes the increase will be small. The increase in real income associated with the expansion in output of A will normally lead to some increases in the demand for non-A commodities as well as for A, and, in order that the increase in demand should be confined to A, the price of non-A commodities must rise relative to that of A, *i.e.*, there will be an increase in the real price of the average non-A commodity.¹

This increase in the real price of non-A commodities, provided that it is associated with no change in real factor prices, will tend to cause the output of non-A commodities, taken as a group, to expand even under existing methods of production, and may make it profitable to install new large-scale plants. The extent to which this will occur will be greater: (a) the lower the income elasticity of demand for A, (b) the less the elasticity of substitution between A and non-A, and (c) the greater the elasticity of supply in non-A. But there will always be *some* positive reaction so long as the income elasticity of demand for A is less than unity, and the elasticity of substitution between A and B less than infinite, and so long as there is a positive elasticity of supply for non-A.

Step (d) in the argument follows directly from the previous steps.

¹ *I.e.*, an increase in the average price of non-A commodities relative to the average price of all commodities including A.

Steps (e) and (f) are of a different character from the others in that they entail welfare-economic considerations. It is convenient to consider them in terms of a conceptual scheme which distinguishes in the case of any change in the output of a plant, between: (1) the increment in profits (IP), net of return on capital, (2) the increment in direct (social) net product (IDNP), and (3) the increment in real national income (IRNI). The IP corresponds to the Pigovian marginal (or additional) private net product and the IRNI to the Pigovian marginal social net product. The IDNP consists of the sum of the IP and the net benefits in the form of real income transferred from the firm operating the plant to its consumers, workers, suppliers, etc., as a result of the price changes resulting from the change in production. The IDNP is measured by the value of the additional output less the value of additional factor input, output and input being valued at the average prices prevailing over the relevant intervals of the corresponding product-demand and factor-supply curves. That the IDNP should be positive is the well-known Dupuit test of desirability of a finite change in production. The IRNI exceeds the IDNP to the extent that the change in production gives rise to economies outside the plant in question. An analysis of such external economies, given in the Appendix, shows them to include such items as changes in net product in other plants, changes in factor supply and changes in the national terms of trade.

Returning to point (e) in the argument, the introduction of large-scale plants in a variety of increasing return industries will tend to reduce product prices (without reducing factor prices) in those industries, and will therefore confer transfer benefits on the rest of the community. If the net profit of the new plants is positive, therefore, the increment in direct net product resulting from their introduction will be still more positive. Unless, as is improbable, the new plants reduce aggregate factor supplies, bring about a deterioration in terms of trade or otherwise give rise to diseconomies outside the industries in question, their introduction is bound to enhance national real income.

As regards point (f), for reasons analogous to those just discussed, not only any introduction of new plants but also any increased output in existing plants which is profitable under imperfect competition is likely to have a positive direct net product and make a positive contribution to national income. Consequently if expansion in industry A renders profitable the expansion of imperfectly competitive industry B the total contribution to national income of the former expansion will include, not only the transfer benefits which it itself confers, but also the economies to which it gives rise in industry B. Even if the expansion at A is unprofitable, its total contribution may be positive, thanks to these transfer benefits and external economies.

A further point, which our authors might have made, but did not, is that the expansion of demand for an industry will increase not only the profit but also the direct net product involved in introducing a new plant there. Consequently, if conditions are such that the joint introduction of plants in a variety of industries may be profitable though the plants are individually

unprofitable they will also be such that the plants would jointly yield a positive net product, even though individually none of them would do so.

As we have seen, the validity of step (c) depends on the assumption that real factor prices will not be affected when the supply of A is increased and that of non-A goods remains unchanged. This, however, could happen only in a limiting case. Normally real factor prices will be raised or lowered, or some raised and others lowered. There is, therefore, a possibility that the real prices of the factors entering into the operation of modern plants in non-A industries may rise to such an extent as to outweigh the rise in the real prices of non-A products, and thus to induce a contraction rather than an expansion in output and investment in non-A industries.

In what follows, we shall assume, in conformity with what appears to be the intention of the balance-growth doctrine, that the influence exercised by an increase in the supply of A on the real demand for other products is randomly distributed among non-A industries with respect to the possibilities for obtaining economies from increased output and investment in such industries. In other words those industries which are of a critical size in this respect are not, on the average, either specially complementary to or specially competitive with, industry A.

Suppose, now, there is only one stage of production and only one homogeneous factor of production, "labour," which is available in fixed supply. Under these conditions the installation of the new plant¹ at A will increase the incentive to install efficient new plants in non-A industries provided that the wage-rate does not rise so far as to prevent an expansion of output in the average non-A industry. And output in the average non-A industry will expand only if labour-input in non-A industries as a whole expands. Since the supply of labour is fixed, this can happen only if the input of labour at A contracts, i.e., if the employment of labour at the new plant is less than the amount of labour released from the other production units in the industry.

Clearly the employment of labour at A cannot contract if A is a completely new industry at which there has been no previous production. Even, however, if there has been some previous production, it is probable in an under-developed country that this will be carried on in small units under conditions of constant (long-term) real unit cost. In this case if the new plant is unprofitable it is impossible that the employment of labour in the industry should decline.

For since the pre-existing production units operate at constant labour cost, the price of the product in terms of wage units will remain constant so long as any of the pre-existing units continue to operate. Aggregate demand for the product will also remain constant, so that the output of the new plant will at first merely replace output of pre-existing units. If, at the point at which the new plant is itself producing practically the entire previous output of the industry it is still not profitable, though the product price in terms of wage units is almost at the level which made pre-existing production units

¹ A "plant," in this model, may be conceived as a group of workers co-operating in some process that requires a minimum number of workers to achieve any output at all.

profitable, the aggregate labour-cost—and employment—of the new plant must be higher than that of the entire industry prior to its installation. If the output of the new plant is further increased, though its *average* labour cost may fall, its *aggregate* employment of labour must be still further increased.

It would appear therefore that where there is a single factor of production in fixed supply the installation of an unprofitable new plant in industry A, even though its unit cost, at the least unprofitable output, is below that of pre-existing production, is likely¹ to induce contraction rather than expansion in other consumer-goods industries, to yield external *diseconomies* rather than external economies. The installation, over a wide range of such industries, of a set of unprofitable large-scale plants would render them not less but more unprofitable than if they had been installed singly. It would, moreover, tend to reduce the real national product. At first sight, this might appear to be contrary to common sense, since the new plants were described as being more efficient and working at lower unit cost than pre-existing production in their respective industries. But this is only true of plants which are installed singly. If all the plants are installed together the rise in wages will force the typical new plant to operate at a level which keeps the labour requirement of its industry approximately what it was under pre-existing methods of production, and at this level, as we have seen, the unit costs of the new plants will be greater than those of pre-existing production.

The situation might be roughly expressed by saying that, whereas the balanced-growth doctrine assumes that the relationship between industries is for the most part complementary, the limitation of factor supply ensures that that relationship is for the most part competitive.

Taking account of the multiplicity of factors of production introduces certain complications and qualifications into the argument without greatly altering its conclusions. Each industry and method of production is likely to have factors which are more or less specific to it. Thus when the new plant is introduced at A there is likely to be some fall in the price of factors specific to the old-fashioned methods of production in the industry. As output in the old sector of the industry is curtailed there will be a decline in product price, and a corresponding decline in marginal cost in the form of non-specific factors released to other industries, so that the aggregate receipts of the new plant will fall short of the value of factors released from the older sector of the industry and the plant may be unprofitable even though it employs fewer resources than those released from the older sector. This creates a possibility, though by no means a certainty, that an unprofitable plant, with a positive direct net product, may effect a net release of factors from the industry and thus create external economies.²

¹ This conclusion would be certain but for the possibility that this output from pre-existing production units might operate under conditions of diminishing returns. This, however, is more likely to occur where several factors of production exist, and is considered below.

² If the direct net product is negative, the new plant cannot possibly create external economies. For the direct net product of the new plant is measured by its price integral *less* its marginal-cost integral. And the net release of resources from the industry is measured by that part of its output

Another probable consequence of the multiplicity of factors of production is that the weighting or "mix" of factors used in running the new modern plant at A may resemble more closely the factor mix employed in running actual or potential modern plants in other industries than the combination of factors employed in production outside A taken as a whole. In this case it is possible that even if the plant installation at A on balance increases the supply of factors to non-A industries it will so raise the prices of those factors which are particularly in demand for the running of modern plants that the net effect on the installation of such plants will be discouraging.

It would appear therefore that, so long as factors of production are in fixed supply, the introduction of large-scale production units in consumer industries is likely to give rise not to economies but to diseconomies in other industries competing for the consumer market unless the former industries are already big enough for the introduction of the new plant to make possible a net reduction in the resources employed there: that this is unlikely to occur where the new unit is unprofitable, and cannot occur unless it passes the Dupuit test of the desirability of a "large" investment, *i.e.*, unless it has a positive direct net product.

It is noteworthy that the introduction of more efficient production methods in a large competitive industry such as agriculture is not only certain to be profitable but likely to release factors to other industries so long as the elasticity of demand for the industry as a whole is less than unity. This suggests that if underdeveloped countries were to press ahead with improvements of a financially profitable character in agriculture they might do more to make profitable large-scale efficient production in other industries, such as manufacturing, which are in a phase of increasing returns, than by trying to develop simultaneously a wide range of such manufacturing industries.

Thus far we have assumed a closed economy. The introduction of foreign trade makes little difference to the argument. Indirectly, through the various mechanisms whereby external equilibrium is maintained, the demand for exports varies with the demand for imports. If the scope for economies of scale is equal in export and in home-market industries it makes no difference which gains at the expense of the other. It will still be true that the expansion of industry A will create a balance of economies or diseconomies elsewhere, according as A absorbs less or more factors than before. It is, however, sometimes argued that in underdeveloped countries the export trades sell on more perfect markets than do the domestic trades, so that fewer unexploited opportunities for economies of scale remain in the former. If so the expansion at A will be more likely to generate external economies of scale than the previous argument would imply if, as is often the case, the industry A happens to be one which is more competitive in product markets

which is curtailed, less the marginal cost integral of the new plant. And the price integral of the new plant cannot possibly fall short of the marginal-cost integral on the curtailed output of the older sector of the industry. So that the direct net product of the new plant must always exceed the net release of resources from the industry.

with imports, and/or more competitive in factor markets with exports, than it is, in the respective markets, with purely domestic industries.

In order really to salvage the doctrine of external economies under examination, however, it is necessary to drop the assumption that the supply of factors of production is fixed in favour of the assumption that the supply varies positively with real factor prices. For then, in order that an expansion in A should increase the profitability of additional output and the installation of new plants in industries producing other consumer goods, thus generating economies, it is no longer necessary that the employment of factors in A should actually decline as output increases, but merely that factor employment there should not rise more than the increased factor supply evoked by the rise in real factor prices. As we have seen, of our authors, only Rosenstein-Rodan explicitly assumes an elastic supply of labour in his illustration of the doctrine, though Nurkse, in arguing in terms of the inducement to invest, is in effect assuming some elasticity in the supply of capital.

It should be noted that the possibility of expanding the supply of labour at a given money wage by increasing the level of money demand would not constitute factor elasticity in the sense relevant here, since the whole argument is concerned with "real" demand, and full employment is assumed from the start. There are, however, a number of *prima facie* reasons why the supply of factors in an underdeveloped country or region may show a measure of elasticity of a sort relevant to the present argument. Not all of them, however, are very conclusive. For example:

(1) The supply of labour from individual workers may increase when real wages increase, because the workers are better able and more willing to work. But the opposite result is at least as likely to happen because the worker wishes to take out part of his real income in leisure, and "absenteeism."

(2) Higher real wages may attract workers on the margin of the labour force into employment, and higher rents may make it profitable to bring poorer qualities of land into cultivation. On the other hand, higher family incomes may lead to a withdrawal of marginal women, children and older workers from the labour force.

(3) Higher real rewards may tempt workers and capitalists to migrate into the country or region in question, thus increasing the supply of factors there. Economies facilitated by this means in the area of immigration, however, may be balanced by diseconomies in the area of emigration.

(4) Higher real wages in a country at an early stage of demographic development may bring about an expansion of population which will entail an expansion in the labour force a couple of decades later. At a later stage of demographic evolution, however, higher real wages may have a zero or a negative effect on population growth.

For the purpose in hand the main potential sources of elasticity in

the supply of factors of production are the three listed below, which will be discussed at greater length.

(5) In so far as factors of production are themselves products of an earlier stage of production—and here we depart from the assumption that there is only one stage of production—an increase in the real prices of those product-factors may bring about an increase in their supply and in the aggregate amount of factors supplied to subsequent stages of production.

(6) A rise in the demand for factory labour may attract workers from employments, such as agriculture, where their productivity is very low, and thus give rise to a virtual increase in the supply of labour or at least an increase in its supply to that sector of industry in which economies of large-scale operation are to be obtained.

(7) Higher interest rates may increase the supply of capital, especially from abroad.

First, let us take account of the "vertical disintegration" of production—the fact that industries buy the products of other industries, as well as original factors of production, and that some industries are predominantly suppliers of other industries rather than of final consumers. Thus far we have considered industries as acting on each other "horizontally," through the interrelated markets which they serve or the interrelated factors which they buy. But industries also affect each other in greater or lesser degree in a more direct manner, *i.e.*, "vertically" as suppliers or customers. We are concerned with the effect of this "vertical" connection on the "horizontal" one, to which the balanced-growth doctrine, as expounded by Rosenstein-Rodan and Nurkse, primarily refers.

The introduction, in industries serving final consumers, of more efficient large-scale methods of production may encourage increased output in factor-producing industries if it tends to raise the prices of produced factors (intermediate products) more, or reduce them less, than the prices of the original factors of production used by the latter group of industries. Now, as a matter of fact, the type of technical changes associated with the substitution of large-scale for smaller-scale production not only tend to raise the demand for capital relative to labour but also to raise the demand for intermediate products as compared with original factors as a whole.

We may assume that, in an underdeveloped country, the industries producing factors of production—especially those producing power, transportation, minerals and capital goods—will, like the consumer-goods industries, frequently operate under conditions of imperfect competition, where efficient production is hampered by the smallness of the market. The stimulus given by the installation of large-scale production in consumer-goods industries to profitability, production and investment in the supplying industries will therefore give rise to an increase in the net product of the latter. This means that the increased use, if any, of original factors in expanding the factor-producing industries will permit a more than equivalent increase in the supply of produced factors, so that the industries producing

for final consumption will secure a net increase in the supply of the two so of factors taken together. It follows from this that the installation of mode large-scale production in one consumer-goods industry, even though involves an increased use of factors of production—in both kinds—nevertheless, in the manner described, leave other consumer-goods industries better supplied with factors than before, thus giving rise to economies there.

It is noteworthy that the chances that the introduction of more efficient large-scale operation in one consumer-goods industry will generate economies in another such industry are here increased only by reason of economies generated at an earlier stage of production. The latter, or "vertical" type of external economies will, of course, enhance real national income just as surely as the former or "horizontal" type, and in magnitude a likely to be the more important of the two. Moreover, the "vertical" generation of economies operates not only from later to earlier stages of production, but also with even greater probability, from earlier to later stages. Thus the expansion of output in a producer-goods industry, provided that involves an increase in net product, will tend to increase the profitability of other industries in general, and will encourage economies in such of the industries as are operating under increasing returns.

There can be little doubt but that the conditions for a "vertical" transmission of external economies—whether forward from supplying industry to using industry, or backward from using industry to supplying industry—are much more favourable than for a "horizontal" transmission between industries at the same stage. There is, therefore, a much stronger case for joint planning of the development of industries at earlier and later stages of the same "line" of production than of industries at the final stage of different "lines." The fact that our authors, other than Allyn Young, seem to lay more emphasis on the "horizontal" rather than the "vertical" variation of the balanced-growth doctrine is probably due to the fact that the external economies underlying the former are less frequently discussed in the literature than those underlying the latter. But the "horizontal" transmission of economies may have been neglected by Marshall and his commentators precisely because, where it exists at all, it is relatively unimportant.

Let us now turn to the possibility, listed at (6) above, that the enhanced real demand for labour arising in various branches of secondary industry is a result of the expansion and modernisation of one such industry may be satisfied by drawing labour away from an overcrowded agriculture where its marginal productivity is negligible or relatively low. As already mentioned, Rosenstein-Rodan, in expounding his version of the "horizontal" variant of the balanced-growth doctrine, explicitly assumes that the labour supply for industrial expansion is drawn from agriculture where it would otherwise be underemployed.

There can be no doubt of the fact, attested by many observers, that underemployment, in the sense specified above, exists in the agriculture of many underdeveloped countries. There can also be little doubt but that an expansion in the real demand for labour in any particular industry

branch would attract some of the underemployed agricultural labour to secondary industry, and to that extent would improve the prospect of reaping economies of scale in the industrial sector as a whole. The crucial question, however, so far as the creation of external economies is concerned, is whether the expansion of industrial branch A would lead to a transference of labour from agriculture to industry sufficient to permit an expansion of branches of industry *other than A*.

It is by no means clear how this question should be answered. Much will depend on the reasons for the prior existence of the agricultural underemployment. It is assumed that this is no mere case of inadequacy of monetary demand combined with rigidity of money wages in secondary industry. There remain two possible lines of explanation. One is that the underemployment is voluntary in the sense that real rewards for unskilled labour in industry are insufficiently in excess of those in agriculture to attract sufficient labour to equalise marginal productivity in the two sectors. Even though the marginal product of labour in agriculture be far below that in industry, labour may stay on the land partly because of a family system under which the individual worker is paid according to the *average* product of peasant labour rather than its *marginal* product, and partly because of inertia, and lack of enterprise.

In this event, however, it seems unlikely that more workers would be attracted from agriculture than are absorbed by the initial expansion in industry A. For expansion in A, output remaining constant elsewhere, is likely to increase the demand-price for food at least as much as for the products of other secondary industries. In so far as this expansion entails an increase in real income, it will no doubt tend to raise demand for manufactures in higher proportion than for food; but the increased output of A is likely to be more competitive with other manufactures than with food, and the probable transference of income from tax-payers—or whoever bears the losses of the expansion at A—to peasants and workers will tend to raise demand for food rather than manufactures. For these and other reasons¹ the real demand-schedule for labour in secondary production outside A appears more likely to fall than to rise relative to the schedule of real *per capita* income in agriculture. If the demand for labour A is sufficiently strong to draw labour from agriculture it will be sufficiently strong to draw it from other secondary industries also. The availability of underemployed agricultural labour may enable A's labour force to expand without that of other secondary industries having to contract as much as it otherwise would: it will not permit the latter to expand as well.

A second line of explanation for the initial state of underemployment in agriculture is that workers, while desirous of moving from agriculture to secondary industry, are unable to obtain employment there owing to the artificially high level of industrial wages maintained by labour unions, etc.

¹ Though any influences transmitted "vertically" to basic industries, or any repercussions on other industries of the economies generated in basic industries, are more likely to favour secondary production than agriculture, on the other hand, the latter is less likely to be affected by scarcity of capital or intermediate products resulting from the initial expansion at A.

In this event much depends on how these wages are determined. It is assumed that as the demand for labour expands in industry A industrial money wages will rise at least as fast as prices in general: otherwise the agricultural unemployment would be of a type curable by mere monetary expansion—a hypothesis which we have excluded. If, as might well happen, the unions were to take advantage of the increased demand for labour in industry A to prevent any whittling away of the original disparity between industrial wages and agricultural incomes, this would entail a decline in secondary industries other than A unless the prices of non-manufactures were to rise faster than those of agricultural products, which, as we have seen, is unlikely. Even if the unions were to confine themselves to preventing a decline in industrial real wages, it is quite possible, for the reasons discussed in the foregoing paragraph, that the rise in agricultural prices would so far outstrip the rise in prices of non-A manufactures as to entail a decline in the real demand-schedule for the latter, and hence a decline rather than an expansion of employment in non-A industries.

In all probability some tendency for industrial wages to be artificially maintained in relation to agricultural incomes is fairly general in underdeveloped countries. It is obvious that real wages are not in practice raised so fast in response to a rise in the real demand for industrial labour as to prevent all movement from country to town. This, however, does not prove that wages do not rise fast enough to nullify the benefits which in several industries would otherwise derive from *each other's* expansion.

Even if secondary industries other than A do not succeed in adding to or retaining their labour force, they may still expand if other factors of production become more plentiful. But the mere fact that agricultural labour is seriously underemployed provides no guarantee that an expansion in which absorbs more factors than are created by associated economies in basic industries will draw sufficient labour out of agriculture to permit an increase in output, profits and net product in secondary industries other than A.

Let us now turn to the third main possibility of factor elasticity, mentioned at (7) above, namely that the supply of capital is to some extent elastic with respect to the rate of interest. This assumption, as we have seen, has from the start been, in effect, woven into the balanced-growth doctrine of Rosenstein-Rodan and by Nurkse in so far as they express that doctrine in terms of the inducement to invest (see p. 242) above.

An elastic supply of capital would undoubtedly facilitate the creation of external economies of scale. If capital were in infinitely elastic supply, that additional capital requirements in any industry had no effect on the cost or availability of capital for the use of other industries, and if all requirements could be met from domestic saving, then any expansion in industry which did not involve an increased use of factors of production *other than capital* would be fairly certain to generate expansion, and the economies associated therewith, in other industries.

A distinction must be drawn, however, between capital obtained from foreign and from domestic sources respectively. When development

financed by foreign capital additional interest or dividends will have to be paid to capitalists resident abroad. In order to transfer these sums the country in which the development occurs will have to generate an export surplus partly by reducing imports and partly by increasing exports. So long as export industries offer the same sort of opportunities for economies of scale as those producing for the domestic market, the increase in exports will have no ill effect. If, on the other hand, no economies of scale are possible in export industries only that part of the addition to the national factor supply which accrues to home-market industries will generate such economies.¹

How elastic is the supply of capital in fact likely to be in an underdeveloped country or region? This is a question which cannot be satisfactorily answered, or even formulated, in terms of the comparative static analysis used in this paper—at least so far as capital of domestic origin is concerned. Any increase in real income associated with the expansion of capital and output at A would tend to raise the domestic supply of *saving* and gradually and cumulatively the domestic supply of *capital*. In the very long run the expansion at A might evoke an additional supply of domestic capital large enough to meet its own requirements and leave some over for other industries. Within the sort of time period which is of interest for the purposes of economic policy, however, capital-expansion in one industry is likely to be at the expense of capital-expansion in other industries, unless additional capital is available from abroad in highly elastic supply.

The transfer of capital from abroad, unlike the increase in supply from home saving, is responsive to the increase of interest rates or profit opportunities rather than to that of real income in the developing country. Though the two types of responsiveness in capital supply resemble each other in operating only over time, the bulk of any additional supply forthcoming from foreign sources in response to the higher interest rates, etc., is likely to appear much sooner than the bulk of any additional supply accumulated from new domestic savings.

It is impossible to generalise about the elasticity of supply of capital from abroad. In certain cases the supply curve may even be downward-sloping, as when the fact that *some* foreign capital is willing to venture into an underdeveloped country encourages additional supplies at even lower interest rates and lower profit expectations. Or the curve may be highly elastic for moderate amounts and inelastic for large amounts (if the capital is drawn from somewhat restricted circles of investors abroad). Or it may be elastic for some industries and inelastic for others. (Frequently the industries for which foreign capital supply is inelastic will be precisely the home-market industries where the economies of scale are most to be expected.) Or, in the case of countries having forfeited the confidence of investors, the supply of foreign capital may be highly inelastic all round.

¹ The net addition, if any, to the factor supply of home-market industries will be the larger the greater the share of import saving in the aggregate improvement in the real trade balance, and the smaller the proportion of that improvement which is required to offset deterioration in the terms of trade.

Inelasticity in the supply of capital from abroad tends to render the doctrine of balanced growth not so much invalid as inapplicable. Even where a diversified investment programme would yield a higher return on capital invested than would the projects taken individually, the higher cost of capital might make the large-scale programme as unprofitable as the piecemeal approach. More fundamental is the criticism already noted that even where capital is available in elastic supply the mere fact that it is obtained from abroad reduces the extent to which it can be used to exploit economies of scale in home-market industries and reduces the chances that the combined investment programme will in fact yield a higher return to capital than would the projects taken one by one.

CONCLUSION

This paper has examined the basic assumptions underlying a modern variant of the balanced-growth doctrine, namely that the introduction of lower (unit) cost methods of production involving expansion in the output of an industry even if itself unprofitable, will enhance the profitability of other industries not specially related to it as customers or suppliers, and, if these industries are operating under imperfect competition, will promote economies of larger-scale production there.

We have concluded that the argument, as usually presented over-emphasises the repercussions on the demand for, and ignores repercussions on the costs of, the other industries, and that, in an economy where factors of production are in fixed supply, the introduction of unprofitable though efficient large-scale production in one industry is more likely to reduce than to increase the profitability of other industries.

We have seen, however, that the chances are much better for a "vertical" propagation of external economies, from customer industry to supplying industry, and especially from supplying industry to customer industry, and that developments in industries at different stages in the same "line" of production are more likely to afford each other mutual support than those in different lines of production.

Moreover, the chances that expansion in one industry will generate economies in other industries not "vertically" related to it will be increased if economies are generated "vertically" in factor-producing industries. This has the effect of introducing a measure of elasticity into the supply of factors of production which is in general favourable to the creation of external economies.

Conditions of elastic supply of labour or capital likewise tend to favor the applicability of the balanced-growth doctrine. The overall elasticity of the labour supply is, however, likely to be low, and the ease with which labour can be transferred from agriculture to non-agricultural industry, where the opportunities for economies of scale are greater, has frequently been exaggerated.

As to capital, the domestic supply is likely to be practically inelastic within any short period of years. Access to imported capital, on the other

hand, varies very much from country to country and from time to time; and, in any case, foreign capital is less effective than domestic capital in widening the market and promoting economies of scale.

The chances that diversified development in a variety of industries will play a mutually supporting, mutually validating role, as required by the balanced-growth doctrine, are greatest when the necessary additional capital is obtainable on easy terms, when unions can be prevented from pushing up real wages in industry, when reserves of underemployed agricultural labour are eagerly waiting to obtain industrial employment, when there are opportunities for economies of scale in the basic, factor-producing industries, and when, taken singly, the investments in question are only just not profitable. When too many of these conditions are absent the combined installation over a variety of industries of unprofitable though efficient undertakings may have the effect of rendering each of these undertakings still more unprofitable than if it had been set up by itself.

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NOTE ON EXTERNAL ECONOMIES

The term "external economies," since it was introduced by Marshall, has been employed in a variety of senses, often confusing and misleading. The usage which I consider to be most convenient for the purpose of welfare economics, and which represents a development of that introduced by Professor Kahn in "Some Notes on Ideal Output,"¹ is the following:

Let us adopt the following definitions:

(1) The "*increment in direct net product*" of a firm is the sum of any net increase in the volume of its sales, less any net increase in the volume of its purchases (including purchases of labour and other original factors of production), plus any net increase in its real stock of physical assets. This is a sum of physical increments valued at current prices.² (The fact that output is netted not only of purchases from other firms but also of purchases from factor-owners makes this a different concept from that of an increase in real "value added.")

(2) The "*increment in net factor supply*" of a factor-owner (worker, capitalist, landowner) is the sum of any increases less any reductions in the supply of his factors to different uses. (A transfer of labour to a better-paid use would constitute such an increase, but not, of course, an increase in remuneration for labour in a given use.)

(3) The "*increment in tax quantum*" associated with any type of transaction is the increase in the volume of transactions of this type times the current tax rate. Subsidies are counted as negative taxes.

(4) The "*increment in government services*" consists in the money equivalent of any net increase in government services provided without charge, other than those provided to firms.

¹ ECONOMIC JOURNAL, March 1935.

² Where adjustments large enough to alter prices are in question the price of each increment will be the average price over the corresponding interval of variation on the relevant product-demand or factor-supply curve. This average price will be a function of the "path" of variation and thus of the convention whereby that path is determined.

(5) The "increment in net psychic income" of any individual is the mone equivalent of all additional advantages less additional disadvantages accru to him, other than those arising through changes in his money income, or i the nominal purchasing power of that income. This is something of a hold all residual item, containing, for example, not only all changes in satisfactio associated with a change in occupation as such, but also those associated wit changes in the availability of consumer goods at unchanged prices.

Now the sum of all increments of the first three types will together constitut that part of the increment of the real national product which is marketed and i statistically measurable.¹ Inclusion of the increments of types (4) and (5) wi add the non-marketed and the intangible elements in the real national product. In a closed economy this sum will also represent the increment in the real nationa income. In an economy with foreign trade, however, we must add:

(6) The increment, resulting from change in the terms of trade, in th import equivalent of the existing volume of exports.

Now, any increment in one of the above mentioned categories may be termed if positive, an "economy" and, if negative, a "diseconomy," and any econom of diseconomy which is brought about by the actions of a particular firm, othe than a change in its own direct net product, I shall refer to as an "external economy or diseconomy, respectively, generated by the operations of that firm."

External economies affecting direct net product, factor supply, tax quantur or psychic income can be cross-classified into two main categories:

A. economies which affect production and enjoyment functions in suc a way as to increase the outputs of affected firms for given inputs or to ic rease the satisfaction derived by persons from given employment an consumption patterns;

B. economies arising out of production adjustments, employment adjust ments or consumption adjustments, undertaken by the affected firms, worker or consumers in response to changes in the market situation resulting fro the initial operation.

Where perfect competition is pervasive only external economies of Categor A can occur.² Economies of Category B can occur only in connection with firm workers or consumers operating under imperfect competition or price-fixing c subject to indirect taxation. Such economies can accompany infinitesimal adjus ments only where production (or employment or consumption as the case may be has previously been uneconomically organised. Thus a small expansion of inpu and output in a firm resulting from an expansion in product demand can lead t an increase in direct net product only when, for reasons of profit-maximisation c force majeure, product price has previously been in excess of marginal cost. Whe large individual adjustments are concerned, however, such as installation of ne plant, a change in market conditions can make economic an adjustment yieldin an increase in direct net product, even though such adjustment was previousl uneconomic.

¹ Summation of the first two types of increments alone would have given us a measure of d increment in real national product in which individual products are weighted according to th factor cost—a faulty weighting from a welfare-economic standpoint. Inclusion of type (increments alters the basis of weighting to that of market price.

² Cf. J. E. Meade, "External Economies and Diseconomies in a Competitive Situation ECONOMIC JOURNAL, March 1952.

INVENTORY INVESTMENT AND THE SHARE OF WAGES IN MANUFACTURING INCOME

I

THE object of this paper ¹ is to suggest an hypothesis which may help to explain some features of the cyclical variations in distributive shares. We shall examine a determinant of the share of wages in manufacturing income which has, so far, received little attention and consider the evidence (all American) regarding its behaviour and importance. We shall also discuss the relationship of our own argument to the findings of Professor Dunlop,² that the share of wages in American manufacturing did vary in the inter-war cycles, and of Professor Phelps Brown and Mr. Hart,³ that the share of wages in British national income has displayed remarkable short-run constancy.

It is to the behaviour of stocks that we wish to draw attention. If we abandon the traditional equilibrium approach to problems of distribution in favour of the disequilibrium method ⁴ our analysis can take account of changes in stocks and their influence on the share of wages. We first define our unit period as the time during which neither prices nor the rate of production are altered. The assumption of price maintenance means, of course, that our analysis is limited to markets in which entrepreneurs have some control over their selling price but, as we propose to limit ourselves to the study of manufacturing business, this does not seem unreasonable. The disequilibrium approach also means that we must abandon the assumption, adhered to by Mr. Kalecki in his studies of distribution,⁵ of short-run profit maximisation. We can assume, if we like, that entrepreneurs set out, at the beginning of the period, to produce in such quantity and at such price as will maximise their short-run profits. Now the percentage profit margin or degree of monopoly need bear no particular relationship to any actual elasticity of demand. It is a function simply of entrepreneurs' beliefs or expectations about demand and the intention of maximising short-run profits does not automatically imply the fact. In this case the mark-up is explained while the relationship between expected and actual gross profits for the period depends on the correctness of entrepreneurs' expectations about demand. We shall assume that entrepreneurs set out to maximise

¹ An earlier draft of which was read by Professor C. G. F. Simkin, to whom the writer is indebted for many helpful suggestions.

² J. T. Dunlop, *Wage Determination under Trade Unions* (English edition, Blackwell, 1950).

³ E. H. Phelps Brown and P. E. Hart, "The Share of Wages in National Income," *ECONOMIC JOURNAL*, Vol. LXII, No. 246, June 1952, pp. 253-77.

⁴ See Ralph Turvey, "Period Analysis," Chapter VIII of W. J. Baumol, *Economic Dynamics* (New York, 1951).

⁵ M. Kalecki, "The Distribution of the National Income," in *Essays in the Theory of Economic Fluctuations*, reprinted in A.E.A., *Readings in the Theory of Income Distribution*, pp. 197-217, and "Costs and Prices," in *Studies in Economic Dynamics*, 1943.

their profits but actually prefer price stability over the chosen period to profit maximisation.

We could, of course, abandon the assumption that entrepreneurs even set out to maximise their profits in which case the original mark-up is left unexplained—except by such vague concepts as “a fair price” or “a normal profit.” Fortunately it does not matter to the present analysis whether the mark-up is supposed to be determined by the attempt at profit maximisation or not. In either case, by adopting the period method we have introduced entrepreneurial expectations, which is a definite gain, since the problem is the behaviour of distributive shares over time, and we have disposed of the inconveniently rigid relationship between the profit margin and the actual, observable elasticity of demand, which is a characteristic of every attempt to apply static equilibrium methods to the problem of distribution. Furthermore, the disequilibrium method enables us to explain a constant mark-up without the restriction that shifts in demand must be iso-elastic.¹ On the whole, we prefer to retain the assumption that entrepreneurs set out to maximise their profits, since this leaves us with a theory of price formation, while use of the disequilibrium method frees us from the assumption of instantaneous price flexibility.

We now add to the above the assumption that average prime costs are constant, which, though not strictly necessary to the point we wish to establish, greatly simplifies its exposition and, for manufacturing business, is probably fairly realistic.² For the moment we shall also assume that there are no raw materials, so that unit prime cost consists only of labour costs. Then, with given unit labour cost, the division of income between wages and gross profits is determined solely by the mark-up so long as the volume of output is equal to the volume of sales. This is illustrated in Fig. 1. Suppose that, in the period just concluded, OM units were sold at a price OP , so that workers' income was $OMLR$ and gross profits $RLQP$, where LM is unit labour cost, constant over the relevant range of output. It makes no difference whether we assume that the marginal revenue curve passed through L or that price was fixed by custom or rule of thumb. If the entrepreneur expects conditions to be the same in the following period, he will once more set his price at OP and produce OM units. Assume, however, that demand is less than was expected, D^1D^1 being replaced by D^2D^2 so that sales are only ON at the price OP . Now, in spite of the entrepreneur's disappointment regarding sales, his wages bill in this period is still $OMLR$. His gross income equals sales minus purchases plus investment or $ONTP - OMLR + NMLS$ if his unintended stocks are valued at the direct cost of production.³ Since $ONTP - OMLR + NMLS = RSTP$, his gross

¹ Kalecki, “Costs and Prices,” *op. cit.*, p. 14.

² See H. Staehle, “The Measurement of Statistical Cost Functions: An Appraisal of Some Recent Contributions,” *American Economic Review*, Vol. XXXII, No. 2, June 1942, pp. 321–33 and bibliography given therein; also P. W. S. Andrews, *Manufacturing Business* (London, 1949), p. 103.

³ There is, in fact, enormous diversity in the methods of stock valuation actually employed, a point to which we shall return later. For the moment, however, current cost of production seems a good approximation for an analytical model.

profits are equal to the volume of sales times the unit profit margin whatever the change in stocks, so long as stocks are valued at current cost of production. The ratio of wages to gross profits is $\frac{OMLR}{RSTP} = \frac{OR \cdot OM}{RP \cdot ON}$. If we write μ for the percentage profit margin,¹ equal to (price minus prime cost)/price, then $\frac{OR}{RP} = \frac{1 - \mu}{\mu}$. Thus the ratio of wages to gross profits = $\frac{1 - \mu}{\mu} \cdot \frac{OM}{ON} \cdot \frac{OM}{ON}$, however, is the ratio of output to sales or of sales plus inventory investment to sales. Hence the distribution of the income of the

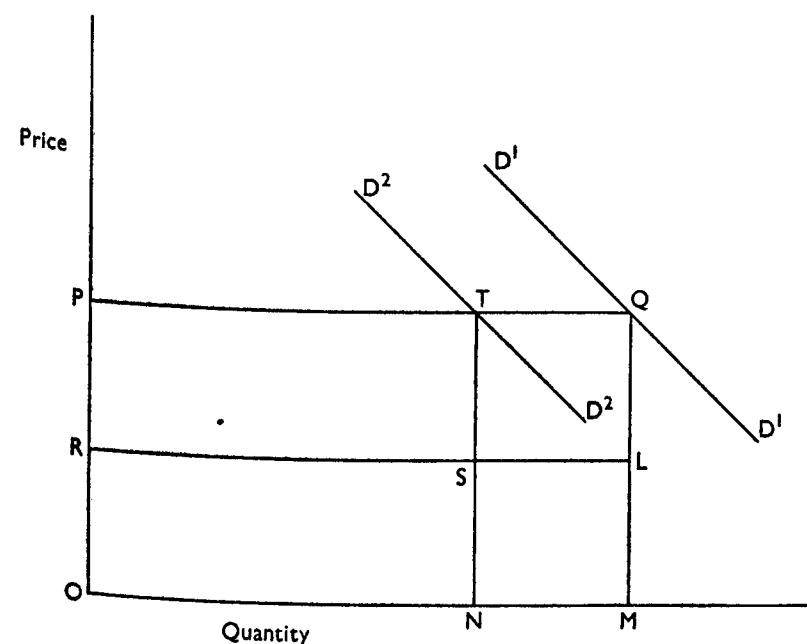


FIG. 1

firm between wages and gross profits depends not only on the profit margin but also upon stock changes. In any period in which stocks are unchanged $\frac{OM}{ON} = 1$ and income distribution depends solely on the margin. An increase in stocks redistributes income in labour's favour compared with the distribution determined by the margin alone, and vice versa. And although, in this model, we have assumed the increase in stocks to be the consequence of disappointed expectations, from the point of view of income distribution it is immaterial whether stock changes are intended or unintended. In the next part of this paper we shall investigate the actual pattern of cyclical changes in manufacturers' stocks of finished goods and show reason to believe that they are mainly unintended.

¹ This is only equal to Mr. Lerner's degree of monopoly ($= \frac{1}{\epsilon}$) when the elasticities of the actual and expected demand curves are equal and the entrepreneur is trying to maximise his profits.

We must first extend our model to include raw materials, since changes in the proportions in which labour and raw materials are combined and in their relative prices both influence distributive shares. We write O and S for the volumes of output and of sales respectively, w and r for wage-rates and raw-material prices, l and m for unit labour and unit raw material content (measured in the same units as those for which their prices are measured). Gross profits are denoted by π , the wage bill by $W = Olw$, the raw materials bill by $M = Omr$ and the selling price of output by P . Now

$$\begin{aligned}\pi &= SP - W - M + (O - S)(lw + mr) \\ &= S(P - lw - mr)\end{aligned}$$

and, if

$$\begin{aligned}\mu &= \frac{P - lw - mr}{P}, \\ \pi &= S \cdot \frac{\mu}{1 - \mu} (lw + mr) \\ \frac{W}{\pi} &= \frac{O}{S} \cdot \frac{lw}{\frac{\mu}{1 - \mu} (lw + mr)} \\ &= \frac{O \cdot (1 - \mu)}{S\mu \left(1 + \frac{m}{l} \cdot \frac{r}{w}\right)}\end{aligned}$$

This equation, it will be noticed, is similar to the equation given by Kalecki in "Dynamics"¹ with the addition of the output : sales ratio, but differs from the equation of "The Distribution of the National Income," where, since the distribution of the whole national income was considered, it was necessary to include a term "turnover" to avoid double counting. When the aggregation is for a single industry the raw materials included are only those purchased from other sectors, and the problem of double counting does not arise.²

It should be emphasised that the relationship we have established is between the share of wages and changes in the stock of finished goods only. A change in the stock of raw materials cannot alter the distribution of the gross income of the firm or industry, since it alters neither the value added nor the wages bill, an entry on the debit side of the trading account (purchase of raw materials) being balanced on the credit side (increase in stocks), and vice versa. Each change in the stock of goods in process, when the rate of output changes, will, however, have a redistributive effect similar to that of a change in the stock of finished goods. Its importance will depend on the length of the production period, and it seems unlikely that this will be long enough for distributive changes caused by uncompleted changes in the rate of output to influence statistics of wages and profits

¹ "Costs and Prices," p. 17.

² For a discussion of the problems of aggregation involved in considering an industry, cf. Kalecki, *op. cit.*

compiled annually. We shall see below that the available evidence confirms this view.

Summing up the results so far obtained, we may say that the share of wages in manufacturing depends not only on the average margin, the ratio in which labour and raw materials are combined and their relative prices but also on the ratio of output to sales or the behaviour of investment in stocks of finished goods. We may also notice that in the trade cycle two contradictory tendencies are likely to be at work: on the one hand, declining sales (in the downswing) will cause unintended stocks to pile up, while, on the other hand, the falling volume of sales, combined with depressed expectations, will provide entrepreneurs with good reason to attempt to reduce their output *faster* than sales fall. The share of wages depends, in part at least, on who wins this race between expectations and events. It will be the task of the next part of this paper to review the available evidence and also to discuss several matters so far neglected, such as the effect of changing prices on inventory valuation.

II (a)

We have now to inquire into the actual behaviour in the cycle and the importance of the outputs : sales ratio. That there is a "Lundberg lag" between sales and output is widely accepted on the strength of Professor Metzler's study¹ of the American evidence (the evidence on this subject is nearly all American), which suggested that, in the period between the two wars, output in the United States lagged as much as a year behind sales.² This would appear to provide grounds for a definite conclusion regarding the cyclical behaviour and distributive influence of the output : sales ratio, but the data with which Metzler worked were not altogether satisfactory, since he had to compare changes in Net National Product with changes in total manufacturers' and retailers' inventories (all quarterly), which include raw materials, while only inventories of finished goods are relevant to the measurement of this lag. When Metzler wrote, however, little progress had been made in isolating the behaviour of stocks of finished goods in the hands of their manufacturers. Fortunately for us, the evidence on the behaviour of the manufacturers' stock of finished goods is now, thanks to Professor Abramovitz' study of the American statistics for the inter-war period,³ considerably better. We shall find that his investigation confirms the existence and importance of the Lundberg lag, and thus establishes a definite cyclical pattern in the output : sales ratio. For our purposes, this is all that is necessary, while, to establish the Lundberg lag, it is also necessary to show that the major cyclical stock changes are unintended.⁴ Since Abramovitz, however, does not think that price speculation is an important factor

¹ Lloyd A. Metzler, "Three Lags in the Circular Flow of Income," *Income, Employment and Public Policy, Essays in Honor of Alvin H. Hansen* (New York, 1948), pp. 11-32.

² *Ibid.*, p. 25.

³ Moses Abramovitz, *Inventories and Business Cycles with Special Reference to Manufacturers' Inventories* (National Bureau of Economic Research: New York, 1950).

⁴ Cf. Metzler, *op. cit.*, p. 25.

determining manufacturers' cyclical stock changes,¹ the evidence will probably serve both purposes. We must bear in mind, too, that our output: sales ratio is a ratio of volumes, not values. The problem of changing valuation is considered separately.

Manufacturers' stocks can be divided into three categories, raw materials, goods in process and finished goods. The first does not concern us. The second we shall continue to neglect in the light of Abramovitz' conclusion that the average production period in American manufacturing is only about three weeks.² If it is as short as this, the overlap at the beginning and end of the year, when the rate of output is changing, can only have a negligible effect on annual income statistics.³ We are, then, concerned only with the third category, stocks of finished goods, which represent some 40% of manufacturers' total stocks.⁴ For our purposes, however, stocks of finished goods must be further divided into three sub-classes, those which vary so closely with output that, from the point of view of income distribution, they are neutral, those which vary irregularly and those which are free to vary with the trade cycle. Fortunately, these divisions agree very well with those made by Abramovitz, and we can examine each in turn.

1. *Stocks whose Behaviour is Neutral*

Any stocks which vary closely with output—small lag or none—will be neutral from the point of view of income distribution. This is likely to be the case with manufactured perishables (neutral or even irregular; see below). The main item in this class, however, is the stock of goods made to order from non-agricultural raw materials, which will move very closely with output. Abramovitz estimates that while about half of manufacturing output is made to order, stocks of this class represent only some 15–25% of total stocks of finished goods.⁵ From the present point of view, stocks in this class are very similar to stocks of goods in process, although so far as there is a lag it will probably be of the same nature as that shown by free stocks, and will therefore produce the same tendencies, though less strongly, as those caused by the behaviour of free stocks.

2. *Stocks whose Behaviour is Irregular*

Abramovitz describes as "supply dominated" the output of some goods which are manufactured from agricultural raw materials which are not readily stored or imported.⁶ If the finished product is perishable stocks will necessarily be small,⁷ while if it is durable stocks will rise and fall with production. Any changes in income distribution caused by the behaviour of these stocks will be erratic from the point of view of the trade cycle, since the output: sales ratio will depend on the chance relationship between raw-

¹ Abramovitz, *op. cit.*, pp. 127–31.

² *Ibid.*, p. 173.

³ In some industries the manufacturing process is "discontinuous," so that stocks of goods in process or, rather, goods between stages, can move independently of final output. An increase in the degree of vertical integration will increase the proportion of goods in process in this category. On the whole, however, total stocks of goods in process are expected to move closely with output.

⁴ Abramovitz, *op. cit.*, p. 159.

⁵ *Ibid.*, p. 242.

⁶ *Ibid.*, p. 311 and pp. 319–20.

⁷ *Ibid.*, p. 321.

materials supply and demand. Abramovitz estimates that some 15–20% of manufacturers' stocks of finished goods are to be found in this class.¹

3. *Stocks Which are Free to Vary With the Cycle*

The irregular and neutral classes have accounted for some 30–45% of stocks of finished goods, leaving 55–70% in this class, in which we find two of Abramovitz' divisions. These are: (a) durable staples made from non-agricultural raw materials for stock rather than to order, estimated at 50–60% of total stocks of finished goods,² and (b) durables made from agricultural raw materials with "demand-dominated" output cycles. These must account for the balance of the stocks of finished goods—Abramovitz puts them at 15–20%.³

These two classes of stocks behave in the same way,⁴ so we may content ourselves with a description of the behaviour of the first. Unfortunately, there are no complete figures for this class (indeed there are virtually none at all for stocks of finished goods taken separately) so that Abramovitz had to work with a sample of eighteen series.⁵ Of the eighteen, fifteen conform *inversely* to the business cycle.⁶ The finding is that stocks in this class "move inversely during the cycles in business activity" but that this tendency "is subject to an important qualification: if an expansion or contraction is long, say over two years, stocks tend to reverse direction and move together with production and shipments during the latter portion of the phase."⁷ Thus in the shorter cycles output changes less than sales. Abramovitz goes on, "when shipments turn down after the peak of business, investment leaps up sharply," and explains that: "Manufacturers, presumably caught off guard by an unexpected cyclical decline in sales, were unable to reduce their rate of fabrication soon enough. During at least the early months of most contractions, the rate of accumulation of stocks increases, then levels off." Later on, these stocks "must become an increasing burden on the companies holding them." Whether or not, in cycles of short or moderate length, liquidation actually starts before business revives is in doubt.

"All these observations may be repeated for business expansions. The upturn is accompanied by a sharp reduction in inventory investment. The downward movement continues for some months, then levels off. In long expansions the rate of liquidation falls before the peak in business, then accumulation begins. But in short or moderately long expansions the evidence that investment turns up before the peak of business is passed is doubtful."⁸

¹ Abramovitz, *op. cit.*, p. 311.

² *Ibid.*, p. 246.

³ *Ibid.*, p. 311.

⁴ *Ibid.*, pp. 318–21.

⁵ For a discussion of this method see Ragnar Nurkse, "The Cyclical Pattern of Inventory Investment," *Quarterly Journal of Economics*, Vol. LXVI, No. 3, August 1952, pp. 385–408.

⁶ Two, automobile tyres and inner tubes, do not properly belong in this class, because the series include stocks on consignment to dealers. The three which do not conform inversely are inner tubes, miscellaneous enamelled sanitary ware and lavatories (Abramovitz, *op. cit.*, pp. 246–8).

⁷ *Ibid.*, pp. 405–7.

⁸ *Ibid.*, pp. 468–9.

We think that this provides a tolerably conclusive answer to the question. Stocks of certain classes of goods, admittedly, are not free to lag in the trade cycle, but they are neutral or, at worst, irregular. Hence neither of these classes can regularly behave in such a way as to offset the effects of the free class. The behaviour of this class shows that, so far as technical conditions of production and marketing permit, the tendency is for manufacturing output to be stable compared with sales.¹ This means that, in those manufacturing industries which produce staples to stock, *the output: sales ratio will rise in the downswing and fall in the upswing, provided that the movements are not too long, increasing the share of labour in the downswing and reducing it in the upswing*, even if the average margin is unchanged. At the same time the evidence confirms the existence and length of the Lundberg lag in those trades in which a lag is technically possible.

II (b)

In our model of the individual firm we assumed that stocks were valued at current direct cost of production so that, with a given mark-up, the redistributive effect of a change in stocks depends solely on its size in relation to the volume of output. In practice, there is considerable diversity in the way in which stocks are valued, and departures from the current direct cost rule will affect the results of stock changes on income distribution. The more stocks are valued above current direct cost (that is, the smaller the difference between the book-entry value of a unit of output put to stock and the selling price of a unit taken from stock), the smaller will be the redistributive effect of a stock change of a given volume. We must therefore attempt to discover how American business-men did actually value their stocks in the inter-war period. We shall deal with the question of how closely stock values would correspond to direct costs if prices were unchanged and then go on to discuss the effect of price changes.

The available evidence is reviewed by Abramovitz.² It consists mainly of a survey, conducted by the National Industrial Conference Board in 1938,³ of the practices prevailing in a sample of 800 firms. These firms were asked to select, from a list of six, the method of inventory valuation employed. From our point of view the results are not particularly illuminating, since we cannot tell how much overhead is contained in such valuations as "Lower of Cost or Market," "Actual Cost of Specific Lots," "Average Cost," "Standard Cost" or "Basic or Normal Cost." More helpful is Abramovitz' conclusion, based on the N.I.C.B. survey and an inquiry conducted by the National Association of Cost Accountants,⁴ that

¹ But compare Andrews, *Manufacturing Business*, *op. cit.*, p. 263, where the opposite is suggested. It may be that British and American experience on this point is different, but it seems unlikely.

² Appendix A, especially pp. 524-7.

³ "Prevailing Practices in Inventory Valuation," *Studies in Administrative Control*, No. 1, February 1938.

⁴ "Finished Goods Inventory Practice," *N.A.C.A. Bulletin XXI*, No. 14, Section III, March 15, 1940. I regret that I have not been able to refer directly to these sources, as they are not available in New Zealand.

stocks of goods which have been processed by their owners "are valued at their purchase cost plus an allowance for the cost of labour directly employed in processing plus an allowance for overhead expenditures. The allowance for overhead is seldom clearly defined, varies in detail from industry to industry and often from firm to firm."¹ Now any allowance for overhead in inventory valuation tends to reduce the redistributive effect of stock changes, but it seems that a considerable gap does normally exist between inventory price and selling price. Abramovitz thinks it likely that "many companies omit a substantial fraction of overhead in valuing finished and process inventories,"² *e.g.*, depreciation and amortisation, taxes other than on income, rent and royalties, profits, office and selling costs. This seems to leave little save power, light and heat, maintenance and factory supervision. If this is correct, then we need make little modification to our analysis to allow for departures from direct cost in inventory valuation.

We must now turn our attention to the problem of the effect on stock valuation of price changes. In the United States inventory appreciation was part of taxable income until 1939, and it was only after that date that the "last-in-first-out" method of inventory accounting was made legal for tax purposes. In the period with which we are concerned inventories were valued on the "first-in-first-out" basis.³ This gives reality to our assumption that stocks of finished goods are valued at current cost. On the other hand, we cannot be sure that all firms did in fact write down their inventories in times of falling prices. Only 40% of the firms in the N.I.C.B. sample already referred to reported that they valued stocks of finished goods at "The Lower of Cost or Market," but, as Abramovitz asked "... did all the firms that supplied markdowns to market prices answer (in this category) no matter what measure of cost they employed?"⁴ In a firm that does not write down its stocks at a time of falling prices the redistributive effect of an increase in the volume of finished stocks in the downswing will be offset by the fact that company income will include something more than the direct cost of these stocks.

On the other hand, the application of F.I.F.O. to stocks other than of finished goods raises a new question. Manufacturers' stocks of raw materials and goods in process conform positively in the cycle⁵ (although raw materials lag), but their volume changes, as we have already pointed out, do not affect the distribution of income. If, however, their revaluation has a

¹ *Op. cit.*, p. 524.

² *Ibid.*, p. 533.

³ This has been well described by George Terborgh ("Manufacturing Inventories During and After the World War," *Federal Reserve Bulletin*, Vol. XXVII, No. 7, July 1941, p. 616 note). "Under the 'first-in-first-out' system, which for inventory valuation purposes may be translated to 'last-in-last-out,' the closing inventory, even when unchanged in physical amount from the opening, is assumed to be composed of the most recent acquisitions, hence is valued at the cost of such acquisitions (barring write-downs to 'market'). The cost is higher, in a period of rising prices, than the cost of the opening inventory similarly computed. Since the excess of the closing over the opening inventory is treated as a deduction from the cost of goods sold during the year, it has the effect of increasing the net profit by a like amount."

⁴ *Op. cit.*, p. 526.

⁵ Abramovitz, pp. 313-15.

considerable influence on manufacturers' profits, this alone will cause variations in the share of wages in reported, accounting income. Terborgh is of the opinion that such revaluation has, in fact, been responsible for a considerable part of manufacturers' reported profits. He estimated that in the period 1916-18 manufacturers' net profits were 50% higher than they would have been had stocks been valued on the L.I.F.O. basis and that, in 1920-21, they were half what they would have been had stocks been valued on that basis.¹ The consequences for the share of wages in manufacturing (and national) income of including or excluding changing inventory valuation have been demonstrated by Dunlop.² He shows that:

"The adjustment of net income for changing inventory valuations and for the difference between depreciation and depletion at cost prices and current reproduction prices . . . shows a smaller rise in the share (of wages) during depressions than with the unadjusted valuations. . . . This result is to be expected since the adjustment reduces the amplitude of income fluctuation."³

Dunlop does not, however, appear to notice the separate influence of changes in the volume of stocks.

The last question we must investigate is the importance of the output : sales ratio in redistributing income during the cycle. It is unfortunately impossible to assess this directly or even to estimate the importance of physical inventory changes compared with inventory revaluation. A cyclical fluctuation in the share of wages does still appear when manufacturing income has been adjusted to allow for inventory revaluation, but since there are at least two other factors, the ratio of raw material prices to wage rates and the average mark-up, besides the output : sales ratio, the influence of the last is hard to separate and possibly not very great. Nonetheless, we should like to be more precise. The difficulty is that, while the behaviour of total stocks is known, in current and constant prices, that of stocks of finished goods alone is only known from the sample series already discussed, and since stocks of "free" finished goods move in the opposite direction to that of all other stocks in the cycle we cannot obtain an estimate of the size of the fluctuation by supposing that free stocks are a constant proportion of the whole. We do know, however, that these stocks were in 1939 some 20-25% of manufacturers' total stocks by value,⁴ which were approximately one-fifth of manufacturers' sales⁵ and were therefore of some importance. The question that remains is how violently they (and so the output : sales ratio) fluctuated in the cycle. We have Abramovitz' qualitative judgment that: "In general we may say that when the shipments of a stable manufactured commodity begin to decline or rise, the rate of growth in the finished stock tends to turn sharply in the opposite direction"⁶ but little else save the knowledge that the lag can be of considerable length.

¹ *Op. cit.*, p. 616. The U.S. Department of Commerce series of Inventory Valuation Adjustments, used in arriving at National Income from 1929, is no assistance here, since it applies to all Corporate Profits.

² *Ibid.*, p. 159.

³ *Ibid.*, Tables 107 and 113, Appendix F.

⁴ *Op. cit.*, pp. 157-9, Charts III and IV.

⁵ Abramovitz, *op. cit.*, p. 318.

⁶ *Ibid.*, p. 412.

On the whole, it seems reasonable to conclude that the Lundberg lag has had some influence on income distribution in American manufacturing business, though it is impossible to say how large the influence may have been compared with that of other factors. We can say that, even if percentage margins remained constant during the cycle, there would still be some tendency for the share of wages to rise in the downswing and fall in the upswing. We cannot tell whether or not this tendency has been offset, or more, by changing inventory valuations.

III

Mr. Hahn¹ is the only author known to us who has, in recent times at any rate, called attention to the connection between stock changes and changes in income distribution in the trade cycle.

Mr. Hahn shows, as we have done, that the accumulation of stocks will tend to increase the share of wages, and vice versa, but we are unable to follow much of his argument. He argues, first, that "the capital intensity of production must diminish during the upswing,"² and vice versa, so that "If the prices of labour and capital remain constant the continuous decline in capital intensity during the upswing will increase the share of wages."³ In this context the "capital intensity of production" is ambiguous. It is perfectly true that, in the short-run, an increase in the rate of output will be accompanied by an increase in the ratio of the wage bill to the quantity of fixed capital in money terms, but this only means that the share of *net* profits increases in the upswing. On the other hand, if "capital intensity" is taken to mean the ratio of labour to physical capital in actual use, then, if there is excess capacity in the depression, the ratio may not increase until the bottleneck point is reached (this in fact will depend on the technical methods of production employed). The ambiguity over capital intensity implies a similar ambiguity over marginal products. Mr. Hahn seems to assume that the marginal productivity of labour must fall in the upswing, which is by no means necessarily true.⁴ His argument is further obscured by the implicit assumption (revealed in the second quotation above) that the whole income of the firm is to be divided between "capital" and labour, *i.e.*, that there is no residual.

He goes on to assume a one-period lag in the adjustment of production to demand so that stocks are run down in the upswing, thus reducing the share of wages. This agrees very well with the arguments presented here, save that, in the absence of a residual income recipient from his construction, one wonders who benefits from the realised profit margins on the sold-off stocks—hardly "capital." Since Mr. Hahn's equations are explosive, however, the drain on stocks increases as the upswing continues until it is

¹ F. H. Hahn, "The Share of Wages in the Trade Cycle," *Economic Journal*, Vol. LX, No. 239, September 1950, pp. 618-21.

² *Ibid.*, p. 619. ³ *Ibid.*, p. 620.

⁴ Cf. Sho-Chieh Tsiang, *The Variations of Real Wages and Profit Margins in Relation to the Trade Cycle* (London, 1947).

necessary to increase prices to stop it, but, as a large part of demand comes from wages, prices must be put up faster than wages if this is to be effective. Thus, having started with explosive equations, it is necessary to assume that real wages fall in the upswing in order to prevent the explosion taking place!

In the downswing, Mr. Hahn tells us "the accumulation of stocks now constitutes part of net income."¹ We fail to see how this can be true so long as stocks are entered in the firm's books at cost of production. The accumulation of stocks will, of course, increase the share of wages but when Mr. Hahn points out that "the share of profits in output must diminish" he unfortunately does not specify whether he means gross or net profits. At the same time, however, he argues that excess capacity tends to reduce the share of labour and that it is not until excess capacity has disappeared that the increase in stocks will actually be able to increase the share of labour.² This seems to us to imply that it is easier to get rid of excess capacity than to sell off unwanted stocks, which is hardly likely to be the case. And, as we have seen, the evidence suggests that while in short depressions stocks of finished goods do accumulate and tend to increase labour's share, in the longer depressions (those in which there is time for some headway to be made with the task of eliminating excess capacity) these stocks are likely to become an intolerable burden and be disposed of—to the disadvantage of labour's share.

IV

It remains to discuss, in the light of our own argument, some of the conclusions reached by Professor Phelps Brown and Mr. Hart. Their statistical investigation has confirmed the view that, in the short run, the share of wages in the national income of Great Britain has been remarkably steady. They also found that this share, over considerable periods, undergoes only those alterations which can be attributed to occupational migration, while, at times, a conjuncture of forces shifts its path to a new level. The explanation of the short-run steadiness of the ratio is sought in the "stability of policy in the firm."³ It is thought that "a level (of profit margins) once imposed by force of circumstances came to be accepted as normal."⁴ With due reservation, the conclusions amount to this: stability in the average mark-up is responsible for the short-run constancy of the share of wages while occasionally circumstances (trade-union strength and the appropriate stages of both short and long cycles, and what Phelps Brown and Hart call "the market environment") combine to shift the average mark-up to a new level, at which it resumes its former constancy.

Before commenting on this finding we must consider another of the conclusions reached by Phelps Brown and Hart. They find that the two ratios (wages to wages plus profits) and (wages plus profits to home-produced national income) vary in opposite directions in the trade cycle⁵ and con-

¹ *Op. cit.*, p. 621.

⁴ *Ibid.*, p. 273.

² *Ibid.*, p. 621.

⁵ *Ibid.*, Chart, p. 265.

³ *Op. cit.*, p. 267.

clude that "the comparative steadiness of the share of wages arises out of a compensation between shares which themselves are not at all steady"¹ and, furthermore, that "this compensation was in a sense accidental."² This seems to us to be at variance with the rest of their argument. If the share of wages depends on the level of margins, if the average level of margins is constant in the cycle and if salaries and rents are "relatively unaffected by the cycle,"³ then it follows that the two ratios (wages : wages plus net profits) and (wages plus net profits : national income) must vary in opposite directions. If the constancy of the share of wages is the consequence of constant percentage margins, then it, together with the relative constancy of salaries and rents in absolute terms, is the cause of the opposite motion of these ratios rather than the consequence of their accidental compensation.

Looking at the general conclusions reached by Phelps Brown and Hart, however, one naturally wonders, as they do, how far it is safe to make deductions about "the firm" from figures representing national aggregates. The average mark-up that is deduced from the aggregates is a *weighted* average, and the weights may change in two ways. The share in total output of industries with different average margins may change, and so may the share in the output of individual industries of firms with different margins. Dunlop found that in America there has been a tendency for large shifts in weights between industries to cancel out in the cycle,⁴ since the industrial groups which lost weight in depressions were those which showed the greatest decline in margins. He concluded that weight shifts between industries were of secondary importance and that changes in the share of wages must be explained in terms of changes in weights and margins inside industries.⁵ One might expect to find something similar in Great Britain, that is, that those industries which experienced the greatest decline in demand in depressions were also those which suffered the greatest squeeze in margins.

As to changes in weights and margins inside an industry there is, so far as we are aware, no evidence, either British⁶ or American. It seems likely, though, that they will behave in the same way as shifts between industries so that firms experiencing the greatest decline in sales (firms which are losing their share of the market as well as suffering from the general contraction in the market) will also suffer the greatest squeezing of gross margins. In this case, again, the changes in weights and margins would tend to cancel out, and we might explain the cyclical change in the share of wages in American manufacturing either by supposing that, on the average, margins *do* decline in the depression or by giving some weight to the output : sales ratio, although, since cyclical changes in both the output : sales ratio and the ratio of raw-materials prices to wage-rates will tend to increase the share of wages in the downswing, there is little need to assume a general change in the weighted average of margins. This gives us no right to suppose, how-

¹ *Ibid.*, pp. 264-6.

² *Ibid.*, p. 264.

³ *Ibid.*, p. 266.

⁴ *Ibid.*, p. 169.

⁵ *Op. cit.*, p. 165.

⁶ But cf. the (static) picture of diversity presented by L. Rostas, *Productivity, Prices and Distribution in Selected British Industries, N.I.E.S.R. Occasional Papers*, XI, especially pp. 24-5, 39.

ever, that the margins of individual firms do not change. It seems very probable that they do. Unfortunately, however, unless the influence of the output:sales ratio can be eliminated, it is not possible to deduce the behaviour of average margins in an industry from the behaviour of the share of wages (or is only very roughly possible. We do not mean to suggest that Dunlop's findings, quoted above, are altogether vitiated).

In view of Abramovitz' evidence that in short swings the change in output generally does not catch up with the change in sales while in downswings of, say, two years and more, excess stocks are finally liquidated, and the probability that changes in weights do, to a large extent, cancel out changes in margins, we are tempted to suggest, very tentatively, that the behaviour of some firms may be something as follows: when sales start to fall the entrepreneur, who is, in any case, probably taken unawares, prefers an accumulation of stocks to a drastic reduction in the rate of output and/or of margins, with the result that the increase in the share of wages is caused only by the changes in the two ratios (output:sales and raw-material prices:wage-rates) but when the depression and the reduction in sales drag on too long the entrepreneur sooner or later has to reduce the burden of stocks, and to do this he is forced to accept smaller margins, thus continuing the redistribution in labour's favour, even when the output:sales ratio turns back against it.

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THE PREPARATION OF NATIONAL FINANCE ACCOUNTS IN UNDER-DEVELOPED ECONOMIES (WITH SPECIAL REFERENCE TO RHODESIA AND NYASALAND)

In recent years, as a result of the emphasis laid on the need to provide information on which to base the development of "under-developed" countries, considerable attention has been given to the preparation of National Income and Social Accounts in these countries. For example, in Rhodesia and Nyasaland detailed National Income Accounts covering persons, enterprises, Government and the rest of the world are available for Southern Rhodesia from 1946 to 1953 and for Northern Rhodesia from 1945 to 1953.¹ These accounts are of undoubted value. There is, however, another set of accounts which can provide useful information for the stimulation and control of economic development. These are the National Finance Accounts.

THE PURPOSE OF NATIONAL FINANCE ACCOUNTS

In any economic system the flows of income, expenditure, savings and investment normally create certain demands for financial accommodation, either from savers who want financial assets or from borrowers who need finance to acquire physical assets. The financing process occurs through savers increasing their cash balances, paying off their debts and buying securities and through investors reducing their money balances, borrowing or selling securities. In the course of this process there are changes in the amount, structure and distribution of the financial assets and liabilities of the community. Where the flow of savings is equal to the demand for investment funds these changes may be simply those required to transfer savings into the hands of investors.² If, however, intended

¹ The main publications, both of which were prepared by the author, are as follows:

(a) *The National Income and Social Accounts of Northern Rhodesia, 1945-1949*, Central African Statistical Office, May 1950.

(b) *The National Income and Social Accounts of Southern Rhodesia, 1946-1951*, Central African Statistical Office, May 1952.

These publications have been brought up to date by articles in the *Economic and Statistical Bulletins* of Northern and Southern Rhodesia of which the most recent are "The National Income and Expenditure of Northern Rhodesia" published in the *Economic and Statistical Bulletin of Northern Rhodesia* for January 1954, and "The National Accounts of Southern Rhodesia, 1946-1952," published in the *Economic and Statistical Bulletin of Southern Rhodesia* of February 7, 1954. The National Accounts of Southern Rhodesia for 1953 were published in the *Financial Statements, including the National Accounts and Balance of Payments of Southern Rhodesia* in April 1954.

² Difficulties may, however, arise even in this case if savers demand a certain type of financial asset and the body supplying this asset is unable or unwilling to accept the financial assets offered by borrowers. For example, in an under-developed economy savings may be held in the form of currency or bank deposits and the banks may be unable to make long-term loans to investors. The result can be the accumulation of external assets to the detriment of domestic investment. In such cases new financial institutions may be necessary to provide avenues for the supply of savings to investors.

savings are not equal to intended investment, these changes are part of the process of equalising realised savings and investment, and thereby influence the flows of income, output and expenditure. In these circumstances a complete system of social accounts for any period should include both accounts showing flows of income, output and expenditure and accounts showing changes in the financial assets and liabilities of the community. The latter set of accounts may be called the National Finance Accounts.

The purpose of the National Finance Accounts is to illustrate the relationships between the financial system and the rest of the economy. This purpose is of great importance in a developing economy. In under-developed economies there is a tendency for savings to be held either in the form of money or external reserves because intended investment is inadequate to match intended saving. The accumulation of external reserves by the Northern Rhodesia economy in 1951 is perhaps a classical example of this phenomenon. As the economy develops, however, the role of the financial system becomes more complicated. Instead of its task being to provide liquid assets for savers and accumulate external balances for the community as a whole, the financial system becomes more and more responsible for channelling savings into the hands of investors. In other words, with the rise of long-term and short-term capital markets the financial system must accept responsibility for the equation of supply and demand in these markets through rates of interest and other means at its disposal. It may also have to create these markets in order to ensure the continued development of the economy. Economic expansion may be limited if there is no means for intended savings (or investment) to be matched with intended investment (or savings). This description of a developing economy is a fair representation of the economy of the Federation of Rhodesia and Nyasaland at the present time. It follows that for Central Africa as a whole, the financial system is faced with the task of securing a balanced equation of savings and investment, both geographically and between different industries. The National Finance Accounts provide a means of investigating these complex questions of financial policy.

THE DESIGN OF THE NATIONAL FINANCE ACCOUNTS

The first step in the construction of National Finance Accounts is to determine the sectors of the economy for which information is required. These sectors must obviously be related to those used in the National Income Accounts of the country, *i.e.*, these should be finance accounts for persons, enterprises, Government and the rest of the world. In addition, a sector must also be provided for the banking system because of its power to create money, *i.e.*, coin and notes and demand deposits. The further extension of the analysis will depend upon the circumstances of each particular country; for example, separate accounts may be prepared for Government enterprises and private enterprises; the account for Government may be subdivided into separate accounts for Central Government and Local Governments.

The finance required or provided by any one sector will depend upon the relationship between its savings and investment. Where the savings of any sector is in excess of investment it will be in a position to supply finance to other sectors. Conversely, when the investment of any sector is in excess of its savings it must obtain finance from other sectors. The fact that a sector is, on balance, a net supplier of finance to other sectors does not mean, however, that it will not also have a demand for finance. For example, in Southern Rhodesia in 1952 the Government provided finance to the other sectors of the economy. Nevertheless, it also obtained additional finance by borrowing, receipts from repayments of loans and capital transfers. The finance accounts of any particular sector must therefore take account not only of its net provision or demand for finance but also of its other financial transactions. The derivation and construction of a consolidated finance account for Government is shown below :

<i>Government Sector</i>	
1. <i>Savings and Investment Account</i>	
Savings	Investment
Sale of existing physical assets	Purchase of existing physical assets
	Net finance available ¹
Savings	Investment and available finance
2. <i>Finance Account</i>	
<i>Acquisition of Financial Resources :</i>	<i>Disposal of Financial Resources :</i>
Available finance ¹	Capital transfers to—
Capital transfers from—	(a) Persons
(a) Persons	(b) Enterprises
(b) Enterprises	(c) Banks
(c) Banks	(d) Rest of world
(d) Rest of world	Lending to—
Borrowing from—	(a) Persons
(a) Persons	(b) Enterprises
(b) Enterprises	(c) Banks
(c) Banks	(d) Rest of world
(d) Rest of world	Loans repaid to—
Loans repaid by—	(a) Persons
(a) Persons	(b) Enterprises
(b) Enterprises	(c) Banks
(c) Banks	(d) Rest of world
(d) Rest of world	Change in money balances—
	(a) At home
	(b) Abroad
TOTAL ACQUISITION OF FINANCIAL RESOURCES	TOTAL DISPOSAL OF FINANCIAL RESOURCES

¹ This item is shown as positive; it can equally well be negative.

Some of the entries in the above finance account, such as capital transfers to and from banks, will normally be non-existent. They are, however, included to complete the account as they may occur, *e.g.*, the Southern Rhodesia Government required the banks to surrender the increase in the value of their gold stocks after the devaluation of sterling in 1949.

Similar accounts can be prepared for persons, enterprises, banks and the

rest of world. In the finance account for the banking system, the entry for available finance will usually be small relatively to other items, as the amount of savings and investment within the banking system is normally small. The change in money balances at home of other sectors will also be balanced by entries in the banks' accounts for additions to demand deposits and coin and notes in circulation. In the finance account for the rest of the world the entry for "savings" can be defined as the balance on the current account of the balance of payments when this is defined to include current receipts and payments from the sale and purchase of goods and services, income payments and current transfers (*i.e.*, "donations" in the terminology of the I.M.F.), and the entry for "investment" will be direct investment by foreigners.

The preparation of these sector accounts in each of which savings does not equal investment does not destroy the equality of savings and investment in the economy as a whole. If the savings and investment accounts of all sectors (including that of the rest of the world) are consolidated, the final result will be equality of savings and investment, *i.e.*, the demands for finance from certain sectors will be balanced by the supply from others. It follows that, while savings and investment accounts can be prepared for the whole economy, finance accounts can refer only to sectors, as a consolidation of finance accounts cancels all the items in individual sector accounts.

THE PREPARATION OF A SIMPLIFIED SYSTEM OF FINANCE ACCOUNTS FOR RHODESIA AND NYASALAND

In order to test the practicability of the above design for finance accounts, an attempt was made to prepare a set of finance accounts for Rhodesia and Nyasaland for the calendar year 1952. For Southern and Northern Rhodesia, detailed National Income Accounts for Government, persons, enterprises and the rest of the world were available. Balance of Payments statements, Government accounts and a statement of the National Income were available for Nyasaland. Banking and currency statistics were available for all three countries. In addition, the statements of the National Income, National Expenditure and Balance of Payments had been consolidated, *i.e.*, all inter-territorial transactions had been eliminated, into statements for the Central African territories, which now constitute the Federation of Rhodesia and Nyasaland. Furthermore, the preparation of finance accounts does not involve any change in the definitions used in preparing National Income Accounts.¹ With this information available, the problem was to measure and analyse the financial transactions which influenced the savings and investment of each sector.

In drawing up the finance accounts for each sector, it was found that separate accounts for persons and enterprises could not be prepared. Difficulties were met in estimating transactions arising from borrowing, lending, repayment, capital transfers, and the sale and purchase of assets between

¹ The definitions used in Rhodesia and Nyasaland are those of the United Nations. Investment is defined as net, *i.e.*, after deducting depreciation.

persons and enterprises. The available banking statistics did not distinguish between loans to and deposits held by persons and borrowing and deposits by enterprises. In these circumstances a consolidated account was prepared for persons and enterprises.¹ The accounts for Government and the banks presented no difficulties, as the statistics required were available from the accounts of the Southern Rhodesia, Northern Rhodesia and Nyasaland Governments, the commercial banks and the Currency Board. The capital account of the Balance of Payments provided the information for the rest of the world. The finance accounts prepared for 1952 were therefore based on a simplified design in which only four sectors—Government, persons and enterprises, banks, and the rest of the world—were distinguished. Furthermore, the account for Government refers only to Central Government, and the accounts for each sector were consolidated, *i.e.*, the acquisition and disposal of financial resources within sectors was not shown separately.

The savings and investment accounts and the finance accounts, prepared upon this simplified model, are as follows:

I. Savings and Investment Accounts, 1952

(£000,000)

	Government.	Persons and enterprises.	Banks.	Rest of world.	Total.
Savings and sums set aside . . .	18.7	17.8	—	42.5 ¹	79.0
Sale of existing physical assets . . .	0.2	0.2	—	—	0.4
Net demand for finance . . .	—	42.2	—	—	42.2
	18.9	60.2	—	42.5	121.6
Net capital formation . . .	15.4	60.0	—	3.6 ²	79.0
Purchase of existing assets . . .	0.2	0.2	—	—	0.4
Net available finance . . .	3.3	—	—	38.9	42.2
	18.9	60.2	—	42.5	121.6

¹ Net balance on current account of the Balance of Payments. In the Central African territories, the current account is defined to include current transfers, *i.e.*, "donations" in the terminology of the International Monetary Fund.

² Net direct investment by non-residents.

II. Finance Accounts, 1952

(£000,000)

1. Government

<i>Acquisition of Financial Resources:</i>				
1. Net available finance				3.3
2. Capital transfers from persons and enterprises				0.6 (14)
3. Borrowing from:				
(a) Persons and enterprises				15.0 (15)
(b) Banks				0.1 (23)
(c) Rest of world				21.1 (31)
4. Loan repayments by persons and enterprises				2.8 (16a)
TOTAL				42.9

¹ The preparation of this consolidated account does not mean that separate accounts should not be prepared. As pointed out later, it is very desirable to have separate accounts for persons and enterprises.

Disposal of Financial Resources :

5. Capital transfers to persons and enterprises	0.7 (9)
6. Lending to:	
(a) Persons and enterprises	22.5 (10a)
(b) Rest of world	1.5 (27)
7. Repayments to:	
(a) Persons and enterprises	10.5 (11)
(b) Rest of world	2.7 (28a)
8. Increase in bank balances:	
(a) At home	4.3 (20a)
(b) Abroad	0.7 (29a)
TOTAL	42.9

*2. Persons and Enterprises**Acquisition of Financial Resources :*

9. Capital transfers from Government	0.7 (5)
10. Borrowing from:	
(a) Government	22.5 (6a)
(b) Rest of world	28.2 (31b)
11. Repayments by Government	10.5 (7a)
12. Drawings on bank balances:	
(a) At home	16.7 (20b)
(b) Abroad	2.1 (32)
TOTAL	80.7

Disposal of Financial Resources :

13. Net demand for finance	42.2
14. Capital transfers to Government	0.6 (2)
15. Lending to Government	15.0 (3a)
16. Repayments to:	
(a) Government	2.8 (4)
(b) Rest of world	3.8 (28b)
17. Reduction of liabilities to banks	1.2 (24)
18. Accumulation of short-term claims on banks:	
(a) Savings-bank deposits	0.6 (22a)
(b) Time deposits	11.0 (22b)
19. Increase in balances:	
(a) Cash balances at home	1.1 (21)
(b) Bank balances abroad	2.4 (29b)
TOTAL	80.7

*3. Banks (Including Currency Board)**Acquisition of Financial Resources :*

20. Change in demand deposits held by:	
(a) Government	4.3 (8a)
(b) Persons and enterprises	-16.7 (12a)
(c) Rest of world	-1.1 (30)
21. Change in coin and notes in circulation	1.1 (19a)
22. Accumulation of short-term claims by persons and enterprises:	
(a) Savings-bank deposits	0.6 (18a)
(b) Time deposits	11.0 (18b)
TOTAL	-0.8

Disposal of Financial Resources :

23. Lending to Government	0.1 (3b)
24. Lending to persons and enterprises	-1.2 (17)
25. Change in balances abroad	0.3 (29c)
TOTAL	-0.8

*4. Rest of World**Acquisition of Financial Resources :*

26. Net available finance	38.9
27. Lending by Government	1.5 (6b)
28. Repayments by:	
(a) Government	2.7 (7b)
(b) Persons and enterprises	3.8 (16b)
29. Additions to balances by:	
(a) Government	0.7 (8b)
(b) Persons and enterprises	2.4 (19b)
(c) Banks	0.3 (25)
30. Drawings on balances in the Federation	1.1 (20c)
TOTAL	51.4

Disposal of Financial Resources :

31. Lending to:	
(a) Government	21.1 (3c)
(b) Persons and enterprises	28.2 (10b)
32. Repayment of balances to persons and enterprises	2.1 (12b)
TOTAL	51.4

The figures in brackets beside each item in the finance accounts indicate the number of the responding cross entry.

This simplified system is set out in order to show that finance accounts can be prepared in an under-developed economy. In practice, an extension of the system to cover the following sectors is believed to be possible:

- Government: (a) Federal Government
- (b) Territorial Governments
- (c) Local Authorities
- Enterprises: (a) Government Enterprises
- (b) Mining Companies
- (c) Other Enterprises
- Persons
- Banks: (a) Commercial Banks
- (b) Currency Board
- Rest of the World

This analysis by sectors refers to Rhodesia and Nyasaland. In other countries the sectors adopted may well be different.

The greatest difficulty is likely to be the separation of the financial transactions of "other enterprises" from those of "persons." Farmers, builders, traders, agents and other individuals engaged in unincorporated enterprise do not, in many cases, maintain separate business and personal accounts. The financial assets and liabilities they acquire as persons also cannot be distinguished from those they acquire for business purposes, for example, the commercial banks will grant personal advances, which may be used for business purposes. The practical solution to this problem appears to be to limit investment by persons to the acquisition of housing: finance required to purchase houses to be owned by individuals would then appear in the finance account for persons; all other finance required by individuals would be included in the account for "other enterprises."

THE USES OF FINANCE ACCOUNTS

A few of the uses of finance accounts are outlined below. These are, however, only an indication of the applications of finance accounts. Further experience in the construction and interpretation of these accounts will undoubtedly reveal other purposes for which they can be used.

(a) *The Design and Amplification of Financial Statistics.*—One of the advantages of the National Income Accounts is that they indicate gaps in the available statistical material and provide a frame of reference for the systematic development of economic statistics. The National Finance Accounts, as an extension of the National Income Accounts, serve a similar purpose in developing financial statistics. For example, in determining the form of the banking statistics for the Federation of Rhodesia and Nyasaland the draft design of the finance accounts showed the desirability of analysing deposits and loans and advances by sectors of the economy. The returns to

Changes in the Supply and Demand for Money in Rhodesia and Nyasaland in 1952
(£000,000)

	Government.	Persons and enterprises.	Rest of world.	Banks.	Total.
Net available finance	3.3	-42.2	38.9	—	Nil
Add Receipts from other sectors:					
Capital transfers	+ 0.6	+ 0.7	—	—	+ 1.3
Borrowing	+36.2	+50.7	+ 1.5	+11.6	+100.0
Repayments	+ 2.8	+10.5	+ 6.5	+ 1.2	+ 21.0
Less Payments to other sectors:					
Capital transfers	- 0.7	- 0.6	—	—	- 1.3
Lending	-24.0	-26.6	-49.3	- 0.1	-100.0
Repayments	-13.2	- 7.8	—	—	- 21.0
Change in money balances	+ 5.0	-15.3	- 2.4	+12.7	Nil
Less Change in balances abroad	- 0.7	- 0.3	+ 1.3	- 0.3	Nil
Changes in balances at home of which:					
1. Changes in demand for money—	+ 4.3	-15.6	- 1.1	+12.4	Nil
(a) Bank deposits	+ 4.3	-16.7	- 1.1	—	- 13.5
(b) Coin and notes in circulation	—	+ 1.1	—	—	+ 1.1
2. Change in supply of money by banks—					
(a) Repayments of demand deposits	—	—	—	+13.5	+ 13.5
(b) Change in coin and notes held by banks	—	—	—	- 1.1	- 1.1

be rendered by the commercial banks were designed accordingly, and the new returns came into operation on June 30, 1954.¹

(b) *The Analysis of Changes in the Supply of Money.*²—The finance accounts

¹ At the date of writing there is no legislation (other than exchange-control legislation) regulating the activities of the commercial banks in either the Federation of Rhodesia and Nyasaland or in any of its three constituent territories. Banking statistics are obtained from voluntary returns. Complete co-operation is, however, obtained from all four banks operating in the Federation.

² The term "supply of money" is used here in the sense of "money balances."

can be recast to show how the supply and demand for finance and the financial transactions between sectors react on the supply of money. The table (p. 278) shows such a rearrangement of the finance accounts of Rhodesia and Nyasaland for 1952.

The above table shows how the supply of money was influenced by the demand for finance of persons and enterprises at a time when the supply of finance from the banks was being restricted. The demand for finance of

1. *The Finance Accounts of Nyasaland, 1952*

(£000)

Acquisition of financial resources.	Government.	Persons and enterprises.	Banks.	Rest of world.
Net available finance	—	—	—	2,154
Capital transfers from:				
(a) Government	—	9	Nil	Nil
(b) Persons and enterprises	69	—	Nil	Nil
Borrowing from:				
(a) Government	—	371	Nil	1,133
(b) Persons and enterprises	399	—	258	Nil
(c) Banks	Nil	Nil	—	Nil
(d) Rest of world	3,505	1,166	Nil	—
Repayments by:				
(a) Government	—	207	Nil	1,414
(b) Persons and enterprises	Nil	—	126	Nil
(c) Rest of world	Nil	251	Nil	—
Drawings on money balances at home by:				
Persons and enterprises—				
(i) Coin and notes in circulation	Nil	323	-323	—
(ii) Demand deposits	Nil	205	-205	—
TOTAL	3,973	2,532	-144	4,701
Disposal of financial resources.	Government.	Persons and enterprises.	Banks.	Rest of world.
Net demand for finance	461	1,680(a)	13	—
Capital transfers to:				
(a) Government	—	69	Nil	Nil
(b) Persons and enterprises	9	—	Nil	Nil
Lending to:				
(a) Government	—	399	Nil	3,505
(b) Persons and enterprises	371	—	Nil	1,166
(c) Banks	Nil	258	—	Nil
(d) Rest of world	1,133	Nil	Nil	—
Repayments to:				
(a) Persons and enterprises	207	Nil	Nil	251
(b) Banks	Nil	126	—	Nil
(c) Rest of world	1,414	Nil	Nil	—
Increase in money balances:				
(a) At home	243	Nil	-243	—
(b) Abroad	135	Nil	86(b)	-221
TOTAL	3,973	2,532	-144	4,701

(a) Obtained by difference.

(b) This item is the difference between an addition of £592,000 to balances due by head offices and banks abroad and a deduction of £506,000 from sums held by the Currency Board in London for coin and notes on issue in Nyasaland.

2. *Savings and Investment Accounts of Nyasaland, 1952 (a)*

	Central government.	Persons and enterprises.	Banks.	Rest of world.	Total.
Savings and sums set aside	878	168(b)	—	2,154	3,200
Sale of existing physical assets	—	52	—	—	52
	878	220	—	2,154	3,252
Net capital formation	1,287	1,900	13	—	3,200
Purchase of existing assets	52	—	—	—	52
	1,339	1,900	13	—	3,252
Net available finance	-461	-1,680	-13	+2,154	Nil

(a) These accounts refer only to the money economy. Savings do not include depreciation and investment is therefore net.
 (b) Obtained by difference.

persons and enterprises in 1952 was greatly in excess of the net finance obtainable from other sectors. As a result persons and enterprises greatly reduced their holdings of demand deposits with the commercial banks. For the same reason, the demand deposits by the rest of the world also fell. The extent of these falls in demand deposits was not offset by the increase in Government deposits, with the result that total bank deposits were reduced.

(c) *The Estimation of Items in the National Income Accounts.*—An example is the use of finance accounts to estimate the savings of persons and enterprises in Nyasaland in 1952. This estimate was made by first preparing the finance accounts for Government, persons and enterprises, banks and the rest of the world, and thereby obtaining the demand for finance of persons and enterprises. The estimate of this demand was then inserted in the savings and investment accounts and an estimate of savings for persons and enterprises was obtained by difference. The details of the calculation are given in tables on pp. 279 and 280.

The estimate of savings by persons and enterprises prepared on the above basis is, of course, subject to a wide margin of error. The estimate of total domestic savings of £1,046,000 is, however, subject to a much smaller margin of error.

Certain extensions of the above analysis are also possible. In under-developed economies borrowing, lending and repayments between persons and enterprises are small. Furthermore, investment by persons is likely to be negligible. These conditions apply to Nyasaland, where the population consists almost entirely of Africans living in a peasant economy and meeting their needs for manufactured consumer goods either from the sale of cash crops and surplus food crops or by drawing on money balances. In these circumstances the finance account for persons can be analysed separately, as follows:

Finance Accounts of Persons and Enterprises in Nyasaland, 1952
(£000)

	Persons.	Enterprises.
<i>Acquisition of Financial Resources :</i>		
Capital transfers from Government	—	9
<i>Borrowing from :</i>		
(a) Government	—	371
(b) Rest of world	—	1,166
<i>Repayments by :</i>		
(a) Government	—	207
(b) Rest of world	—	251
<i>Drawings on Money Balances at Home :</i>		
(a) Coin and notes	323	—
(b) Bank balances	—	205
TOTAL	323	2,209
<i>Disposal of Financial Resources :</i>		
Net demand for finance	208	1,472
Capital transfers to Government	49	20
Lending to Government	66	333
Repayments to banks	—	126
Accumulation of short-term claims on banks	—	258
TOTAL	323	2,209

While the above table is based on certain assumptions, e.g., that all coin and notes withdrawn from circulation came from personal balances, a comparison with other information indicates that it presents a realistic picture. If the savings and investment accounts are used to estimate personal savings and savings by enterprises, then, on the realistic assumption that all investment shown as made by persons and enterprises is in fact made by enterprises, savings by enterprises appear as £376,000, while there was personal dis-saving of £208,000. A study of the external trade accounts shows that the prices of manufactured consumer goods, almost all of which are imported, rose sharply in 1951 and continued to rise in 1952, so that, despite increases in the price of agricultural produce, the terms of trade moved severely against the African peasant farmer. As a result, the Africans drew on their money balances, as their money incomes were insufficient to maintain their level of money expenditure.¹

(d) *The Analysis of Supply and Demand on the Long-term and Short-term Capital Markets.*—This application of finance accounts is likely to be of greater value in a developed country. It can, however, provide useful information in a developing country such as Southern Rhodesia, where a small local capital market exists. For this purpose, the entries for borrowing and lending are extracted from the finance accounts. It is, however, desirable that borrowing and lending within sectors, e.g., between enter-

¹ It is possible that the higher level of money income received from their sales of produce led Africans to believe that they could afford to purchase more consumer goods. Their expenditure on these goods was, however, greater than they anticipated because of higher prices, and they also probably did not allow for the higher domestic prices of foodstuffs which they buy when their own stocks of food are exhausted.

prises, should be shown separately and that as much detail as possible should be given about the nature of the borrowing and lending recorded.

(e) *The Analysis of Inflationary and Deflationary Movements.*—In an under-developed economy where the local capital market is either small or insignificant, savings and investment, with the exception of direct investment financed from undistributed profits, is financed through three main channels, namely, Government financial transactions, borrowing from or lending abroad and the banking system. In these circumstances finance accounts prepared on the basis of the models for Nyasaland and the Federation of Rhodesia and Nyasaland present an almost complete picture of the main forces of inflation and deflation. Even where the local capital market is no longer insignificant, an extension of the finance accounts to show the financial transactions in this market does not present insuperable problems. For example, in Southern Rhodesia, companies registered in the country are able to raise capital by issues of stock, while insurance companies and building societies provide loan capital. These transactions can, however, be measured: the Companies Act in Southern Rhodesia requires a return to be made of new capital issues, while the insurance companies and building societies must also render returns showing the nature and extent of their financial transactions. The total value of these transactions within the sector for persons and enterprises is, as yet, still relatively small, but the possibilities exist for the extension of the finance accounts to show these transactions in detail.

THE RELATIONSHIP OF THE FINANCE ACCOUNTS TO NATIONAL INCOME ACCOUNTS

The Finance Accounts, as set out in previous sections, are part of the National Income (or Social) Accounts. They supplement the information contained in the National Income Accounts showing the income, expenditure, savings and investment of persons, enterprises, Government and the rest of the world, *i.e.*, those National Income Accounts which are usually prepared.

An examination of Stone's paper on the "Definition and Measurement of the National Income and Related Totals"¹ shows that he included all the items included in the Finance Accounts in his system of Social Accounts. In particular, Stone's "Reserve Account for Productive Enterprises"² is very similar to the Finance Account for Enterprises in the model in this paper. In his Reserve Account, Stone includes the surplus of enterprises after meeting dividends and taxes, the sums required to meet accruing tax liabilities, sums accruing from excess provisions for taxation and amounts realised from capital gains and transferred to the appropriation account for enterprises. The remaining items are, however, those included in the finance account for enterprises in the present model. Stone did not, how-

¹ Appendix to *Measurement of National Income and the Construction of Social Accounts*, United Nations, 1947. ² *Ibid.*, p. 46.

ever, draw a distinction between the capital and finance accounts for each sector of the economy, *e.g.*, he shows consolidated "Capital and Reserve Accounts" for "Persons" and "Public Collective Providers."¹

The division between the Finance Accounts and other National Income Accounts on the basis advocated does not therefore destroy the unity of a system of social accounts as a whole. On the contrary, it provides an additional set of accounts which can provide valuable information, particularly in under-developed countries, on the finance of savings and investment. We have seen that the finance accounts can be used, *inter alia*, to produce estimates of savings or investment. When used for this purpose the finance accounts provide a convenient method of extending the social accounts by providing analyses of savings and investment for sectors of the economy. Their preparation requires, as a minimum, statements of Government's financial transactions, the Balance of Payments and the assets and liabilities of the banking system, all of which are frequently available in under-developed countries. We may conclude that the finance accounts are a useful means of extending the social accounts and of providing additional information for the assessment of relationships within an economic system.

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¹ *Op. cit.*, pp. 52 and 53.

THE CAMBRIDGE ECONOMIC HISTORY OF EUROPE

THIRTEEN years have elapsed since the appearance of the study of medieval agrarian life contained in the first volume of *The Cambridge Economic History*. The foundations of the second, which treats of medieval trade and industry, had already then been laid; but war, post-war dislocation and the removal by death of Professors Clapham and Power, as well as of scholars who had promised contributions and of a colleague so wise in counsel as the never enough to be lamented Marc Bloch, postponed its publication. It is a tribute both to the prescience of the architects who planned it and to the competence of their successors, Professors Postan and Rich, that it should have been possible for the work now before us to follow, with only minor modifications, the original design. Of the eight chapters composing its six hundred odd pages, three deal in turn with the pre-Roman world, the late Western Empire and the regions which had as their metropolis Byzantium—two—the central and most imposing block—with the contrasted, but complementary, economies of North and South, whose interlocking activities made the commerce of medieval Europe, not a chaos, but a system; three more with the fundamental crafts of the textile worker, the miner and metallurgist, and the builder in stone. Naturally, while a high level of scholarship is maintained throughout, not all the contributions are of equal interest or weight; nor will the judicious reader fail to note that some of the generalisations suggested are more valuable as incitements to further research than as epitomising conclusions already established beyond dispute. The former feature is inevitable; the latter, in the opinion of the reviewer, is a virtue, not a fault. The result is a volume which is more than a mere series of monographs, and which, in comprehensiveness, insight and, when the data permit, precision, stands, in its own vast field, alone.

Monetary, credit and investment conditions and techniques are so intimately connected with the subjects here discussed that the incidental character of the treatment accorded them may, at first sight, cause surprise. The editors' decision, however, to postpone for subsequent examination these and certain other topics, such as town life, urban finance and the economic policies of municipal corporations and guilds, has been more than justified by the use which they have made of the space thus secured. It has in particular, enabled the present work to dwell at length on the too often neglected international background against which particular regional and national economies require in all periods, and not least in that here considered, to be seen. An insularity pardonable in a youthful discipline, con-

cerned to consolidate its base before venturing abroad, has unduly restricted the range of English work on economic history, with the consequence that its contributions to the continental chapters of the story, without a grasp of which its domestic problems cannot easily be solved, have been meagre, and that its practitioners continue at times to rattle the dessicated bones of concepts and controversies which a more catholic outlook would have shown to have had their day. The antidote to provincialism offered by the wide horizons and long vistas of *The Cambridge Economic History* is not the least of the services for which gratitude is due. Based on half a century of labour by scholars of a dozen different nationalities, it betrays few of the limitations inevitable in the verdicts of a particular period, place or school; makes movements, not states or even peoples, the leading actors on its stage; and employs the rise, pre-eminence and decline of individual regions to illustrate the vicissitudes of a civilisation shared in different degrees by all.

To do justice to a conspectus so extensive is beyond the power of a single pen; but some features of the landscape revealed by it leap to the eye. The high degree of inter-dependence favoured, when other circumstances were propitious, by the long and deeply indented coast-line of Europe, with the rivers and two inland seas which made commerce accessible to most of its provinces and indispensable to some, needs no emphasis. The prolonged coexistence, in spite of those unifying influences, of different cultural levels, typified by the continuance in some regions of a stone age at a time when in others iron had already ousted bronze, is a converse, and not less significant, trait. The effect of changing population densities in accelerating or retarding the economic tempo; the impact on economic life of political factors, from the order and wide markets of centralised empires to the dynamic supplied by the existence of numerous independent centres of energy, fertilising each other by rivalry, imitation and migration; the contrasted psychologies of different periods, peoples and social strata, confounding interpretations based on the assumption that identical stimuli, such as price changes, will evoke the same response from each; the complexity of so-called simple economies and unceasing mutations of eras sometimes labelled static; the alternation—a recurrent theme—of growth and stagnation, which causes economic progress to resemble, not the broadening river of the conventional metaphor, but an unpredictable succession of irregularly advancing and receding tides—such are a few of the reflections with which a reviewer unversed in medieval economic history is likely to lay this latest study of it down.

Trade, in one form or another, if not as old as man, has too lengthy a pedigree to make the quest for origins a profitable pursuit. The palaeolithic contemporaries of the concluding phase of the last ice age were not, it seems, immune to the impulses which prompted Smith's famous comment on the ineradicable human "propensity to truck and barter." Professor Childe's introductory chapter, though not meat for babes, offers illuminating examples of activities later to be known by more majestic names. In parts of neolithic Europe the mists begin to clear; and its characteristic develop-

¹ *The Cambridge Economic History of Europe. Volume II. Trade and Industry in the Middle Ages.* Edited by M. M. POSTAN and E. E. RICH. (London: Cambridge University Press, 1952. Pp. + 604. 45s.)

ments—the minute agricultural surplus emerging as mere collecting is replaced by plot cultivation and stock-breeding; an incipient regional specialisation; and the appearance of something in the nature of regular trade routes by mountain-passes, rivers and coasts—are epitomised by the author with admirable skill. In the ensuing era, where history and pre-history meet, but where archæology still remains our only guide, the high land-marks, which alone can here be mentioned, appear to have been three. The first, from 3000 or so B.C. the chief accelerating factor, consisted in the reaction on Ægean islands and coasts, and through them on the continental hinterland, of the demand for luxuries, materials for armaments and articles for ritual, pomp and display, set in motion by the surplus accruing to the monarchies and hierarchies of the great river civilisations of the Nile and Euphrates deltas. The second, the sequel to the destruction about 1700 B.C. of Knossos, was the shift of the centre of economic gravity from Crete, hitherto the monopolist intermediary between Europe and Egypt, to Mycenæ, and subsequently, when northern pressure threatened an Ægean dark age, the expansion of enterprise in the Western Mediterranean and north of the Alps. The third was a series of technological changes, of which the most significant were the substitution for plot-farming of an agriculture based on some form of plough, and metallurgical improvements, in particular the smelting and forging of iron, which, being widely distributed and relatively cheap, had no rival as a metal for daily use. The evidence of the sixth and fifth centuries points to an increase in the number of specialised crafts; a multiplication and enlargement of settlements made possible by more abundant food supplies and the greater ease with which forests could be cleared; heavier traffic on ancient routes, together with the opening of new; and a lengthening of the radius of trade which causes the products of Italian iron-workers to appear in Denmark, Cornish tin to be sent *via* Brittany and Marseilles to the Mediterranean and, on occasion, Southern wines to make glad the melancholy heart of Central European man. Of the scale, as distinct from the occurrence, of such activities little apparently is known, so that it is not always easy for the layman to decide whether he is faced by isolated episodes or by specimens of a trend. Even after Cæsar's conquest of Gaul, writes the author, "the free Germani, except in formerly Celtic areas just across the imperial frontiers, remained as barbarous as in the first iron age." The fact remains that the symptoms of a quickening economic pulse several centuries before that date seem beyond dispute.

The two succeeding chapters are concerned with the most famous of historical themes. Few contrasts can be more impressive than that emphasised in the opening paragraphs of Professor Walbank's brilliant study of trade and industry under the later Roman empire in the West. The problem posed by him is why the expanding enterprise and open economy of the first two centuries of the Principate had as their sequel disorders of the kind to evoke the all-embracing *étatisme* typified—to mention only one example—by Diocletian's abortive essay in universal price-control at the beginning of the fourth. The felicity of the imperial golden age has been, from Gibbon

onwards, a familiar tale. Peace unbroken by major wars for a period not much shorter than the interval which separates the accession of Victoria from the death of Anne; seas cleared of pirates and patrolled; easy land communications along magnificent roads; moles, quays, docks, light-houses, even inns constructed at the public expense; low revenue duties at the ports—such innovations combined, in the author's words, to make an area extending from the Scottish Lowlands to the Euphrates and from the Black Sea to the Atlas mountains, "a single economic system," of dimensions which the world had not yet known, and, till the American industrial revolution, was not again to know. Technological improvements were, it appears, few, and Roman influence on the rural populations may well have been superficial; but, in other respects, *novus nascitur ordo*. The economic response to order and unity, unaccompanied as yet by crushing fiscal burdens, was that to be expected. The heart of the empire, long a parasite on its dependencies, appears to have experienced a brief revival. The scene of the most sensational developments, however, was not Italy, but the provinces.

The fascinating pages in which the author uses archæological discoveries to reveal how in Gaul, in Spain, in the semi-Romanised German border-regions near the Rhine and Danube, and later in the *parvenu* province of Britain, military consolidation and economic development, so often enemies, advanced for a period hand in hand, could hardly be improved. The armies lay the foundations, in the shape of roads, forts, supply establishments and factories, to meet their own requirements. The Italian trader, with an eye for the demand of the natives as well as of the troops, follows in their wake. Markets spring up; resident merchants are added to itinerant peddlars; local industries expand; the camp becomes the nucleus of a conglomeration which grows in time into a town; new cities are founded. As manufactures develop, as agriculture feels the pull of a heavier demand and natural resources are more intensively exploited, the divergent economic characteristics of different regions and provinces, and with them the tendency for each to go its own way, become increasingly pronounced. The capital, with its million or so inhabitants dependent for food on Egypt, Africa and Sicily, and for luxuries on the East, remains the single greatest aggregate of mass consumption and conspicuous waste; but primacy in the productive arts moves outwards from the centre towards the circumference. Strategic highways increasingly become commercial arteries, linking the semi-industrialised frontier regions with the interior and with each other. Slowly, but inevitably, it ceases to be true that all roads lead to Rome.

The trader's paradise of security, easy intercourse and light taxation did not last. Among the forces undermining it, frontier wars and internal revolts; a consequent decline in population, particularly in the towns; the partial de-Romanisation resulting from the official policy of introducing barbarian settlers to fill the gaps; a reduction in the supply of the slaves, on whom large-scale industry had rested; and, as long-distance commerce contracts, a loosening of the economic links between provinces and metropolises, are given by Professor Walbank a prominent place. The immense

bureaucratic and military machines devoured money. Attempts to lighten the burden on the Treasury by currency manipulations had begun, on a modest scale, in the first century; but it was not, it seems, till the middle of the third that the effects of depreciation became catastrophic. By that time, not only the stable currency of the early Empire, but the predilection for a qualified *laissez-faire*, which had caused even the crucial business of importing corn to Rome to be left in private hands, was a thing of the past. Vitality is waning; but production must be maintained, goods distributed and food supplies assured. Less, it appears, by design than in response to practical necessities, authority intervenes to compel, or itself to undertake, the performance of functions which, in an era of deepening insecurity, political and economic, the invisible hand of self-interest can no longer be relied on to discharge.

In the later years of the Empire, therefore, something like an *économie dirigée* staggers piece-meal into life. The multiplication of imperial factories, with a *Vir illustris* in Rome at their head, belongs, it seems, to a later age; but the bureaucratic framework of prescriptions, with which enterprise must comply, was already, in the fourth century, not a trifle. Partly, perhaps, to appease the armies, prices, at least on paper, are strictly controlled. Guilds of merchants and craftsmen, the *collegia*, had a long history behind them. Step by step they are converted from voluntary associations into organs of the State, working in Rome to the orders of the Government, and in the provinces under the municipal authorities to which its instructions are transmitted. Membership, which, in order to prevent evasion, is made both compulsory and hereditary, ceases to be a right and becomes a matter of legal obligation. Similar tendencies to petrification are equally pronounced in rural areas, where the military requisitioning of supplies; *corvées* for the transport of goods; a fiscal policy which makes the greater proprietors responsible for the collection of the tax in kind, known as the *annona*, from all holdings on their estates; and—a natural consequence of that measure—the *de facto* binding of tenants to the soil, enlarge the area of economic life in which compulsion, not inducements, moves the springs. The parallel movement on the domains of private land-owners, who spontaneously, for reasons of convenience or security, make a high degree of economic self-sufficiency the aim of their estate policies, is even better evidence of the forces at work. Its effect is to dissolve the more complicated social organisms of which individual productive units and local communities had once formed part, and to throw their former components, in autonomous isolation, back upon themselves. A money economy, it seems, continues in and after the fourth century to be the rule; but the ranges of economic activity withdrawn from the influence of the market show a noticeable increase. It is a question how long, in a contracting and increasingly turbulent world, the two types of organisation will function side by side.

The economic life of the Eastern Empire, the subject of an instructive chapter by Mr. Runciman which deserves a fuller discussion than space permits, went in most respects a different, but in some a similar, way.

Commanding the junction of the only land route from Europe to Asia with the exit from the Black Sea, Constantinople, of which more is said than of the provinces, seemed cast by nature for the role of a commercial, as well as of a diplomatic and administrative, capital. Its political stability depended, like that of Rome, on regular and adequate supplies of food. It obtained them at first from the old imperial granary of Egypt, and then, when the Arab invasion locked that door, found a substitute within easy reach in the corn-fields of Asia Minor. Raw materials came to it partly from territories, from Greece to the Balkans, under its own political control, partly by long-distance trade, which brought to it, in addition to timber, wax, furs and other northern products, the heterogeneous oriental products conventionally epitomised as spices, and its single largest import, the invaluable Chinese raw silk. As a manufacturing city, Constantinople appears to have combined imposing productive capacities with a specialisation in costly superfluities not easily paralleled on the same scale elsewhere. Apart from armaments, a state concern, its longest lines appear to have been high-class silk fabrics, also produced in government factories, and an impressive list of luxury wares made by a multitude of minor crafts, the two last supplying exports which went far afield. The State's monetary policy was enlightened, with the result that inflation was kept at bay long after it had become a problem in the West. On the other hand, the imperial control of the minutest details of economic life was carried to lengths which cause the comparable Western expedients to appear almost a régime of freedom. The emperor, writes Mr. Runciman, was both the largest manufacturer and the largest merchant in his domain.

It was at the second point, rather than at the first, in the sphere, not of industry, but of trade, that, towards the end of the eleventh century, the dangerous cracks in the Byzantine economic edifice appeared. Their immediate occasion was the coincidence of strains imposed on the Empire by wars in Asia Minor, by the advance in the same area of the Seljuk Turks, which cut the grain trade at its source, and by Norman piracy in the Levant, with the renascent economic ambitions of the regions of Southern Europe nearest its own. Confronted by a crisis, its ruler invokes the aid of Venetian naval and financial power, and liquidates the debt by a grant to the creditor of the privilege of trading duty-free in the majority of imperial ports. The precedent, originally a temporary expedient, proved not only irreversible, but infectious. It was followed by analogous concessions to Genoa, Pisa and a lengthening list of Italian commercial towns, and they in turn by the establishment throughout the Near East of colonies of Italian business-men endowed with privileges similar in kind to the favours enjoyed by the Hanseatic League in a score of cities from London to Novgorod, and to those later wrung, under the name of Treaty Ports, from the Celestial Empire, when, in the nineteenth century, the Western Barbarian broke in. Thus within the Byzantine political framework an Italian economic empire quickly develops, one of whose pioneers, the Venetian plutocracy, plays a leading part in the catastrophe of 1204, and whose continued expansion in

the ensuing period makes the Mediterranean an Italian lake. It was not till two centuries later that the occupation of both sides of the Bosphorus by the Ottoman Turks dealt the final blow to the empires of Byzantium and of its spoilers alike. Long before that date, however, the pre-eminence in Mediterranean commerce and shipping had passed from Constantinople and her dependencies into foreign hands.

Medieval Europe contained within itself its own small equivalent of North America and, if not its own tropics, a partial substitute for them. The two chapters by Professors Postan and Lopez on the trade of a period extending roughly from A.D. 1000 to 1500, discuss with an agreeably sophisticated realism, not only the commerce of the northern and southern components of the system, but the contrasted economies in which each stream had its source. A text-book legend, which has found its way even into Toynbee's great *Study of History*, depicts the trade of the Middle Ages, and, indeed, of all centuries before the eighteenth, as of minor moment, because predominantly confined to luxuries of high value in small bulk. As far as that of Northern Europe is concerned, nothing, the first of our authors suggests, could be farther from the truth. In reality, except for the virtual absence of capital goods other than timber and stone and the small, though not negligible, part played by metals, the back-bone of its commerce consisted of indispensable staples of much the same character as to-day. The deficiency areas of Scandinavia, the water-logged estuary of the Rhine and the increasingly industrialised Low Countries would have starved without imported grain. In the days before Eastern colonisation made Poland and Prussia the granary of Europe, the largest surplus which supplied them came from Northern France. The propensity of agrarian historians to write as though our benighted ancestors lived by bread alone has diverted attention from the majority of agricultural products other than cereals; but there are good grounds, it seems, for thinking that dairy produce from northern England *via* Boston and Lynn, vegetables and fruit from France, and, later, Dutch and south German beer and hops, were regularly shipped abroad. On the international rôle of fish—at a time when fresh meat was almost the seasonal delicacy which game is to-day, not a supplement to flesh-food, but a substitute for it—and of wine from the specialised vine-growing regions of Gascony, Burgundy, the Moselle and Cyprus, it is needless to dwell. The tonnage employed in moving raw materials must, to judge by Professor Postan's pages, have been hardly less than that carrying food. Scandinavian, south German and, later, Baltic timber; fibres and subsidiaries, in particular, potash, alum and dye-stuffs, needed by the textile industries; salt from the Bay of Bourgneuf, the ideal return cargo for vessels trading south, which without it must have returned in ballast; and, among metals, Swedish iron and English tin and lead are cases in point. Manufactured exports included a host of minor specialties, but bulk consignments of textile fabrics, a genus embracing a wide diversity of species, travelled both by land and water far afield. Next to foodstuffs and raw materials, they supplied the strongest link between different regional economies.

Favoured by the existence of vast areas in Eastern Europe to colonise and exploit, this northern commerce continued, it seems, till the mid-fourteenth century both to thicken and to expand. At its zenith, however, it was not comparable in the range of its activities or in the harvest yielded by them with the cosmopolitan business empire developing farther south. "The startling surge of economic life in Europe in the 'high' middle ages," writes Professor Lopez, "is probably the greatest turning point in the history of our civilisation." The unchallenged pioneer of that mediæval commercial revolution, whose rôle as the economic schoolmaster of Europe he compares with that played by England in the industrial changes of the eighteenth century, was Italy. Her manufactures, in particular woollen textiles, of which, if Villani may be trusted, about 30,000 workers at Florence alone produced, in the early thirteenth century, some 100,000 pieces a year, together with a wide variety of high-class silks and satins, glass, ship-building, hardware and a multitude of minor crafts, were important; but it was primarily as a trader, and on special occasions a financier, not as an industrialist, that the Italian business-man made his influence felt from London to Peking. Geography made Italy a natural intermediary, whose products and re-exports reached the commercial centres and fairs of southern Germany and France by land, and from the later thirteenth century, when the Genoese despatched their first fleet through the Straits to France, Flanders and England, the countries of the Atlantic coast by sea. Monopolising the Mediterranean traffic, buttressed by trading stations and depots at every vantage point from Alexandria to the Black Sea, commanding the western termini of the oriental routes and tapping the resources of southern Russia, the Levant, Africa and the Far East, Italian cities, in spite of their internecine feuds, exploited these unrivalled opportunities with incomparable skill.

The articles handled by so widely ramifying a commerce as that depicted by Professor Lopez were naturally more heterogeneous than the pedestrian staples of Northern trade. Raw wool and raw silk, timber and possibly grain stood high among Italian imports, and cloth among exports; but it was more costly and exotic, if not more important, wares—expensive silks, velvets and damasks; Russian furs; spices, of which a contemporary expert catalogues three hundred and eighty odd varieties; and other amenities for a small, but wealthy, clientele—for which the Italian merchant was in cruder societies most renowned. It was equally natural that Italian business methods should be marked by a sophistication unusual at the same date elsewhere. "The anti-capitalist religious theories of the middle ages," writes Professor Lopez, "had probably more widespread acceptance than anti-capitalist Marxist theories have today." He has no difficulty in showing, however, that, in spite of the impediments to corporate enterprise offered both by the *commenda* and by the *compagnia* types of partnership, features often regarded as peculiar to a later phase of capitalism were not absent from the business life of Italian city-states.

Granted the range and complexity of medieval commerce, what of its magnitude? The English customs returns, which enable Professor Postan

to produce for just under a century invaluable triennial averages of exports of wool and cloth, imports of wine, and exports and imports of miscellaneous merchandise, have, unfortunately, few parallels elsewhere; nor is the interpretation of statistical data, whether derived from official sources or from more fragmentary observations, free from snares. In order to be significant, quantitative statements, whether of time, space or number, must be seen in scale with the other dimensions of the world to which such measurements are applied. Sidereal and human time are not the same. Distances, which in one age are long, are short in the next. Nor would it be according to light to discount, as mere battles of frogs and mice, the Napoleonic campaigns on the ground of the paucity to modern eyes of the divisions engaged. The instinctive scepticism which, on the score of the minute values involved, dismisses as much cry and little wool the trade of a Europe whose total population, Professor Lopez tells us, was nearer fifty than a hundred millions is equally beside the mark. The question of moment, after all, is not whether medieval commerce was comparable with that of a later age, which it obviously was not, nor, given its setting, could conceivably have been. It is the degree of significance possessed by it for the societies of its own day; and, on that point, though figures are obviously to be welcomed, evidence of a non-statistical kind can help us as much or more. In considering the problem, the existence of large back-waters unaffected by the business currents racing in the great commercial centres must not, of course, be overlooked. But the growth of areas specialising in particular productive activities, which only wide markets could have enabled to survive; the multiplication and enlargement of towns; the rise in numbers, wealth and influence of a commercial plutocracy; the fiscal importance of foreign trade, and the struggle of the classes engaged in it to keep at bay princely propensities to poach their profitable preserves to death—these commonplace features of mediæval economic and political life tell their own story. An equally convincing proof of the interdependence of different economies is given by the partial paralysis ensuing when, as a result of tariff policies, blockades and wars, the links forged by grain, fish, wool, salt or cloth—not to mention finance—are temporarily snapped.

Space does not allow a reference to more than a handful of the problems explored by Professors Postan and Lopez. It must suffice to remark that the reader seeking light on medieval communications and costs of transport; on the rise and retrogression of particular centres of enterprise and the markets served by them; on the commercial rôle of the precious metals; on the forms of organisation under which trade was carried on and the characteristics of the different types of entrepreneurs who made the pace, will find in these chapters a store of novel information and abundant food for thought. On one central issue, however, raised by both the authors, something more should, perhaps, be said. The economic civilisation of the Middle Ages did not, in their view, follow a continuously, if irregularly, ascending curve, but encountered a crisis in mid-career. The age of expansion climbed to a watershed, on the other side of which lay, not further progress, but a long contrac-

tion, in which engines were retarded or reversed and vitality ran down. Thus both the Hanseatic League's commercial empire and the greatest achievements of the Italian Renaissance were the fruits of a period when the peak of material prosperity was a thing of the past. The outburst of economic energy in parts of sixteenth-century Europe was not, it is suggested, the continuance of a previous upward movement, but a belated recovery from a prolonged decline.

This theory of a long-term change of trends is obviously of great interest and importance. The evidence adduced to support it is of several different kinds. Professor Postan points to customs figures showing from the 1340s to the 1470s, save for a few exceptional years, a continuous fall in English exports; to the reduction of grain surpluses coming on the market as a result of the contraction of large-scale demesne farming which, with cereal prices sinking, no longer paid its way; to the temporary exhaustion, till methods of dealing with water were discovered, of continental silver- and copper-mines as well as to the diminished output of English tin; and to the probability that, in more than one region, textile manufactures themselves fell on evil days. The explanation offered by him consists, not in the conventional reference to price movements, which, though in particular instances important, he regards as too disparate in tendency to account for the "secular slump," but in a shrinkage of demand resulting from a diminished population. Vacant holdings and untilled fields; dwindling towns; falling rents and rising wages—phenomena common to England and the Continent—are cited as circumstantial evidence in favour of the view advanced. Given the validity of the initial assumption of a failure of man-power, these corroborative examples of its effect are much to the point. The premise of the argument, however, is a numerical decline on a scale sufficient to have as its consequence a century of stagnation. It seems to the reviewer that that crucial postulate required to be strengthened by a more exhaustive analysis of the causes, as distinct from the results, of the fall in population than is here attempted. It ought in fairness to be added that Professor Postan's thesis does not lack impressive support. Writing of Southern Europe, and using different *data*, Professor Lopez agrees with his Northern colleague, both as to the reality of the "all-European depression" of the later Middle Ages and as to the importance of progressive depopulation among the factors producing it. A series of devastating epidemics, of which the catastrophe of 1348 was the highest, but not the only, peak; wars more protracted and destructive than any since the last barbarian onslaught of the ninth and early tenth centuries; and the collapse of internal order in the ninth and early tenth centuries; and the collapse of internal order in civil strife, were combined, first with the arrest, and then with the contraction, of the moving frontiers of commercial enterprise, on which, during the period of expansion, the prosperity, not only of Italy, but of Southern Europe as a whole, had been based. Debarred from access by land to the Far East by the welter of intractable successor states erected on the ruins of the Mongols' Asiatic empire; squeezed by the ruler of the Egyptian bottle-neck on which, as a result, it was compelled to fall back; deprived by the Turkish

advance of its trading stations in the Levant and by the impoverishment of other regions, such as France, of its markets in the West, the former commercial capital of Europe, at the height of its cultural brilliance, was on the way to become an economic back-water, with consequences hardly less disastrous to its neighbours than itself. "In the larger part of Europe," writes Professor Lopez, "the prosperous level of 1300 was not reached again before the sixteenth or the seventeenth century." It is against that background that the social life and policy of the later Middle Ages—the increase in town and country of small-scale enterprises as compared with large, the multiplication of *rentiers*, the defensive restrictionism of companies and guilds—ought, it is suggested, to be seen.

Of the wares handled by commerce something has already been said. The concluding chapters of the volume are devoted to three of the major industries by which these and other articles were produced. The learned and penetrating contribution by Professor Carus-Wilson on the growth and vicissitudes, during more than a thousand years, of the most venerable, widest-spread and, in its dependence on imported raw materials and distant markets, most international, of medieval industries, is a model of all that such a study should be. Like the other activities of peace, the manufacture of woollen textiles for sale had found under the Principate a congenial climate. A high degree of local specialisation in Italy; the deliberate development of Spain as a source of wool; the remarkable industrial progress of northern Gaul, which enabled its fabrics in the fourth century to compete with Italian products in Rome itself; the high prices paid for some British makes and the establishment of an imperial factory at Winchester, suggest that the economic benefits of unity and order were more than a phrase. During the ensuing disintegration, a few stray glimpses of the industry—woollen cloaks sent as a present to English missionaries abroad, cloths as a valuable item in Viking plunder, later textile workshops on Carolingian estates, in one of which the Emperor's famous gift of Frankish cloths to Haroun el Raschid may perhaps have been produced—are all that come our way; but by the eleventh century the lines of a new industrial landscape can be discerned. A North Sea manufacturing region, as the authoress calls it, has come into existence, including as a subordinate partner England, but primarily composed of the densely populated territories of the Count of Flanders, from Arras to the Scheldt. It is here, in a corner of Europe unable to support itself except by the exchange of manufactures for food that the first medieval version of a Black Country is born.

Flanders, Brabant and north-eastern France, then a single economic area, are the first of the three great textile specialists on which the writer's searchlight is turned. The international connections of the region and the internal structure of its business justify her treatment of it as a classical example of medieval industrialisation at its height. The basis of its manufactures was English—mainly Lincolnshire—wool, together with alum from Asia Minor and the Black Sea, and, in addition to woad from Picardy and Provence, more exotic dye-stuffs from Spain and Portugal, the Levant and as far afield

as Ceylon. Its products were in demand, not only all over Northern Europe, but, *via* the Champagne fairs, in Italy, the Levant and the Far East. The organisation of production assumed the form to be expected in an urbanised industry involving the co-ordination of a multiplicity of different processes and dependent on distant markets and sources of supply. The dominant figure was the business entrepreneur, supervising in his own establishment the staff required for the preparatory tasks of sorting and cleaning, and for the rest distributing orders among small masters, who employed in the aggregate a large body of wage-earners. The potentates at the head of the firms concerned composed the merchant guilds through which the civic plutocracy controlled, not only the economic affairs, but the public life, of each town; and these guilds in turn were organised in an inter-city kartell, the so-called "Seventeen Towns," which enforced a common export policy on the merchants resorting to the crucial window on the world in Champagne. The domestic politics of the industry had little to learn from subsequent refinements in that field. Piece-lists, time-wages and hours prescribed, on the advice of Big Business, by the municipal authorities, kept, or attempted to keep, the lower orders in their place. If Capitalism implies the control of production for the pecuniary gain of the owners of capital, Professor Carus-Wilson does not err in using the term.

The decline of an economic Leviathan is not less instructive than its growth. Social instability, combined with the precariousness of raw material supplies at the mercy of political caprices abroad, were the most obvious of the Flemish industry's Achilles heels. In the later thirteenth century both these sensitive points became increasingly inflamed. Proletarian exasperation produced from 1280 onwards the series of upheavals which, heightened by nationalist passions, culminated in 1302 in the sensational victory at Courtrai of the artisan infantry of Bruges, backed by the Count of Flanders, over the civic plutocracies and the cavalry of the Count's grasping suzerain, the King of France; while, at the same time, English export duties raised the price of wool. The effects of the intermittent operation of both these factors, the latter aggravated in the next century by recurrent embargoes and blockades, were heightened by the long-term menace of intensified foreign competition. The Italians who exchanged oriental dyes for Flemish fabrics at the Champagne fairs had not been slow to grasp that it might pay to import cloth in the grey and finish it at home; and from dressing and dyeing to manufacturing was not a long step. The result was the conversion of the small native manufacture of Italy into a giant using African, Spanish, French and English wools to produce high-quality textiles of European repute. In Florence, its largest centre, where by the middle of the fourteenth century the once pre-eminent finishing gild—the *arte di calamala*—was over-shadowed by the younger *arte di lana*, it was an affair of large firms, employing on the average 150 workers a-piece, and marked by a strong tendency to concentration.

The virtues of a work are shown, not only by the new information which it conveys, but by its success in making its readers aware of the limitations

of their knowledge of supposedly familiar themes. Judged by that test, Professor Carus-Wilson's pages on England are among the best in her chapter. The demand for textiles was so insatiable that, in spite of Flemish and Italian competition, the English product had long been exported on a considerable scale to a world which might have been supposed to be already wallowing in superfluous cloth; but, in comparison with those two great rivals, the English industry had remained of the second class. It possessed one great advantage in native supplies of cheap and high-grade wool. The turning-point, however, in its history was, it seems, the mechanisation of one of the most laborious, and presumably most expensive, processes of the craft.

The substitution for fulling by hand—or rather by feet—of power-driven hammers made the country's abundant water resources an economic asset of the first importance, and gave the industry introducing it a technological lead similar in kind to that which mule and power-loom were later to confer. The multiplication of fulling-mills in the last half of the fourteenth century not only strengthened its hold on the international market but at the same time set in motion drastic changes in business localisation and structure. It both accelerated, if it did not initiate, the dispersal of textile manufactures in rural areas and concentrated them in those of the west and north, where climate and the lie of the land provided a sufficient head of water close at hand. As a result, the typical clothier ceases to be the prosperous burgess of a corporate town, and becomes an economic individualist who, untrammelled by gild or municipal regulations, can adopt such productive methods as he deems expedient and grow to whatever stature success may allow. The effect of this minor technical revolution is convincingly illustrated by the authoress from different angles. Her evidence includes the diminution in wool exports, increase in cloth exports and virtual cessation of cloth imports shown in the customs accounts of the mid-fifteenth century; the decay of the older urban centres of the industry; and the increase in the trade and political influence of the celebrated or notorious cloth-exporting kartell known as the Merchant Adventurers Company. By the time that the Tudors took command, the English manufacture, judged by its exports and probably also by its output, was the greatest in Europe.

Professor Nef's chapter on medieval mining and metallurgy deals with a subject long as obscure as textiles were famous. The diversity in productive techniques and markets of the industries grouped under these heads; the multitude of minute undertakings composing them; and, since the factor determining their localisation was the existence of accessible ores, their frequent remoteness from conspicuous centres of population and trade, make a synoptic survey difficult to present. The stages in the development of mining are, however, clearly set out, and the complexities of law and custom defining the respective rights of the different parties—miners, land-owners, feudal superiors and political sovereigns—interested in its progress are successfully disentangled. Of the industry under the Empire little, it seems, is known, and of its fate during the succeeding five centuries even less. The

expanding trade and growing population of the eleventh and twelfth centuries were accompanied by an increase of the energy applied to tapping the more easily accessible sources of mineral wealth. It is at that point that Professor Nef takes the story up.

In central and south-eastern Germany, where silver, lead and copper are the prizes sought, a prospector's age of semi-colonial enterprise, with the "free miner" as its characteristic figure, gets under way. In Sweden, a little later, the great Kopperberg resources are systematically exploited. In the first third of the fourteenth century the output of Cornish tin shows a sensational rise; while lead, mainly from Derbyshire, assumes its place among the four most important English exports. The most widely distributed of metals, iron, was probably still too dear to compete in common use with wood; but the author can point to symptoms in more than one country of its increased production. In the Low Countries, France and England the mining of coal for the market has begun its great career.

This upward movement did not, it seems, last. Reference has already been made to the verdicts of Professors Postan and Lopez on the economic decline afflicting the later Middle Ages. It is instructive to note that the researches of Professor Nef in a narrower, though highly important, field point to a similar conclusion. Apart from the environmental factors affecting them in common with other departments of economic life, mining and metallurgy were confronted by problems peculiar to themselves. The exhaustion of superficial deposits necessitated shafts, and increased the perils of water, gas and falls of roof; while the subsequent crude processes of treating the ore offered obvious opportunities for economies to be realised by more efficient techniques. Whether as a direct result of economic pressure or because a shift of intellectual interests had prepared the way, the technological innovations recounted by Professor Nef, from drainage and ventilating systems to power-driven machinery for crushing ore and blast-furnaces for smelting it, may fairly be said to make the century following 1460 the first great age of the mining engineer and metallurgist. The social and political consequences of the heavier outlay which modernisation involved are rightly regarded by him as meriting more than a passing word. Gradually, but inevitably, the capitalist undertaking directed by an entrepreneur, financed by the issue of shares to investors and employing hired wage-earners, superseded the informal co-operation of the partnership of working miners. In England, except for the precious metals, the State stands aside. In France and some of the German principalities a Mines Administration is created to supervise the exploitation of minerals in the interests of the dominant political régime.

The subject of the volume's concluding chapter is an industry some of whose greatest products, unlike medieval fabrics and metal-work, are constantly before our eyes, but whose economic, as distinct from its æsthetic, aspects remain to most of us a closed book. Of the methods by which, with the minimum of skilled assistance and such materials as the locality supplied, the common run of medieval dwellings, often in rural areas sheltering men

and beasts under one roof, were produced and maintained, little, if anything, is known. Their construction was probably an amateur job, completed with a helping hand from a neighbouring joiner or thatcher; and though in towns the professional played, no doubt, a larger part, it is difficult to believe that, even so, a body of skilled craftsmen could have arisen to meet these humble needs alone. The industry with which Professor Jones is concerned was of a different type. It is sufficient to consider the chief categories of buildings erected between 1100 and 1400 in order to appreciate the magnitude both of the demand—governmental, military or semi-military, ecclesiastical, municipal and private—for durable and imposing structures, and of the strains on man-power and materials which the effort to meet it imposed. The capital expenditure represented by royal castles, such as those built by Edward I to hold down the Welsh; castles and fortified houses of magnates and gentry; cathedrals, abbeys and thousands of parish churches, many, no doubt, first built of wood, but with an eye to its subsequent replacement by stone; the walls and market halls of towns, not to mention such lesser structures as bridges, hospitals, chantries and a few colleges and schools, suggests an aggregate outlay which, even when spread over centuries, it seems surprising that a society by modern standards poor could support. Some of the major operations have left records behind them. It is these undertakings, therefore, which supply Professor Jones' theme.

The finance of the subject—a crucial issue—belongs to a later volume. The aspects of the industry which receive most attention here are the organisation and management of building, including the provision of materials, the recruitment and training of workers, and the circumstances in respect of wages, hours, the right of association and other conditions in which they were employed. Building, as interpreted by Professor Jones, was in effect engineering in stone. As a result partly of the progressive substitution, from the latter part of the tenth century onwards, of that material for wood, partly of the recurrent supersession of old tastes and styles by new, the technological innovations experienced by it were probably both more frequent and more drastic than those undergone by any other medieval industry. It might have been expected, therefore, that the scientific qualifications required to cope with the problems of an intricate and swiftly changing craft would have permanently been in short supply. In fact, to judge by Professor Jones' pages, there is little sign that, as a limiting factor, that particular obstacle was acute. Technical manuals, if such were produced, have not apparently survived. It is evident, however, that a body of professional knowledge existed, and that on such major issues of policy as the choice of sites, the nature of the foundations to be laid, the preparation of plans and the safety of structures, expert advice was sought and obtained. The direction and control of operations could follow several different patterns. The initiating party could, as was the usual practice of the English Crown and of many ecclesiastical bodies, get the work done by—in modern language—direct labour, under the direction of its own officers, sometimes employing for the purpose a dual staff, partly financial and administrative,

partly technical. Or it could give the contract to a professional architect or builder who undertook to complete it in a specific period, sometimes supplying him with materials, sometimes requiring him to procure them himself. Or it could combine both methods, and, while planning the building as a whole, let the execution of parts of it to a contractor. In either case, it may be remarked in passing, the rôle of the architect appears to have been of the first importance. The view sometimes heard that medieval cathedrals were built by anonymous masons, between whom and the artists designing them little difference of remuneration and authority existed, is dismissed by the author as a sentimental myth.

Whatever the particular form of organisation and control, the practical difficulties of the builder were liable to be grave. It was of the nature of many of the operations concerned that, as in the case of some monasteries, the situation selected should be remote; or that, as when defensive structures were in question, speed of execution should be the first necessity; or that, both for that reason and because of their mere dimensions, particular pieces of work should involve the mobilisation and maintenance of a body of craftsmen running into several hundreds. In such conditions the assembling of materials and workers on the site required was an intricate business, demanding, in the case of large undertakings, an office and staff on the spot. The former could be bought in the open market; but the more usual procedure, since the demand for extensive structures normally came from bodies and individuals well endowed with land, was to rely on stone and timber from quarries and woodlands on their estates. The latter, in the case of work done for the Crown, were often conscripted, but, with that exception, were usually engaged by the architect or master-mason, as he was commonly called, in charge of the job. The provision of accommodation for an industrial army in an out-of-the-way place presented a problem of accommodation similar in kind to that which arose, six centuries later, during the construction of railways. It appears to have been solved by much the same methods.

In the days when mechanical cranes and other equipment were crude, the proportion of labourers to skilled workers was presumably high. The latter included carpenters and plasterers, as well as masons; but the group of whom we hear most is the last, and Professor Jones devotes some illuminating pages to the distinctive features of the mason's life and work. The craft included two main branches, hewers or free masons who dressed and carved the stone, and layers or rough masons who fixed it in position. Demanding as it did experience in the ways of different qualities of stone, a knowledge of the methods required to meet the primary need for stability, and probably an ability to work from drawings, it offered opportunities for the exercise of a high degree of skill and sometimes of artistic power. In addition to apprenticeship and here and there an occasional craft school, the allied trade of quarrying, which also taught the properties of stone, was an obvious source of recruits. The figures given by the author show that the rise in time-wages, which began shortly after 1348, continued in the case of masons during the next two centuries; but they do not make it possible to specify

the stages by which the upward movement advanced, or to determine the relative changes in the economic position of masons as compared with other craftsmen. To judge by the diversity of the payments made to the former, even when working on the same job, nothing in the nature of a standard time-rate existed.

On the other hand, the craft, as Professor Jones observes, was marked by some peculiar characteristics, which distinguished its practitioners from most other artisans, and which may have fostered a sense of solidarity among them. For one thing the mason was necessarily a migratory worker, who moved from one locality to another, as an old building was completed and a new begun. For another, unlike the blacksmith or weaver, he had only his labour-power to sell. In the third place, the construction of a great ecclesiastical or military edifice was the nearest approach to mass production which the age had to show, with the result that, to a degree unknown by the majority of artisans, the mason addicted to that class of work passed a substantial proportion of his working life as a member of a team. It is possible that these features of the craft account, not indeed for organisation among masons, for association for mutual protection was in the air, but for the particular form which, in their case, organisation assumed. In some large cities, for example fourteenth-century Paris and London, we hear of masons' guilds; but the membership of the craft was in most towns too minute to permit effective corporate action on a merely local basis. The type of organisation characteristic of the masons, therefore, was not, as in other industries, the municipal guild. It was the lodge established wherever any considerable building was under way, and composed of all members of the craft working on it. Whether the German attempt to federate such lodges in a wider association was absent from France and England, or existed in those countries as an underground movement, we cannot say. One further development, however, which links the concluding paragraphs of Professor Jones' instructive chapter to the experience of a later age is reasonably clear. It is the emergence, here and there, from the fourteenth century onwards, of the separate journeymen's organisations—the *compagnonnages* of France and the so-called yeomanry guilds of England—which were trade unions in all but name.

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It is customary for a reviewer to conclude with an epitome of the impressions left on him by the book concerned. In the case of a work on a subject so vast as the commerce and industry of Europe during more than a thousand years the evasion of that ritual obligation is more, perhaps, to be commended than a formal compliance with it. The discussion of the treatment accorded to particular topics is a task for specialists. Nor, it is probable, will readers be lacking to deplore supposed *lacunae*, and to regret that space could not be found for industries other than the three classica

crafts which figure in these pages; for a fuller survey of the contemporaneous evidence and modern theories relating to population at different dates; and for an account of some salient features of medieval economic thought. In any case, they may be reminded of the nightmare of selection by which historians are haunted, and invited to console themselves with anticipations of the further volume on the Middle Ages still to come.

Whatever such criticisms and comments, the magnitude of the achievement represented by the second volume of the *Cambridge Economic History* is unlikely to be challenged. Among its virtues are two, for which the gratitude of even a mediocrally illiterate reviewer may without presumption be expressed. The first is the intimate knowledge of different periods and regions which enables the authors to interpret their economic life in terms not, as too often in the past, of a classification into hypothetical stages of growth, but of the specific environmental forces—resources, opportunities, obstacles and strains—which prepared the varying moulds into which the energies in different circumstances should run. The second quality consists in the illumination to be derived from the comparisons and contrasts between developments simultaneously taking place in different parts of Europe, on which the breadth of the writers' canvas invites the reader to fix his eyes. The heightened realism born of both is not a trifling gain. A book which without labouring these lessons, by its example drives them home, is a landmark in the study of its subject. It reveals the point which half a century of effort has enabled to be reached, and indicates some of the paths which future travellers may profitably pursue.

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REVIEWS

A Survey of Contemporary Economics. Volume II. Edited by B. F. HALEY.
(Homewood, Illinois: Richard D. Irwin, for the American Economic Association, 1952. Pp. xvi + 474. \$5.00.)

It is now ten years since the American Economic Association first conceived the idea of commissioning surveys of the major fields of economics designed to "provide to the economist outside a particular field an intelligible and reliable account of its main ideas—both analytical devices and their practical application to public policy—which have evolved during the last ten or fifteen years." The first volume of surveys appeared in 1948, under the editorship of Professor Howard Ellis. For a variety of reasons it met with a less enthusiastic response than the Association might have hoped for. Inevitably, in such an experimental endeavour, the authors' conceptions of their task varied widely, and great differences were evident in the balances struck between reporting and evaluation of developments and between exposition of tools and elaboration of policy implications, and in the emphasis placed on the novelty as opposed to the continuity of recent economic thought. Almost inevitably, also, the date of preparation of the book meant an excessive concentration on the as-yet-undigested theoretical revolutions of the 1930s, and a consequent impression of disjointedness and incoherence. Nevertheless, the standard of individual contributions was high, and the book proved its usefulness in the modest spheres for which it was intended. Professor Lloyd Metzler's chapter on "The Theory of International Trade," to cite but one example, was a godsend to teachers and students alike in the years immediately after publication, though in common with much in the other chapters it has been outmoded by experience and critical new work.

In preparing the second volume, Professor Haley has taken advantage of the experience gained from the preparation and reception of the first. There are ten, rather longer, chapters in place of the thirteen of the original volume; the authors have apparently been subject to much stronger editorial control; and they have been prompted to appraise the work they review, and to indicate problems for research, with the intention of making the book more interesting to the specialist reader. Further, the two critics who hovered invisibly over each author in the first volume have now been allowed brief comments, which help to call the reader's attention to disagreements over conception and emphasis.

In spite of this elaborate preparation—perhaps to some extent because of it—the present volume is distinctly less interesting than its predecessor. Partly this is a consequence of its design as a supplement to the earlier volume; Volume I skimmed the cream of the theoretical developments and the well-

defined fields, and the subjects surveyed here are more empirical and either residual or amorphous in scope. Partly it is a consequence of the more rigorous discipline imposed on the authors, which has in some cases led to an effort to cram material into the allotted space with insufficient attention to orderly and balanced presentation. By contrast with Volume I, there is more scholarship and less good writing; the reader is more likely to come across a shrewd aside and less likely to encounter an illuminating paragraph or section. Still, it is only too easy to underestimate the magnitude of the tasks of organisation and condensation faced by the authors; by and large, they have done their work extremely well, and the volume should well serve the purpose for which it was undertaken.

Of the ten chapters in the volume, the most successful in meeting the editor's standards is Professor Norman Buchanan's on "International Finance," which surveys the impact of the 1930s on conceptions of the problem, theoretical developments based on employment theory, and experience of governmental and private capital transfers since the war. The theoretical literature might have been handled more critically—Professor Metzler's analysis of the transfer problem, for example, hinges on assumptions which are mathematically convenient rather than economically relevant—and the discussion of the failure of the Marshall Plan to induce European economic policies of the intended kind is perhaps somewhat naïve politically, but the exposition is lucid and the presentation and discussion of statistical material is commendable. In a stimulating final section on "Unresolved Problems in International Investment," Professor Buchanan puts his finger on the crucial conflict between the advanced countries' interest in developing backward countries *into* the world economy, and the backward countries' ambitions to develop themselves *out of* the world economy; though both he and Professor Williams may be over-pessimistic about the strength of the trend of the terms of trade in favour of primary products which points the conflict.

Professor Joseph Spengler's chapter on "Population Theory" is, as one would expect from him, an authoritative work of awe-inspiring scholarship; though one finds oneself agreeing with Professor Notestein's wish that he had indicated his own views more positively. This is an essay well worth reading for its wide range—from the limitations of population forecasts to the economic problems of Britain—and its suggestive ideas. On the other hand, Professor Abramovitz's chapter on "Economics of Growth," which might be expected to be the most interesting in the volume, is rather disappointing—a re-arrangement in a formal system of old bones and new bits and pieces, the latter mainly of American origin. The explanation, underlined in Professor Kuznets's comment, is that "economic growth" is a recent interest of economists, and possibly a transient one, rather than a natural outcome of the specialisation of areas of economic research. It is also a political product, whose emergence prompts speculation on the relative effectiveness of "development" as compared with "civilisation" as an intellectual *quid pro quo* for international domination by a major country; the growth of growth economics in the United States is paralleled and complemented by

the growth of anthropology and colonial studies in this country—in part a defensive measure dictated by shortage of investment capital.

As a survey of growth economics, Professor Abramovitz's chapter is restricted by its too close identification of growth phenomena with the characteristics of modern American capitalism, and its concentration on capital formation as a cause of economic growth. On this latter subject, however, Professor Abramovitz has many shrewd remarks to make and questions to raise—though some of the questions might be answered by a perusal of the literature available in languages no more foreign than Australian or Canadian. The heavy reliance placed on Keynesian literature may also be questioned; and it is surely going too far to credit Keynes with the invention of the idea that income may be hoarded, as well as consumed or invested (p. 147).

Three other chapters in the book reinforce the implication of Professor Abramovitz's exposition, that the adjective "American" might helpfully be inserted in the title of the volume. Dr. Ruth Mack, writing on the "Economics of Consumption" (by which is meant consumer buying and saving) surveys the literature of demand analysis and the consumption function, within a broadly socio-psychological frame of reference; her exposition is a mixture of wide knowledge of research results, shrewd common sense and jargon representing a mild case of inter-disciplinary jitters. The chapter is interesting in detail, but uneven; its theme could almost be summarised in the proposition that buying depends on all sorts of things, and that statistics prove it. The state of knowledge reflected in this chapter may represent the low point of post-war research in the field: since it was written, consumption function research has tended to move in the healthy direction of trying another theory rather than trying another variable.

Professor Lowell Hariss, writing on "Public Finance" (excluding fiscal policy, which was covered in the first volume) is mainly concerned with institutional features of the American tax system. The reader is kept awake by the author's ability to pinpoint the theoretical problems raised by detailed tax issues, but the general impression conveyed, over the protests of the two commentators, is that the field is in a rather unhappy state, largely due to the absence of a workable general-equilibrium theory. Professor Gale Johnson, writing on "Economics of Agriculture," is mainly concerned with the position of American agriculture relative to the rest of the economy, and with American agricultural policy; the former is well presented, but the discussion of the latter is too obscure at crucial points to be satisfactory to the lay reader. Professor Black's comment, in addition to reminding the reader of the work that has been done on production economics, conveys something of the lusty pioneering spirit of this relatively young branch of economic research.

The theoretical interest is catered for by two chapters. Professor Kenneth Boulding surveys (the new) "Welfare Economics" in his usual sprightly and illuminating way; his critics catch the few obvious slips, though neither has noticed the peculiarity of the $U_b U'_b$ curve on p. 15, and the unresolved

contradiction between footnote 11 and the text has already been exploited by an interested party. In his appraisal of this crossword puzzle of a subject, Professor Boulding relies largely on his long-standing critique of the calculus as an economic tool; Professor Samuelson's cryptic notes probably provide more solid nourishment for those interested in the field. Professor Andreas Papandreou, in a chapter entitled "Some Basic Problems in the Theory of the Firm," introduces the reader to organisation theory and sets up a "frame of reference" for the analysis of problems of large-scale corporate enterprise. The argument is interesting, though it is conducted with very little reference to market structures, and the results scarcely justify the heavy methodological guns brought to bear. The critics should be read carefully: Professor Heflebower for his useful summary, and Professor Mason for his unexpected defence of orthodoxy.

There remain for comment the two really controversial chapters of the book, Professor Paul Baran's essay on "National Economic Planning" and Professor Richard Ruggles's survey of "Methodological Developments." Both authors deserve credit for their courage—Professor Baran for his political courage in writing what he has written, Professor Ruggles for his professional courage in accepting the thankless assignment, appropriately rewarded by his critics, of describing the grin in the absence of the cat.

Professor Baran's chapter is a powerfully-written argument in the non-Communist Marxist tradition which has been more successful in maintaining its respectability outside the United States than in it; its originality is, perhaps, less apparent to the reader who remembers the flowering of that tradition in the middle 1940s, around the work of Dobb and Sweezy, than to critics facing this system of thought for the first time in high academic surroundings. Professor Baran's themes (to summarise a complex argument) are three: planning for full employment under advanced capitalism is impossible without fascism, planning for development in backward countries is impossible without a social revolution, and economics gives little guidance on how to plan under socialism. Lack of space prevents an adequately rigorous and appreciative critique of these themes. The first assumes a knife-edge definition of full employment, a hard-faced-gang view of the capitalist class and a disregard of the political role of Civil Servants and intellectuals; in dismissing labourism as an alternative, by appealing to the "investment strike," Professor Baran seems to confuse personal savings with corporate investment—the important obstacle to labourism is more likely to be emigration of capital and skilled labour. The second identifies development with large-scale industrialisation, lumps all backward countries together and assumes "development" as an ethical imperative regardless of circumstances. The third is at points belied by Professor Baran's own economic analysis of problems of planning in Russia, and begs the question of whether existing planning represents best possible practice. These remarks are not intended to denigrate the quality of the essay, but rather to underline the simplifications which give the argument its bold sweep. Professor Baran raises some important issues of political economy, and it is

regrettable that his critics have been so pussy-footed in tackling the basic issue of the theory of the state.

Professor Ruggles's chapter on "Methodological Developments" is a much superior version of the kind of thing that sometimes gets served up to undergraduate societies by tired professors, but with the juice of personal prejudice largely squeezed out. Given that this was to be written, Professor Ruggles has done a reasonable job of ordering chaos; but it is all about the "how" and the "what," it being left to the critics to point to the importance of the "why." In the author's defence, it could be argued that the critics' answer to "why" (abstraction and prediction as opposed to descriptive realism) does not fit all the workaday problems of economic research. Nor would everyone agree with Professor Friedman's faith in positive economics and rejection of the scrutiny of assumptions.

Reviewing a book of this type is extraordinarily difficult—if the reviewer could review authoritatively, the American Economic Association's project would be demonstrably a waste of effort. Ultimately, the real test of the project is with the students and non-specialists for whom it was intended, but who are never invited to write reviews. From their point of view, the present volume may well be more useful than the first, both because it has been more carefully prepared and because it is more in touch with post-war economic developments. Whether further volumes of the same type will prove useful in the near future is another question; these two have mined the recent English-language literature fairly thoroughly, and it might be preferable to continue the project more modestly in the pages of the *American Economic Review*.

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A Study in the Theory of Economic Evolution. By T. HAAVELMO. Contributions to Economic Analysis, III. (Amsterdam: North Holland Publishing Company, 1954. Pp. v + 114. 15s.)

AN attractive statement and formulation of problems in the pure theory of economic growth are given in Professor Haavelmo's new contribution, but the reader does not put it aside with a feeling that these problems have been solved. Professor Haavelmo teaches us how to think about growth, by laying bare a variety of possible or plausible modes of evolution. It is a noteworthy study, since this branch of theory has been ill treated analytically, and now he has directed thinking towards logical model building. As we would know on the basis of his other researches, which have been noted for their clarity of thought, his analysis of economic growth makes the proper distinctions between variables and parameters, something which his predecessors in this field have not done. This follows, of course, from his application of formal mathematical models to the problem. An interesting aspect of his models is an extension of the customary bounds of economics to

include population and technical "know-how" or education as endogenous magnitudes in the equation systems.

As every scholar is aware, wide variability offers fruitful ground for scientific explanation. Results are usually more definite when differences to be explained are great. Professor Haavelmo usefully starts out with the feeling that much of present economic theory has the objective of explaining minute differences, at the *margin*, or small percentage changes, while enormous unexplained differentials exist among the different economies of the world or among the historical states of the same economy. He drops the refined tools of conventional economic theory and uses a global type of reasoning leading more quickly and transparently to insight in these larger problems.

The global analysis is based on four main variables: an index of output; population; an index of capital; an index of the level of education and technical knowledge. These are strikingly few, considering the complexity of the problem tackled, possibly too few to lead to success. These four variables are associated, in a deterministic system, by four equations: a production function (dependent on manpower, capital and technical "know-how"); an accumulation function (dependent on production, population, stock of capital and technical "know-how"); a law of population growth (dependent on *per capita* output); an education function (dependent on capital or trend). The law of population growth is usually of a logistic type making the percentage rate of growth a linear function of the reciprocal of output per head. The production function is either linear, parabolic or linear in logarithms.

The frustrating character of the book—that which led me to say above that the problems of economic growth are not solved in it—is that the main analytical sections consist of repeated solution of the many combinations of two, three or four equations relating the main variables to one another. In one model the production function is linear; in another non-linear. Sometimes a particular variable is omitted from one or more equations; sometimes it is included. Some models are truncated with one or two variables and one or two equations suppressed. Since many of these different combinations of equations have different implications, which are we to accept? A theory of economic growth ought to single out a fairly restricted range of models with definite and useful conclusions. In Professor Haavelmo's approach we see that a wide variety of results can be obtained by *a priori* selection of different combinations of functions. In the hands of a less gifted person this approach could lead to a type of promiscuity.

The growth models are dynamic mathematical systems whose solution reveals the evolution of the model economy being studied. In business-cycle analysis, usually couched in terms of linear differential or difference equations, we have learned to look at conditions on fundamental parameters to judge the cyclical nature of the solution, its periodicity, amplitude and degree of damping. In an essential way, Professor Haavelmo's non-linear models involve the *initial conditions*, as well as the fundamental parameters,

in order to characterise the evolution of the economy. Differences in initial conditions, together with differences in parameters, account for inter-regional (international) differences in economic development. Professor Haavelmo offers a penetrating commentary on the roles of these two sources of difference in the problem of growth and development.

From exact or deterministic models he then turns to stochastic models, in which the superposition of random shocks enhances the possibilities of dissimilarities, either temporally or spatially. Special problems are posed if the random shocks are in differential rather than difference-equation systems, and the treatment of this matter is highly useful and interesting, although technical. There is also a discussion of a theory of inter-regional relations showing how the evolutionary development of several economies can be studied simultaneously.

In making specific points of criticism on this study I should point out the absence of such vital concepts or variables in the long-run economic process as labour force, unemployment, savings and interest rate. While we may applaud the explicit attempt to include population growth as one of the endogenous processes, it must be stressed that population is not the same as labour force. There are wide differences throughout the world, and historically for given areas, in the use of women, youths and aged people in wage-paying occupations. Unfortunately, Professor Haavelmo deals with a single variable, population, in his production function and his law of population growth. An additional implication is that this population mass is always fully employed. In so far as his theory of economic growth is meant to describe evolution during the capitalist epoch or in the capitalist sector of the world, the assumption of full employment casts strong suspicion on the applicability of the results.

Capital as a productive factor, assumed to be utilized at capacity, appears in the production functions of the several models, and its time rate of change in the accumulation function. Analysis in this form gives rise to an inherent set of dynamic properties. There is, however, no analysis of the other side of the picture, the release of funds by consumers to permit accumulation out of current production, in other words, saving. Related to the assumption of full employment is a disregard of saving, yet this would seem to be an essential part of economic development and especially important in studying inter-regional relations, for capital flows from "advanced" countries are now being thought of as major sources of finance for development of less advanced countries who cannot induce a large enough flow of domestic saving to cover the needs of industrialisation. The one market indicator, devoid of the arbitrariness of wage and price units, that is related to saving, investment and capital flows is the rate of interest. In models of balanced growth the interest rate plays a key role, being identified as the rate of growth itself.

It is a cheap criticism that argues that any macro-economic theory is inadequate and that the whole gamut of general equilibrium variables must be considered in each problem. One should look for ways of strengthening

Professor Haavelmo's models, not by calling for scores and scores of additional variables, difficult though the problems investigated may be. Far from that, it may be argued that a limited number of strategic variables or concepts, if properly built into the models, would improve their usefulness immensely.

This brings us to a point of general criticism. Ought we to try to develop a theory of economic evolution which is so general that we fail to find explicitly in it the principal characteristics of feudal, capitalist or socialist economy? If these models are to help us understand economic history or the different historical stages of to-day's economies, surely they must be much more specific. To some extent, a model distinguishing between population and labour force, labour force and employment, and savings and investment will improve matters, but the reader should also find explicit use of the profit motive and the analogous drives of feudal and socialist economies if the models are to avoid telling us too little.

Now that Professor Haavelmo has introduced an extremely sound basis for model building in the field of economic growth, the outlook is favourable for one with a good grasp of history; a broad acquaintance with cultural, social and institutional conditions throughout the world; and an ability to carry out statistical measurement to make a resounding contribution to the subject.

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Trade, Aid, or What? By W. L. THORP. (Baltimore: Johns Hopkins Press (London: Geoffrey Cumberlege), 1955. Pp. vii + 224. 36s.)

IN the summer of 1953 there took place over a period of some eight weeks a lively series of discussions at the then newly founded Merrill Center for Economics at Southampton on Long Island. Professor Willard Thorp succeeded in collecting over the period as a whole some forty-five economists, of whom the present reviewer (let me admit it) had the privilege of being one, to discuss the broad questions represented by the title of this book. There were eight or tenfortunates who continued throughout the period; others came and went each fortnight as the particular subject of discussion changed. Those who attended were almost all economists who had, during the war or since, played some part in economic administration and the State Department, the International Bank, the Fund, the O.E.E.C. and G.A.T.T. were all well represented, though in no sense officially. The discussions themselves were free and unplanned; there were no "conference papers," though we chose the topics for daily discussion and individuals were asked to open the argument. The preparation of a report was no declared part of our intentions; but at the end some few of those who had been present throughout put down on paper some account of the issues that had emerged. From that rough material Professor Thorp has succeeded in making a book.

The subjects that came in for discussion were first, those of inter-

national trade and payments, secondly, those of currency and foreign exchanges, thirdly, those of economic development and foreign lending. No attempt was made to reach agreement, though few who were present failed to come away with a greater awareness of other people's problems. And Professor Willard Thorp has—rightly I think—made no attempt to superimpose his own views on the disputations of the rest of us. Thus the value of this book lies in an attempt to see clearly and state fairly the problems facing the world without too rigid preconceptions about solutions. But this does not mean that the statement of the problem pays as much heed to the most foolish as to the best possible solution. It means rather that an attempt is made wherever possible to discover the best economic solution from the point of view of all countries, to study the implications of such a solution for those who might be damaged by it, to assess the damage and to attempt to see ways of averting it. Thus the importance to the world of a high level balance of payments with North America is allowed to emerge clearly; there is a full, frank and very valuable discussion of the restrictive effects on international trade of the United States tariff and of the possible effects on trade and on particular United States industries of possible measures to lower the tariff. At the same time the implications for other countries of a world of freer trade are not burked.

Similarly, the discussion of convertibility, of its possible advantages and equally possible dangers is full and frank. A genuine attempt is made to see the virtues of the more limited convertibilities of the Sterling Area and of E.P.U. and the risk that an attempt to push world convertibility before conditions are ripe for it may destroy these limited or regional convertibilities without creating something effectively to take their place. In addition, there is a useful discussion of the central problem of the adequacy of reserves and the dangers of excessive obligations with insufficient reserves.

Professor Thorp has been much more successful in making a book out of his material than most of us could have dreamed to be possible. I believe that many who did not enjoy the opportunity of hearing him and his colleagues discuss will find this analysis of the world's problems valuable and feel a vicarious gratitude to Mr. Charles Merrill for the endowment which has made this kind of clarification of the world's problems more possible. For clear thought is the first and necessary step to effective action.

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A Theory of Economic-Demographic Development. By HARVEY LEIBENSTEIN. (Princeton: Princeton University Press (London: Geoffrey Cumberlege), 1954. Pp. xi + 204. 32s.)

THIS powerful study from the Office of Population Research of Princeton University deserves the careful attention of economists interested in the interactions of population and income or welfare. It is mathematical, but Professor Leibenstein marshals his regiments of symbols with orderly skill,

and the course of his campaigns is easy to follow—the more so because of the refreshing clarity of his prose.

The starting-point is a static Malthusian equilibrium—average income (with given natural resources other than population) falling with increasing population, and population just maintaining itself at one level of average income, increasing at higher incomes and declining at lower incomes. If resources remain unchanged, a population obeying these rules will remain at the so-called "subsistence" level, at which it just maintains itself. But what if fresh resources are injected into the system, or if innovation improves the use of the resources already present, or if emigration lessens the pressure of population? It is desirable that the equilibrium of the system, for such a change, should *not* be stable; for a stable equilibrium would simply mean that population would increase to press just as hard upon the new resources as it did upon the old. What is wanted is a system in which average income, given one kick upwards, will go on increasing.

The results of an investigation of stability are interesting. First, it is no good giving a feeble kick; for small displacements, the system is stable. Second, a series of lusty kicks, appropriately spaced through time, may be more effective than a single supreme effort; though in practice it is hardly conceivable that the correct spacing could be "planned." Third, the characteristics of the system may be such that no stimulus to income is sufficient to break away from the Malthusian equilibrium. Fourth, to try to break away and fail may be worse than not to have tried at all.

Professor Leibenstein pursues his study into the complexities of inter-sector and micro-economic relationships, but the argument becomes of such generality that it is difficult to relate to practical issues. A final chapter does some useful clearing up of the theory of optimum population. If the size or the path of a population is wholly determined, then it is useless to describe it as "optimum": it is what it must be. The possibility of a "best" comes in with the existence of *choice*. If the results of alternative policies on population, income, wealth, "welfare," etc., are fully determinate, then the optimum population sizes can be defined as those which are consistent with "a set of achievable economic states preferred to all other achievable economic states." But what if (as is more likely) the outcome is uncertain? Are a population and an economic state which are much to be desired, but uncertain of achievement, to take preference over a less desirable but more probable outcome?

Professor Leibenstein's main theory is clearly very difficult to test, and he thinks it too early to begin the process of testing. Yet it might be possible to make some conjectures about the magnitudes of the parameters and the behaviour of the principal variables, which would enable certain of the theoretical possibilities to be eliminated from practical consideration. It is to be hoped that workers will not be wanting in this important borderland of economics and demography.

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Savings in the Modern Economy. A Symposium. Edited by W. W. HELLER, F. M. BODDY and C. L. NELSON. (Minneapolis: University of Minnesota Press (London: Geoffrey Cumberlege), 1953. Pp. 370. 40s.)

I WONDER if there is any other field in which the qualitative and empirical have interacted to such mutual enrichment as in the sphere of savings (or consumption) behaviour. Perhaps this accounts in some measure for the degree of success that attended the conference on savings, inflation and economic progress held under the auspices of the University of Minnesota with the active and generous financial support of a number of non-academic bodies, including banks, insurance companies and business corporations.

Not that controversy has yet given way to accord. Far from it, as the contents of this symposium of conference proceedings so clearly testify. But one can feel somewhat envious of the array of statistical material bearing on savings now assembled in the United States, which it is the function of the theorist to interpret, and the apparent inconsistencies in which it is his duty to resolve.

Though this in itself would have provided ample material for a conference, the planning committee decided to make a broader approach, which enabled representatives of political and financial institutions to take an active part, contributing their knowledge and presenting their problems to the forum of discussion.

The conference proceedings were divided into four sections. The first—savings and economic policy—contained papers by Mr. Douglas Abbott, the Canadian Minister of Finance, Mr. Hugh Gaitskell, former Chancellor of the British Exchequer, Professors Hansen and Slichter, Messrs. E. A. Goldenweiser and H. C. Sonne.

Professor Slichter is concerned with long-term trends in inflation and savings. He seeks to identify the generally deflationary influences in the American economy, on the one hand, the inflationary ones, on the other, and concludes that on balance the latter will predominate in future, resulting in a generally rising price level. Provided that price increases are gradual and acceleration of trends not anticipated or realised, he concludes that this would be preferable to a stable price level which would entail periods of unemployment. The deflationary influences delineated by Professor Slichter include the satisfaction of pent-up post-war consumer demand and industrial-replacement requirements, the re-entry of Germany and Japan into world trade, growth of pension funds and increases in taxes and repayment of private debt. Inflationary forces listed include population increase, technological research, wage policy and public policy directed towards high demand and employment.

One may question whether population increase is necessarily inflationary, increasing effective demand, the relevant criterion, not being certain to emerge. And is the transition from technological research to innovation quite as smooth or assured as he suggests?

The next section, and in terms of contributions the largest, was concerned with savings concepts, data and behaviour. Here the methodological track was cleared of many obstructions by Messrs. Irwin Friend and Lawrence Klein. Then Mr. R. W. Goldsmith provided a foretaste of his forthcoming volume on savings in a paper on trends and structural changes in savings in the twentieth century. The most valuable work in the provision of long-term savings estimates undertaken by Professor Kuznets and Mr. Goldsmith was directly responsible for theorists having to rethink the savings problem in recent years. Now in addition to evidence of the long-term stability of the saving-income ratio Goldsmith shows that the distribution of national savings among the main savers groups shows little secular change over the last fifty years, provided war periods are disregarded and government pension and retirement funds accretions are treated as personal saving. Another interesting feature is the tendency for the share of relatively illiquid forms of saving to increase. One may well ponder with Mr. Woodward whether the constancy of the saving-income ratio can be as readily accounted for as at first sight appears.

Then comes a vigorous discussion of individual saving behaviour in which Professor Duesenberry kicked off and the well-known protagonists Miss Dorothy Brady, Mr. De Vegh, Professors Margaret Reid, Simon Kuznets, James Morgan, James Tobin and McCord Wright saw to it that none of the onlookers went to sleep.

An examination of the determinants of corporate savings by Professor Lintner and contributions by Professor Galbraith and Messrs. W. Thomas and R. Murray complete the section. Professor Lintner's analysis falls into two parts—the relation between corporate profits and national income and the determination of the share of net corporate profits that will be distributed (or retained) in any time period. Comment is restricted to the former.

The share of corporate profits in national income had been accounted for by Modigliani by means of his ratchet principle. His equation expressed the profit-income ratio as a function of a cyclical income index defined as the difference between current and previous peak national income divided by current national income where all variables are measured in real terms *per capita*. Professor Lintner has two criticisms of this formulation. The first is that population should not enter the function as a deflator as "corporations respond to the demand for their products, not to the demand *per capita*" (p. 239). The relevant peak demand is not real national income per head but real national income. Population goes on increasing, even during depression, and the *per capita* measure serves to delay the change-over from cyclical to secular stretches of the function much too long.

The second point is that the Modigliani ratchet function contains the assumptions that long-run marginal costs are higher than short-run and that the margins between prices and short-run marginal costs are unchanged over time. On the former Professor Lintner argues that if firms are still operating at or below optimum size after the new investment, long-run marginal costs will be equal to or less than short-run marginal costs, whereas if production

functions change as capital is increased, savings in variable costs may offset the extra overheads, lowering unit cost and, eventually, though often after a fair lag, prices. Now the resulting relation between prices and unit (prime) costs depends, *inter alia*, upon the type of market situation, the nature of the capital investment (competition-reducing, etc.) and whether business conditions are favourable or depressed. It is not too clear what assumptions as to entrepreneurial behaviour are being made at each step of the argument. Many of the difficulties are, of course, attributable to the inadequacies of our theories of entrepreneurial behaviour under various market situations.

Accepting Professor Lintner's reservations—and many of them appear justified—what conclusions does he draw? He argues that Modigliani has not established a kink in the profit-income relation at the point where previous peak income is regained—the factors mentioned will tend to keep profits up to those given by the line linking trough and previous peak income even after that peak has been passed—but that there will be two approximately linear relations, one between trough and boom, and the other between boom and slump, the latter being the steeper of the two.

Professor Lintner would be the first to argue that his conclusions are tentative, but one might suggest that the work of Mr. Kalecki on the wage-income ratio may serve to throw light on some dark places. In particular, his analysis of the effect of overheads on profit margins via the degree of monopoly may prove useful. To the extent that the degree of monopoly rises in slump there may be need to modify both the linearity and steepness assumptions of the profit-income relation.

The third section was concerned with savings in relation to under-developed economies, and included papers by Messrs. Eugene Black, E. M. Bernstein, E. A. Ross, F. Pazos and B. R. Shenoy. The final section, on savings and inflation, contained one paper only, by Mr. George Garvy, which was made available but not read at the conference.

Naturally the things one selects in a book of such range will depend upon one's interests and degree of familiarity with the literature. To this reviewer two papers in particular stand out—Mr. Goldsmith's advance report on savings in the United States and Professor Lintner's researches into that meagrely analysed field of corporate savings behaviour. Mr. Bernstein's detailed study of the financing of economic growth, which stresses the difficulties of avoiding pure inflation in under-developed countries when they try to lift themselves without outside aid, and Mr. Garvy's thorough analysis of the inflation problem in the United States, are also substantial pieces of research. It is interesting, too, to read Professor Duesenberry's further thoughts—which relate principally to the influence of asset holdings on savings behaviour—but with this section on individual savings behaviour one feels how much more the participants must have derived from personal discussion than can be conveyed to the reader. One feels that one is only getting a look through keyholes into rooms where much activity is taking place.

This book is the report of a conference, and as such suffers from most of

the defects that one encounters in volumes of this kind. The participants were a very high-powered group, and many stimulating thoughts pervade the pages of the symposium. It is a book from which one can obtain a good vista of the mountainous nature of the terrain and which makes one eager to repair to the fuller reports of the research where and when they are available.

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Shares of Upper Income Groups in Income and Savings. By SIMON KUZNETS, assisted by ELIZABETH JENKS. (New York: National Bureau of Economic Research, 1953. Pp. xli + 725. \$9.)

THERE are certain works by economists which one might contemplate as gifts for friends outside the profession. This is definitely not one of them. Of all the volumes of economics ever published it is one of the most limited in its appeal.

This is not due to the unimportance of the subject, the economic basis of the social structure of one of the most purely "capitalist" of countries, over the period 1913–48. The reason why it will never be widely read is because it consists of over seven hundred closely printed (and as closely argued) pages, 126 tables (mostly long and detailed) and scores of graphs. Only the specialist in income distribution could or would follow the argument through all the permutations of income concept (taxable, "economic," disposable, adjusted), of unit (recipients, persons, spending units, "equivalent adults"), of population (total, non-farm), of inequality measure (percentage shares, concentration ratios, income multiples). Even the specialist, unless he is a reviewer, will hardly read it all.

Nobody could fail to be impressed by the patience and thoroughness with which Professor Kuznets and his research team have brought the available information in the field into a single statistical framework, and by the meticulous care with which every stage in the construction is described. This, moreover, massive though it is, must be seen as part of a still greater structure, the National Bureau's programme for revealing the fluctuations and trends in the economy of the United States, a structure intended to last for a very long time.

Yet how many other economists, particularly British economists, would have been able to resist the temptation to discuss the results? Many of us would feel more vexed than St. Anthony if our principles restrained us from giving more than a couple of pages (of what are admittedly "notes") to the explanation of why, after two decades of near stability, even over trade cycles, the share of the top 1% declined from 12% of disposable income in 1939 to 8% in 1946. Most writers would indeed have felt obliged to assess the permanence or transience of the post-war income distribution. Even more curious is to discuss savings in the war and post-war years without exploring the changing scarcities of consumer goods. The author is indeed sticking to his last, so much so that he does not interest himself in whether the shoes are

for tennis or hiking. I half expected to see on the title page this motto: *De maximis non curat economica*.

Such puritanical empiricism, explicitly avowed in the opening sentences of the book, is really beyond the reach of criticism: the reviewer must accept the self-imposed terms of reference. Indeed, after decades of theory without numbers, or at best few numbers, it is a little refreshing to find a hundred thousand pieces of factual information (at a rough guess, based on a random sample of pages) with hardly a suggestion as to the light they throw on the theories of income distribution or cyclical instability.

But what can be criticised is the sketchy discussion of the significance of the categories used, a common weakness of the extreme empiricist. After all, one cannot escape from theory by ignoring it. If so much time had to be spent on the thousands of double-logarithmic interpolations required for the tables, was it not worth pondering a little before dismissing illegal income as by definition outside the scope of the inquiry (p. 438)? Suppose it were shown that the growth of "rackets" during and after the war had offset to some extent the greater equality of legal income, would this not affect the way in which one looks at the conclusions? Is it self-evident that "disposable" income should be income *after* expenditures on gambling, philanthropy, etc., have been made (p. 12)? And is it not worth while examining rather thoroughly the very common impression, at least in Manhattan, that a growing, and now high, proportion of luxury consumption has been financed by expense accounts unrelated to the real requirements of industry? Whether or not under-reporting of income on tax returns is serious at a particular time (and the discussion of the audit of tax returns is not very impressive), has evasion not increased as the tax rates rose, thus causing income shares derived from tax assessments to overstate the egalitarian trend? Certainly Professor Kuznets is only discussing changes in categories of income he carefully defines. But it is not very surprising if other people, particularly the great majority who learn the results at second hand, assume that he is interested in, and saying something about, the relative welfare of different classes in society.

Buried under the rubble of data are some interesting fragments. For example, over half the "civilian earners" in 1946 in the top 5% had never been to "college" (one-fifth of this elite had never been to high school). Moreover, of those in a high stratum in any one year, over half would have been found in a lower group within a very few years. This implies, as Professor Kuznets shows, that if we take decade incomes instead of annual incomes the distribution is considerably more equal. It also suggests an astonishing social mobility, at least to British eyes, and a society in which property income has been, at least in a superficial sense, relatively unimportant. Other indications are that in 1935-36 wage-earners and clerks formed nearly a third of those in the top 8% of incomes, and that employment tended to be the main source of income for the upper-income brackets, except for the highest 1%—and even for this stratum dividends were only slightly more important.

The section on savings is much thinner, and relies a good deal on inference. It appears that the proportion of income saved is very steady for upper-income groups, and this is taken to imply that the cyclical variation in this proportion for the whole population is due to violent changes for the lower-income groups, and that the ratio of the savings of the rich to total savings rises sharply in a recession.

The second half of the book deals with the points of technique, and there is much for the technician. The reader who does go right through the book becomes increasingly uneasy, as the weeks pass, about the validity of drawing conclusions from the *per capita* distributions. The basic distributions are by income recipient, and only for each income group is it possible to convert income to a *per capita* basis. Thus the lower groups will contain many single persons having higher incomes *per capita* than have large families in groups higher in the scale. It was a relief to discover, towards the end, that when one uses material which permits a proper *per capita* distribution to be calculated, and compares the results with those obtained on the method used in the book, the difference is not so great as to damage the earlier analysis. Many other gaps and biases are also skilfully assessed, forming altogether an impressive demonstration of how such problems should be handled. Of similar technical interest are the uses of the Lorenz diagram to measure how much inequality *within* groups contributes to the total inequality of distribution.

Although returns for the non-specialist diminish quickly thereafter, the opening section contains a summary of the main procedures and the most important results. These pages make the book, for any economist, well worth borrowing.

DUDLEY SEERS

New York.

Il Monopolio nella Teoria Economica. By S. LOMBARDINI. (Milan: Società Editrice "Vita e Pensiero," 1953. Pp. 317. L. 1,700.)

THIS book is a survey of the theory of the firm in conditions of imperfect competition, designed as a step towards a view of the economy in both its structure and development. The treatment is ample and extensive, allowing the author to develop his own original framework and contributions, and to comment fully on the work of others. He starts with a long and interesting historical introduction and passes through problems of definition, short-run models, growth of the firm, issues of new entry and strategy, to dynamics and welfare. His method is similar to much that has been written on the theory of the firm; it does not lie in the field of inductive investigations, nor in that of neat analysis by a model, or models, but in a sort of territory between the two, with some simplified models, seizing on particular aspects, followed by generalisations about behaviour, probable courses of growth, and possible alternative policies and results.

In his short-run equilibrium theory special attention is given to those features of the situation which give rise to kinks in the demand curve round the existing price and output position: those factors, that is, making for

price rigidity. (Part of this analysis is available in English in *Monopoly and Competition and their Regulation*, reviewed in a recent issue of this JOURNAL.) The first kink arises from the probability that any suspicion in a businessman's mind that the prices at which he can sell different outputs will be lower than his estimates will increase the more he moves away from his existing position. The slope of the "expected" demand curve, on the basis of which he will adjust policy, will therefore be greater to the right of the existing position and less to the left than it would otherwise be.

There may be a kink of an opposite kind (pointing towards the horizontal axis) in the demand curve of a firm which has competitors; a rise in price may only drive off the firm's own marginal customers, whereas the firm may gain the marginal customers of a number of other firms by a reduction in price. The result is that there are likely to be three intersections of the marginal cost with the marginal revenue curve, and the firm is faced with a choice between a low output, exploiting consumer preference for its product to the full, and a high output, competing with its rivals, if its existing position does not yield the highest profit.

Thirdly, there is the well-known likelihood of the reactions of rivals leading to the opposite kind of kink in oligopoly.

The treatment of the cost curve is also interesting, since depreciation is separated out from fixed costs (those remaining being associated with the "organisation" of the firm) and made, except for some cases, a function of output. The author argues that the contribution of a certain period to the reconstruction of the efficiency of the plant will be influenced by the "horizon" of the entrepreneur, and will be greater when business is good, and vice versa. In most cases output can be taken as an index of business conditions. This seems plausible, but when a cost curve formed in such a way is used as one of the elements in the determination of price and output doubts arise. In good times it is more likely to be the case that high demand with a particular price policy permits a high provision for depreciation, than that high provision is a factor in the formation of the particular price and output policy. In bad times the decision to be satisfied with little provision may, however, allow a particular price and output policy.

It is impossible to mention more than one or two of the many interesting issues raised in going beyond these short-run models. Professor Lombardini is convinced that the internal forces moulding the behaviour of monopolistic firms have an important influence on the structure and growth of the whole system. In the growth of the firm itself he thinks it is possible to distinguish two phases; one of initiative, output expansion and active search for profits; the succeeding one of defence, product differentiation, development of other products, measures to restrict entry and advertising. Firms take account of long-term demand conditions from the start, so that excess capacity is not an important consequence of monopolistic competition. He takes a rather pessimistic view of effects on the dynamics of the whole system. Variation in tastes and costs will tend to induce smaller changes in output than if conditions were competitive. Thus growth may be held up

by failure of the capital-goods sector, which is likely to be strongly monopolised, to respond to an increase in investment demand, and the effect of a public works programme on activity and employment may similarly be lessened.

Altogether Professor Lombardini has produced a stimulating review of a wide field.

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The Control of Public Expenditure. Financial Committees of the House of Commons.
By B. CHUBB. (London: Oxford University Press, 1952. Pp. viii + 292. 25s.)

MR. HERBERT MORRISON, in his recent *Government and Parliament*, insisted on our admitting what we all knew to be true but were somehow reluctant to concede: that British government is expected to be, and is, front-bench government. The Comptroller and Auditor General, more slightly but with an equal authority, has lately added the financial clauses to Mr. Morrison's bill:

"The financial conscience of the nation which, so far as one can gather, was in Gladstone's day shared broadly by the whole House of Commons, is now largely the prerogative of the Crown and the Executive." (Sir Frank Tribe, "Parliamentary Control of Public Expenditure," *Public Administration*, Vol. 23, Winter 1954.)

In one sense, that of the determination of the main lines and quantities of public expenditure, Parliament has lost control entirely. There is, in fact, a "growing tendency of Members of Parliament to try to bring pressure on the Government to spend more and more." Nevertheless, in the other sense, that of "audit" and—a peculiarly British institution—"accountability," the power of Parliament is maintained as strong as ever:

"It is remarkable how back-benchers of all parties still retain the time-honoured tradition of guardians of the public purse if there is the slightest suspicion that the Government are failing in any way to secure complete Parliamentary authority for every penny spent."

It is in this peculiar context, of front benches and back benches, estimates and appropriations, committees successful and committees failed, then, and in no simpler analyses of private and community preferences, that explanations for the scope, scale and efficiency of public expenditures are, if anywhere, to be found. At this point, therefore, it is a pleasure to return to Mr. Basil Chubb's *The Control of Public Expenditure*, a book which this reviewer first enjoyed reading in 1952, but without then paying the price of the review which was due for the privilege.

Mr. Chubb's book is strictly defined on its title page. Its concern is with the financial committees of the House of Commons. These are treated exhaustively: the Public Accounts Committee, evolved that the Commons might use the knowledge thrown up by the developing processes of appro-

priation, Exchequer control and audit, and until 1912 their only means of so doing; the Estimates Committees of 1912-14 and 1921-39, which attempted the impossible and failed; the National Expenditure Committees of war-time, which pointed the way to more efficient methods of working; and the present Estimates Committee, whose merits and limitations lead easily on to a general discussion of what is needed to-day and what particular improvements might be made. There is no discussion of the grand questions—the amounts of taxation and expenditure and the objects to which public money should be applied. It is an examination of how the House may “ensure that the policy which, though it is the government’s in origin, it endorses and makes its own, shall be carried out accurately, faithfully and efficiently.” This examination is thorough and complete, even to appendices which record committee meetings per decade since 1870 and the arrangements around the table at sessions of the P.A.C. Furthermore, it is most readable.

What of Mr. Chubb’s conclusions? “If history and analysis bear witness to the success of the Public Accounts Committee,” he writes, “they show equally its limited field of action.” The P.A.C. is successful as *an accounting control*, and an accounting control alone neither prevents the waste of public funds nor guarantees the value for money in government purchases. “The story of the Estimates and Expenditure Committees is, therefore, the story of the House of Commons’ efforts to *extend its control*.” Mr. Chubb is confident that the House is right, both in the role it thus takes upon itself and in its mode of discharging it. The effect of committee investigation, he avers, should stimulate not reduce, ministerial responsibility. Question time and “a short, sharp, vigorous debate on the Adjournment” are no substitutes. Neither, at the other extreme, are expert inquiries by a commission or by a paid officer. Mr. Chubb is also satisfied that the lines which our so-called Estimates Committee has now got on to are the right ones. It is a select committee, made up of members of the House, but it should not, and does not, rely on the Estimates alone. They are only one, and a very limited, source of information. The sting is in Mr. Chubb’s tail. If full opportunities for testing efficiency of operations were being operated *by the departments themselves*, new sources of information for the select committee would become available.

This is one of the best books in public finance published since the war.

R. C. TRESS

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The National Income of Nigeria 1950-51. By A. R. PREST and I. G. STEWART. Colonial Research Studies, No. 11. (London: H.M. Stationery Office for the Colonial Office, 1954. Pp. 124. 8s. 6d.)

THIS excellent study will be useful and stimulating not only to those focusing on Nigeria itself, but to all concerned with national accounting for under-developed areas. It has the merit of aiming at a comprehensive set

of statistics rather than at a few broad aggregates, and gives ample notes on the sources and methods used. While the whole does not add up to a complete and articulated set of national accounts, it contains the greater part of an accounting system, with quite full detail on the various transaction flows. The gross product of Nigeria is presented in a breakdown by final expenditures as well as by industrial origin and a beginning is made to an income shares breakdown, though the latter necessarily includes a large unclassified segment of income of farmers, small traders, artisans and a host of minor occupations. In addition, accounts are given for the various levels of government, and for the balance of payments, while a detailed reconciliation is provided between the domestic and the national products. The statistical presentation is completed by a regional distribution of the gross product in both its industrial and expenditure breakdowns. There is evidence throughout that the authors have been painstaking and imaginative in sifting available sources of data and in supplementing them by information they obtained in the field.

Apart from the statistical presentation itself, the volume contains four chapters or sections which should be mentioned. These are a provocative introductory discussion of conceptual matters, a concluding analysis of the results, an appraisal of the accuracy of the estimates and a section on suggestions for further work. I liked the latter three of these very much, but must confess to considerable irritation with the first.

To work off my irritation first, this arises not so much because of disagreement with the novel treatment of a few conceptual points which the authors appear to find necessary to fit the conditions of an under-developed country. It is rather the general tone of the chapter, a persistent straining to emphasise the economic peculiarities of under-developed countries which, we are led to believe, ought to affect the basic concepts of social accounting—but then which don’t affect them. I am quite ready to welcome any changes in western conventions to adapt social accounting to other types of countries. But apart from the need to impute a larger part of productive activity and to add a few items of imputation, I have never seen a demonstration of what these changes should be.

Certainly there is a streak of obscurantism in what we are treated to by Dr. Prest and Mr. Stewart. They say, for example, that the distinction between production and living is often nebulous in Nigeria—but give no hint of its implication. Or, they ask if payments to beggars are really transfers when begging is a “profession” and there is a strong social obligation to give—but then treat them as transfers. Then they say, in the incomes derived from farming, trading and other small-scale enterprises of Africans, any distinction between incomes from work and from property is impossible—as if this were possible for similar enterprises in advanced countries. They also seem to find it peculiar that “even when we can sort out property incomes a fine division between profits, interest and rent is often meaningless.” And, for a final example, they find that, although direct tax obligations are a small percentage of total income for most Africans, the concept of

disposable income as a whole, and, *a fortiori* any individual's disposable income, must inevitably be shadowy and ill defined because of the social obligations to support dependent relations, ill-prospering members of the tribe and professional beggars. Most readers will surely envy the authors their apparent immunity from corresponding social sanctions on the spending of their disposable income in a "developed" country.

Let me emphasise that the authors do not let such foibles interfere with their practical work, which is based almost entirely on standard concepts, and that their treatment of particular conceptual problems such as dual-nationality companies, government institutions operating partly in London and balance-of-payments issues is quite sensible. However, a few changes from standard practice they introduce to adapt national accounts to Nigerian conditions leave me unimpressed. I am not convinced by their arguments that imputed food consumption should be valued at retail rather than farm prices, nor that export taxes should be considered government property income rather than indirect taxes. I violently disagree, as I have argued elsewhere, that housewives' general services of cooking, cleaning, child bearing, child minding and the like should be considered economic activity—or that their value should be measured by the annual sums paid over in bridal prices. Further, I do not see in what sense the gross domestic product is the most appropriate single aggregate for use in Nigeria, but agree with the authors' actual practice, which is to compute the national product as well.

The other three sections of the volume noted above, must be warmly recommended to all readers. The fact that income per head is shown to be very substantially higher than previously believed and that the gap between the domestic and the national product is quite narrow are only the most striking conclusions. The appraisal of reliability has the merit of being done in detail, while the suggestions for further work are both constructive and practical. They cover not only national income work but also the broader aspects of basic economic statistics, and should be useful to other under-developed areas as well as to Nigeria.

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Die Nachfrage nach Nahrungsmitteln und ihre Abhängigkeit von Preis- und Einkommensänderungen. By H. GOLLNICK. (Hamburg and Berlin: Paul Parey, 1954. Pp. 110. DM. 5.)

THIS volume, though somewhat slim by recent standards, represents a notable contribution to the field of demand analysis. It is based on a study of some 135 Hamburg families who returned accounts of their household expenditure, month by month, for the period of a year between August 1949 and July 1950. Using the now well-established methods of Schultz, Stone and Wold, the author obtains estimates of income elasticities, own-price

elasticities and cross-elasticities for a group of five foodstuffs: eggs, butter, margarine (including cooking fat), cheese and meat.

The main novelty of the method is that estimates of price elasticities are derived from observations extending over such a relatively short period of time. The variations in prices to be found in a year necessarily contain a very high proportion of seasonal elements; for the most part it is these that determine the value of the estimates obtained in this study.

Seasonal movements have this peculiarity: while they are of an essentially short-term nature, they are generally anticipated by consumers to a substantial extent. The housewife bottles plums during the glut, and when they are scarce she is able to reduce her demand and benefit from her forethought. The consequence of this is that the accompanying seasonal movements in quantities purchased show rather wider variations than would be in the case if the price movements were not anticipated. It is not therefore altogether surprising that Dr. Gollnick's estimates of various elasticities are rather higher than those obtained in studies based on year-to-year variations in prices. For example, for the own-price elasticities of eggs and butter, Gollnick finds for both commodities values in the region of -2.0 to -3.0 ; whereas Stone *et al.* in their recent United Kingdom study of the inter-war period find values in the region of -0.4 . Whether the higher or lower estimates are the correct ones for use in a particular problem must depend on the circumstances of the problem; demand for a commodity may be elastic in the short-run but inelastic in the long-run. It is only by carrying out more (and, especially, more varied) studies of demand that a fuller quantitative picture can be built up of its very many determinants and their varying effects over time.

Other interesting features of the study are that the calculations have throughout been carried out separately for five income groups; the use, in estimating price elasticities, of average prices paid by the consumer instead of the prices of standard varieties of the commodity (a higher average price paid may only indicate the purchase of a better quality of the commodity, and this is therefore not an entirely satisfactory procedure); and the fact that of the various cross-elasticity estimates very few seem to satisfy the Slutsky equation.

Despite a substantial number of diagrams, statistical tables (including the basic data) and mathematical symbols, the booklet has been produced at a commendably low price.

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Monopoly and Competition in Banking. By D. A. ALHADEFF. (Berkeley, California: University of California Press (London: Cambridge University Press), 1955. Pp. 294. 34s.)

THIS book is mainly devoted to a study of the banking system in California, and in particular to a comparison of the four banks with branches with unit banks in that state. Methods of analysis made familiar by W. L. Crum
No. 258.—VOL. LXV.

show how the assets structure and earnings of these banking corporations vary by size and type of bank.

Many points of general interest emerge from this analysis. There is an excellent and timely dissection of customer loan rates showing how they vary from the low rates charged to large customers, for some of whom the open market in commercial paper is an alternative source of funds, to the high rigid rates charged to small borrowers in small country towns. It is noteworthy how the variations in prime loan rates with other short-term interest rates, such as the Federal Reserve rediscount rate, commercial paper and Treasury Bill rates, are not matched by any apparent variations in rates for small loans. But Mr. Alhadeff does not pursue the question as to whether the volume of such small loans shrinks when money becomes tight—whether, in other words, such customers suffer from rationing of credit. He seems to overestimate the importance of the fact that such small borrowers are in a weak bargaining position having no other adequate source of funds available and to underestimate the costs involved in making small loans. For his statistics show that the smallest size class of unit banks which earned a high rate of interest on their loan portfolios (of small loans) earned a low rate of return both on their total assets and on their own capital (Tables 26, 30 and 31).

It is clear that the profitability of branch banks when compared with all unit banks is due to their ability to economise on liquid low-yielding assets. For they obtain a higher rate of return on total assets and on their capital from a lower average yield on loans and investments. If the yield on loans be regarded as their mark-up, they can be described as efficient low-cost producers.

More detailed comparisons between branch and unit banks are tricky because the unit banks most nearly comparable to the branch banks on a size classification are the largest city banks doing a significantly different business. This surely accounts for the conclusion—which Mr. Alhadeff finds curious—that the average loan rate of the branch banks—with their substantial small country town, small loan business—is above that of the biggest unit banks lending mainly to large city borrowers.

Ideally one would like to know how the earnings and charges of that segment of the unit banking structure displaced by the branch banks compared with their supplanters. Such statistics are, of course, not available; but an approximation that might well be pursued further is a comparison of branch and unit banks on a portfolio rather than a size-group basis, e.g., of a branch bank with a loan portfolio yielding 5% with a unit bank with a similar portfolio, on the assumption that the rate of interest charged is a reasonable indication of the type of lending carried out. (It is clear that branch-bank competition does not take the form of direct cutting of loan rates.) Then in addition to showing that the trend towards large-scale branch banks in California has apparently not reduced the number of bank offices, nor the volume of loans granted, it is probable that the economies of branch banking would emerge more clearly.

Some conclusions need to be checked by further sample studies; for this small sample of branch banks has certain obvious peculiarities. One is that the largest branch bank is the one with the most small-town, small-loan business, which the author tends to accept rather too readily as a basis for generalisation. Now whereas given legal geographical limits to maximum branch banking areas it is quite natural for branch banks first to expand in large cities, and then, when already large, to push out into rural areas; it is also quite conceivable that a small branch banking system could be built up mainly on a rural basis, or a large one by concentrating on a few large towns.

That it raises fresh questions while answering others is a good indication of the value of this book to those interested in the economics of banking.

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The System of Industrial Relations in Great Britain, its History, Law and Institutions.
Edited by A. FLANDERS and H. A. CLEGG. (Oxford: Basil Blackwell,
1954. Pp. v + 380. 30s.)

THIS book has been written as a text-book to serve the needs of teachers and students of industrial relations—a field of study which has developed both inside the universities and extra-murally to a considerable extent since 1945—and they will welcome it as a very useful contribution. It would, of course, be extremely difficult, if not impossible, to provide a fully comprehensive treatment of every aspect of industrial relations in one volume, and the editors have restricted the scope of the six contributions to studies largely about the growth and functions of the institutional framework. Every reader will have his own idea of what ought to be included in a book of this kind, and some may cavil at the omissions. The editors defend their choice of approach to the subject on the grounds that it is through the institutions that industrial relations are conducted. Since, however, “institutions are not separable from their history,” the way in which they have developed forms the main theme of each contribution, and the first section of the book is devoted entirely to an historical survey of the social background to the evolution of “the system of industrial relations.” This is followed by an analysis of the legal framework; the structure and government of trade unions; employers’ associations; collective bargaining; and joint consultation.

The organisations, rules and procedures, agreements and conventions which constitute the system of industrial relations are a manifestation of what has been described as Britain’s greatest contribution to civilisation, the rule of law. The preference displayed by the British people for the orderly conduct of their affairs and their hatred of anarchy or arbitrary rule can be clearly seen in the field of industrial relations, but this preference has not resulted in an overwhelming reliance on the power of the state. Employers

and workers, Parliament and the courts have sustained by their attitudes and policies the general principle that good industrial relations are best achieved by collective agreements arrived at between autonomous groups. The nature of the British system of industrial relations is perhaps most vividly illustrated by contrast with the American system. There the trade unions rest to no small extent on the basis of legal protection; collective bargaining takes place under the protection of far-reaching legal regulations; and the most important principle followed in negotiations is "to get as much as possible into the contract." In Britain, as every chapter in this book brings out, legal compulsion has been kept to a minimum, and the gentlemen's agreement has a large and vital place in the pattern of industrial relations.

However, whilst the primary emphasis here is on the voluntary agreement, custom and practice, industrial relations are not, of course, conducted in a legal vacuum. The part played by the legislature and the courts in regulating the behaviour of employers and employees cannot be ignored, and the chapter which deals with the legal framework is perhaps the outstanding contribution to this book. Professor Kahn-Freund has given a brilliant account of the way in which the law has been adjusted to meet the growth of trade unionism and collective bargaining, and of how the courts have managed to recognise social facts without entirely repudiating principles derived from a society which was fundamentally opposed to collectivism in economic affairs.

The evolution of the structure and pattern of collective bargaining, traced by Allan Flanders, again exemplifies the uniqueness of the British system of industrial relations. The development has been aided in important respects by government intervention, but the state has not usurped the functions of the unions and employers' organisations. Contrary to the expectations of the Webbs, the unions have not sought to use their political power to secure the legal enactment of the common standards of employment secured by collective agreement. Far from looking to the state, both unions and employers have preferred to depend upon their own strength, except in those circumstances when the voluntary system was clearly proved inadequate. The voluntary system of collective bargaining is not, however, without weaknesses. Its evolution from local to centralised negotiations has been "good for some things" but "bad for others." Inevitably negotiations now often appear remote and complicated to the rank-and-file members of unions; issues of importance at the workshop level do not receive the same degree of attention as those of national significance. The result has been to promote, on the one hand, apathy, and on the other, unofficial local action. Though Mr. Flanders has, in his own words, "only touched lightly on... the future of collective bargaining," he is surely right in insisting that it must become "more flexible so that agreements are concluded with a coverage appropriate to their contents." What has to be decided is "what is the concern of society as a whole, what should be settled on an industrial scale, and what is the affair of the employees in a single enterprise or a smaller group within it."

A good deal of information already exists about trade unions, but Mr. Bell has given a fresh and readable account of their growth and functions. Little or nothing, however, has been written about employers' organisations, although they now cover the bulk of British industry. Mr. Clegg's explorations of this *terra incognita* have yielded interesting results, but one feels the need for a full-length study of these institutions. Indeed, it is difficult to avoid this feeling about a number of the sections of the book, and it is a tribute to the authors that one looks forward to the expansion of the chapters into books.

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Centralization and Decentralization in Industrial Relations. By H. BAKER and R. R. FRANCE. (Princeton: Industrial Relations Section, Princeton University, 1954. Pp. 218. \$4.)

I SUPPOSE (if one may begin with a cry of envy) it is significant of the resources American Universities are now prepared to devote to inquiry into industrial relations that a considerable effort should in this case be devoted to what might here be regarded as one of the subject's *minutiae*. This study represents the findings of an inquiry among 135 United States companies employing 20% of workers in American manufacturing industry. Four of these companies, with 140,000 employees, were made the subject of "case-studies." Another forty were submitted to (quite elaborate) questionnaires and interviews. The remainder were let off lightly, with a mere correspondence and "short" questionnaire, but officers of seventeen trade unions were also interviewed.

The aims of the inquiry were, however, modest. Each of these companies was notable for owning a number of separate plants—in some cases, more than fifty. The study's purpose was to discover whether, in these cases, decisions on such matters as wages and working hours, promotions and dismissals, pensions and other conditions of employment, were made at the level of the individual plant or by the company's head office. It particularly aimed to discover the advantages and disadvantages of these alternatives, and the views of managements upon them. It is no doubt also significant of the value attached to administrative researches by American industry that the investigators secured such a wide co-operation.

If the inquiry's aims were modest, however, so also is its manner. It mainly confines itself to orderly *présis* of managerial statement and opinion. Indeed, its pursuit of detached presentation has involved the suppression of detailed illustration and incidental comment to an extent that makes it rather formal than lively. Beyond their cautious conclusions as to trends, the most the investigators permit themselves by way of remark is to proffer some final advice (clearly informed by current concepts of industrial psychology) on how directorates may best achieve decentralisation—or, alternatively, be centralised without depriving local managers of a sense of responsibility.

The conclusions themselves are not much concerned with the advantages of dispersed or concentrated authority as such, since centralisation or decentralisation in a company's handling of "employee questions" is, it seems, quite compatible with an opposite arrangement of its other functions. As a comment on the controversy of principle, however, it is interesting that whichever policy directors had favoured, they were largely of opinion that it had no important effect, for good or bad, on their own firm's relations with its workers.

Otherwise, the study's conclusions are much what one might expect: different companies have different preferences; centralisation (or decentralisation) is good in some ways and bad in others; there is more centralisation in the handling of some matters than of others; in some respects companies cannot choose, because centralisation (or its opposite) is thrust upon them by the other bodies with which they have to deal—and particularly by trade unions. And so on.

To those concerned with the general analysis of industrial relationships, however, perhaps the most interesting of the study's revelations are those it makes in passing or by implication. First, it seems clear that, in practice, the issue with which it is concerned is really the extent to which local or subordinate managements may interpret their firm's policy without reference to headquarters: nearly all companies thought it necessary to have an explicit and centrally-determined policy to *govern* such detailed decisions. Second, and even in the last respect, there seems a trend to centralisation because of the risk that local decisions may involve firms (by way, for instance, of arbitration appeals) in issues of general principle. And third, there is a conflict of preaching and practice: most directors are in favour of dispersing responsibility; but comparison with past studies of their companies confirms an opposite trend.

Much attention has been given to the effect of *trade unions'* "institutional" necessities upon their wage-policy. The trade unionists consulted were predominantly in favour of "company-wide" or even "industry-wide" bargaining: and it is clear that their insistence upon uniformity between a firm's different plants was an important factor in the trends to centralisation. But there were also cases (I suppose where plants were organised by different unions) where they actually obstructed the firm's *own* desire for uniformity—which it was able to implement for its unorganised salariat. It is curious that the "non-economic" factors in *firms'* wage-policies should have received so little American study. Where collective-bargaining is still quite largely conducted with individual plants, but where the latter's ownership is heavily concentrated, such factors may have a normative influence equal to those pressing upon trade unions. In Britain collective agreements are more widely cast: but the fact that large companies are often party to several distinct "industry-wide" agreements certainly influences the latter's common adjustment.

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The Department Store, its origins, evolution and economics. By H. PASDERMAJIAN (London: Newman Books, 1954. Pp. 217. 16s.)

THIS book is of considerable interest, both to those who are engaged in trade and to the student of applied economics. *The Department Store* is not only a study of the origins and evolution of the department store but is also an essay in the dynamics of retail competition. The late Dr. Pasdermajian was General Secretary of the International Association of Department Stores. He begins his history of the department store with its formative years (1860–80) when this new form of retail organisation threatened established traders by selling, under one roof, at prices "usually from 15 per cent to 20 per cent cheaper than the remainder of the retail trade" (p. 10) goods that had previously been available only in a number of specialist outlets. "The department store swept across the Western world" (p. 7) in the course of a few decades. It "democratised luxury." By using new principles of commercial policy and, in its formative period, by reducing distribution costs, it placed within the reach of the public a whole series of articles which had, until then, been reserved for the well-to-do.

The new principles were first, the substitution of fixed prices, at any one time, for individual "higgling" and, secondly, the principle of "free entry" into the store, that is the admission of shoppers without any feeling of obligation to buy. The adoption of these principles was necessary to any form of large-scale retailing, since management could scarcely delegate to shop assistants the authority to fix prices, and free entry was necessary to the expansion of sales. In addition to these were added two further principles: first, the so-called "departmental principle" of stocking a variety of merchandise under one roof, and secondly, the principle of concentrating on a rapid stock-turn at low gross margins, reinforced by periodical "sales."

Dr. Pasdermajian is concerned to show that a particular set of historical circumstances made these important innovations possible. He attributes major importance to two factors which increased the potential extent of the department store's market, the rise of the middle class during the nineteenth century and their increasing wealth, and also the provision of means of public transportation. In addition, two technical developments occurred at the strategic moment, the invention of lifts and of plate glass in the later nineteenth century; the former facilitated the use of cheaper upper stories (the "occupancy factor" to which so much importance is given by historians of the department store) and the latter facilitated the essential possibility of display.

During the second period (1880–1914) the department store reached its full stature. But the growing influence of competition from two directions threatened the erstwhile innovators. First, other forms of retailing progressively adapted to their needs many of the innovations of the department store, and, secondly, competition among department stores themselves was intensified and brought about a shift to forms of non-price competition which tended to raise operating expenses. This trend made department stores, themselves typically small-scale *buyers*, vulnerable to the price competition of the chains

which was based to a large extent on the economies of large-scale buying and of the sale of merchandise with a rapid turnover. The third period (1920-40) is therefore referred to as a period of "endurance in adversity" from which the war-time and post-war inflationary conditions have offered a temporary respite.

Dr. Pasdermajian concludes with a penetrating analysis of the dilemma facing the department stores to-day: summed up, it amounts to the forcible threat of competition in the retailing of dry goods by the unit-price chains and the multiples. He suggests that the way for the department stores to meet this threat is, first, by adapting price policy to take some account of the cost of selling—to compete in terms of price with the chains in merchandise where the turnover is rapid, and to upgrade luxury or non-standardised merchandise where the selling effort is disproportionately large and where, for that very reason, the chains are not engaged. Secondly, to make more use of pre-selection, by turning over to the shopper more of the job of retail selection, with consequent economy of operating cost and apparent increase in satisfaction for the consumer. Thirdly, by forming department chains, or even without financial integration, by forming retail buying groups to secure the competitive advantage of large-scale buying already accessible to the chains. Finally, he advocates, without any caveat, association among department stores with a view to limiting "harmful" competition—for example, to limit the amount spent on advertising or to obtain collective agreements to impose an extra charge for charge accounts and for delivery. These latter recommendations seem hardly appropriate to the American position against horizontal combination. Dr. Pasdermajian also feels that department stores should reconsider their position on resale price maintenance which they may come to welcome. It is surprising in these circumstances to be told (p. 118) that in retailing "monopolistic or quasi-monopolistic situations are unknown."

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MARGARET HALL

Standard of Living. The concept and its place in economics. By HUGO E. PIPPING. (Helsingfors: Societas Scientiarum Fennica, 1953. Pp. 280. Mk. 1400.)

WHEN we come across different ways of life, we sometimes grow dissatisfied with our lot, and are stirred by new desires. The contact that economists have made with the ways of life of different countries, and with the methods of other human studies, has aroused their dissatisfaction with traditional ways and has led to calls for revision. Thus we now are ready to allow that a man's past consumption, and the consumption of other people, may influence his current needs; that not only the goods and services which he demands depend upon time and other people's consumption, but that tastes themselves are socially interrelated. Professor Pipping's book is a

symptom of the external diseconomies created in economics by anthropology, sociology and psychology (particularly in its *Gestalt* version, p. 59), and a challenging contribution towards satisfying the newly stirred up desires.

The task of the book, in the words of the author, is "to prove that instead of starting from unmeasurable, undivisible, incommensurable, timeless wants we should use *standards of living* as our basic concept in the theory of consumption" (p. 73). "Standard of living," on Professor Pipping's definition, includes much more than consumption; it comprises choices relating to the size of the family, to leisure and work (as well as the conditions of work and the security of employment) and to savings. Professor Pipping rejects the view that consumption alone is the aim of economic activity, and the assumption that people attempt to maximise satisfactions. He suggests that we should substitute both in positive and in welfare economics for wants and satisfactions his concept of the "standard of living" (comprising the four standards of consumption, leisure and working time, family, and savings) and claims that this substitution would yield a desirable link between economics and sociology, a more realistic analysis and a more concrete basis for policy recommendations than either marginal utility or indifference analysis.

Much of what Professor Pipping says is convincing, although strict adherents of utility or indifference theory would claim that most of his objections can be, and have been, incorporated in their analysis. A more appropriate complaint is that he does not conduct his criticism consistently. Professor Pipping's central thesis is that the goal of economic activity is to improve standards of living (p. 247), neither to improve consumption only, nor to maximise satisfactions. But what is his criterion for a better standard? Professor Pipping tries to remain neutral. (He repeatedly insists that there are no economic ends, in spite of his own argument that ends and means cannot be separated in this field [Ch. I. 4]). That rather spoils his game. The better standard is that which "society" values more highly (*e.g.*, p. 216). Many would agree that social valuations are, for some purposes, a better starting point for welfare economics than indifference curves. J. M. Clark has suggested Justice Holmes' "the settled judgment of the people." But Professor Pipping's criticism of utility theory can be applied to his own proposals. To take "society's" valuation as *given* is not only uncritical, but ambiguous to the point of vacuity. Are we to take fully informed valuations, or actual judgments based on error and ignorance, inertia and habit? Are we concerned with professed valuations or actual practice; with rationalisations or behaviour? What channels are we to use to ascertain society's judgment: representative government, the market or public-opinion polls? If we take prevailing conditions as manifesting actual valuations ("given valuations" in one sense—which Professor Pipping seems to have in mind when he says that attractiveness of standards can be "proved behaviouristically," p. 203) we should remember that these are often criticised by society in the light of some standard ("given valuations" in another sense). This standard, in turn, can be measured against a more ultimate moral standard ("given

valuations" in yet a third sense). To say, as Professor Pipping does, that he is concerned only with the actual, not with the ideal, is no answer to these questions.

Sometimes one gains the impression that Professor Pipping has in mind a strict hierarchy of ranks, on the order of which all are agreed. But what if different groups value these standards of living and the rank and status that go with them differently? Our need to justify ourselves makes us often prefer what we do, perhaps even more than our need to satisfy given wants makes us do what we prefer. We like to invoke the assent of a social or moral principle for what we are compelled to do. If consumption alters wants (as Professor Pipping often reminds us), it is surely also true that enjoying a standard of living alters our attitude to it.

On several other occasions, Professor Pipping can be hoist with his own petard. His discussion sometimes suffers from the attempt to fuse different points of view to the point of confusion. He argues (pp. 63 and 67) that wants are not comparable between individuals and that therefore there is no economic argument for a more equal income distribution and, in the same breath, that different incomes "correspond to an unequal distribution of wants themselves" (p. 67)—hoping to use this inequality of incomparables to vindicate the inequality of the *status quo* (p. 249). Yet, in spite of these faults, the book is a stimulating criticism and suggests new ways of looking at old problems.

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PAUL STREETEN

The Age Structure of the Corporate System. By W. L. CRUM. (Berkeley, California: University of California Press, 1953. (London: Cambridge University Press, 1954.) Pp. ix + 181. 26s.)

THE statistical techniques now universally accepted for describing and forecasting the age structure of the human population were the outcome of a long period of growth and development, during which investigators tried, on the one hand, to devise methods so as to utilise more fully the existing fragments of information, while at the same time they pressed for more comprehensive, detailed and accurate data. Up to the present, however, no large scale attempt has been made to apply similar techniques to the production of vital statistics for the population of business units, even though similar concepts to those of birth, death, morbidity or even marriage can be suitably applied to individual corporate and incorporate businesses. Professor Crum has now shown himself to be the pioneer in this field, and in common with the early demographers has had to apply his ideas and methods to very incomplete data. The resulting study, therefore, while interesting as far as the methodology is concerned, is somewhat inconclusive from the economic standpoint, owing to the limitations of the basic material. It consequently provides a very strong case for the future production and publication of a more complete body of such statistics, both in the United States and elsewhere.

This study was made possible by the recent publication of a new body of statistics by the United States Treasury, giving for 1945 and 1946 the distribution of nearly half a million corporations active in those years, according to their date of incorporation. This has enabled the author to determine the age structure of this important sector of the economy, age being based on the length of time that each of these corporations in their present form have spent in the corporate sector, and not, as would be more significant, according to their length of operation as business units. The factor of age is then considered in relation to size, type of industry, profitability and history prior to incorporation, with the stated intention of attempting to establish the relationship between these factors, and to consider the economic implications of these findings and their relation to private and public policy affecting corporations. A final section dealing with changes in the corporate sector presents some limited inferences about birth- and death-rates obtained by the joint use of the data for both years.

The main conclusions which emerge are: first, that young corporations vastly outnumber the old; second, that the young are on the average much smaller than the old; third, that the age structure varies more within the major lines of industry than between them; fourth, that the young are more likely to suffer losses than the old; and finally, that a substantial fraction of recent incorporations represents completely new enterprises, and that these truly new corporate enterprises are more likely to suffer losses in their early years than those new corporations which have had a previous existence, either in another corporate form or as a partnership or sole proprietorship.

None of these conclusions is at all surprising, but surely it is valuable to have at last some statistical evidence to support that which everyone has suspected to be the case, not only in the United States but in all other countries where important sectors of the business world are organised in a corporate form. How much better off we would be in our understanding of the structure and operations of the United Kingdom corporate sector, with its quarter of a million public and private companies, if it were possible to obtain even a rough picture of its age structure from the records of the Registrars of Companies!

The disappointing part of Professor Crum's treatment is that he confines himself almost entirely to arranging the data in such a way as to establish these fundamental conclusions; with constant references to the limitations of the data, he refrains from attempting any further statistical inferences. A less cautious approach might have resulted in the discovery of more detailed relationships between the various factors under study, and at the same time an attempt could have been made to explain why the various relationships are what they are. A further chapter, assessing the relevance of the data as far as public and private policy is concerned, would have been most valuable, for although some suggestions as to the possible use of this system of analysis are to be found hidden among the detailed descriptions of the statistical manipulations, no clear picture emerges of the way in which this new tool could be used in economic analysis.

This book will be of primary interest to those specialists engaged in examining the structure of the American business sector, for by far the greater part is taken up by the detailed description of the data and of the methods by which the final figures are produced. However, it should also stimulate an interest in this kind of approach among those economists and statisticians in other countries who are trying to learn more about the organisational structure and working of their respective economies.

Two things need urgently to be done: first, the purpose of this type of analysis needs to be more closely defined, and second, the appropriate authorities need to be persuaded that the publication of the vital statistics of registered business units should be one of the products of the system under which these units are registered.

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The Foundations of the Australian Monetary System, 1788-1851. By S. J. BUTLIN. (Melbourne: Melbourne University Press (London: Cambridge University Press), 1954. Pp. v + 727. 57s. 6d.)

THIS judicious, scholarly book will be of value to many different readers: to historians of Australia and of British colonial development; to economic historians; and to all interested in the growth of currency and banking systems. From this last point of view only can this reviewer seek to appraise it.

Professor Butlin gives a fascinating account of the growth of the Australian monetary system from scratch. For his story opens: "The equipment of the First Fleet did not include money. . . . The colony was to be a special kind of prison and prisons do not require a monetary system" (p. 12). In one respect the subject matter is simplified: geography provides a clear division between the colony and the rest of the world; but in others it is most complex. Indeed, it demands great skill to expound the vagaries of an economy lacking good money and using such a variety of substitutes for money as rum, wheat, tobacco, sugar, tea, depreciated copper coin, ducats, pagodas, gold mohurs, holey dollars, Paymaster's Bills, Commissary's Bills, private bills and private notes of hand of every description. Professor Butlin manages to give us the detail without obscuring the main pattern of development. In doing so he corrects the exaggerated and partisan accounts of E. O. G. Shann and H. V. Evatt as to the importance of rum; for, as he says, "It is incredible that the most numerous section of the population lived entirely on a diet of rum, and equally incredible that rum should have been used quite so widely when other means of payment were available, less potable but more portable, less liquid but more convertible. . . . The only general rule is that wages were paid mainly in kind and rum was very often a highly desired part of such wages" (pp. 19 and 22).

One important cause of the chronic shortage of good money was described briefly by Macarthur in 1817: "Our chief and indeed almost only export is bills upon the Treasury" (p. 103).

Governor Macquarie—by founding the Bank of New South Wales with a charter conferring limited liability, in defiance of the Colonial Office—provided a splendid illustration of the importance of confidence. For in time the authorities at home had their way and the charter was declared null and void, but, as Professor Butlin says: "Eleven years of supposed limited liability had carried the bank through to a period when the public was prepared to support not merely one but several banks with unlimited liability" (p. 119). This surely is an antipodean story of vintage quality.

While the stormy early years of this bank are clearly described, it would have been helpful had Professor Butlin set himself specifically to answer the question "How was the shortage of good money overcome?" That monetary reforms, the expansion of the colony as a capitalist as distinct from a penal settlement, the import of capital and, finally, the export of wool all contributed, is brought out; but the reader is left in some doubt as to the exact sequence and significance of each of these.

The record of the activities of Swanston, managing director of the Derwent Bank, is of particular interest. For it shows how as investment agent he directed funds from Britain and India into mortgages and purchases of bank shares to finance the first great pastoral expansion of the 1830s. So is the evolution of the banks from reliance on shareholders' capital to reliance on deposits as the most important source of loanable funds during the period 1820-45.

The analysis of the 1841-43 slump provides an excellent illustration of the effects of a period of rapid expansion generating expectations based on a rate of increase of income and profits that could not be maintained. Professor Butlin's argument seems conclusive that in this case at least: "The truth is that the sharp fall in British investment was initiated by bad news of returns in the colonies, and that its role is in greatly accentuating a slump already begun, and so producing the dire disasters of 1842-43" (p. 318). It is noteworthy how the value of wool exports increased through these slump years from £442,000 in 1839 to £686,000 in 1843. The severity of the depression must surely be ascribed mainly to monetary factors. This is not at variance with the contemporary view that: "A more abundant supply of labour is undoubtedly the one great thing wanted in the Colony."

A reviewer must stop; we must hope that Professor Butlin will continue in a second volume.

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Glyn's 1753-1953. Six Generations in Lombard Street. By ROGER FULFORD. (London: Macmillan, 1953. Pp. v + 267. 21s.)

THIS is a pleasantly written account of the history of one of the few survivors of the London private bankers, taken up to the start of the twentieth century. It cannot be pretended that it adds much to our knowledge of the development and history of that mysterious entity, the City, but it provides

some interesting details about its working and some amusing personal anecdotes; it will be read by a larger public for pleasure, rather than by a smaller public for its academic interest.

Glyn's is a particularly interesting example of the London private banker, but probably not a typical one. It was not one of those banks which developed from a goldsmith's business, and it is probable that its interests were always more akin to those of a merchant bank. Thus in the eighteenth century there is considerable evidence of the bank's interest in the finance of industry, notably through its connection with Samuel Garbett and the Carron Iron Works. Like so many other London private banks, however, Glyn's took up the work of acting as London correspondent for country banks, whose number rose so rapidly in Pitt's peace decade of 1783-93. Interesting letters are quoted to show how intimate this relationship was.

The partners did not confine themselves to this line of business, which was a specialisation that was to cost most of the other London private banks their existence as the correspondence system dwindled away. But Glyn's continued to interest themselves in the direct finance of industry and commerce, a notable example being the establishment of the St. Katherine's Dock Company. But this interest became of paramount importance with the development of railway finance.

If initially the impetus for railway promotion came from the provinces, George Carr Glyn, later Lord Wolverton (surely one of the most surprising omissions from the *Dictionary of National Biography*), not only played a great part in railway finance but also became interested in railway operation, and the amalgamation, which led to the formation of the London & North Western Railway, owed much to him.

Nor did Glyn's confine their interest to this country, but played a notable part in the finance of Canada and her early railways, though the account given by Mr. Fulford does not make the details of these operations very clear.

Glyn's was fortunate in obtaining through amalgamation an able recruit in Bertram Wodehouse Currie, who was the dominant partner for the period 1866-96. As Mr. Fulford emphasizes, Currie played an important part—though perhaps not as important as the author suggests—in the Baring crisis of 1890, found £1½ million for the Manchester Ship Canal and was Gladstone's trusted financial advisor. This was the period in which Britain's financial supremacy was consolidated, and much was owed to the unspectacular work, in the background, of men like Currie. At the same time it was clearly he who ensured the continued existence of Glyn's in a London which was fast becoming the preserve of the giant joint-stock companies.

Unfortunately the account Mr. Fulford gives does little more than whet the appetite on these topics. There is a great paucity of detailed figures, and where he moves away from his narrative of the bank into general economic history his judgment, and indeed his accuracy, are far from sound. It may be pedantic to object to errors of detail, but these are far too numerous to be passed over. For example, J. W. Gilbert was not the founder of the Westminster Bank (p. 71), but its first general manager. In 1799 the Bank of

England had no general circulation outside London, and the London private banks had long ceased to issue notes (p. 94). The Bank of England had not the exclusive power to issue notes in the London area—it was the only partnership of more than six that had this power (p. 111), the deliberations of the Select Committee of 1797 did not pave the way for the suspension of cash payments, since the Committee was set up precisely to inquire into the circumstances of suspension (p. 90). Biddle was not the chief cashier of the United States Bank, but its most influential Director (p. 143), and many more examples could be quoted. But perhaps more serious, though this, of course, remains a matter of opinion, is the author's judgment on events and people. His picture of Lord Overstone is not even a caricature of the man—it is a travesty. Lord Overstone, tiresome as one may find his dogmatic views on the currency question, was a very considerable figure, and not a self-seeking speculator, as Mr. Fulford hints. Again, Mr. Fulford on the trade cycle (*vide* p. 188) might have passed muster in an elementary textbook written before 1914, but is scarcely adequate in the light of the very considerable advance in trade-cycle analysis in recent years.

The final impression remains of an interesting subject which has scarcely received the treatment it deserves, and though individual vignettes, particularly of the various personalities concerned, make good reading, the general picture is blurred and unsatisfactory.

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The English Land Tax in the Eighteenth Century. W. R. WARD. (London: Oxford University Press, 1953. Pp. 188. 21s.)

THIS study is the outcome of a thesis submitted for a D.Phil. and cut down to one-third of its length in order to fit into the requirements of the Oxford Historical Series. The result has not been altogether successful, for the compression has often made analysis difficult to follow. This is a highly specialised subject, and other historians will be grateful that this work has been done, for the evidence is of scholarship and painstaking work, as is clear when the original thesis appears *in extenso* or where Dr. Ward is drawing his conclusions from his own work. The political narrative, however, is little more than a chronological account, which is intelligible only to those who understand the nuances of the eighteenth-century political scene, while the repetition of contemporary arguments regarding the desirability of various forms of taxation is so condensed that it often cannot be followed or appears naively conceived. Dr. Shehab, in treating a similar problem for a later period in his *Progressive Taxation*, is much more successful, largely because he was allowed a more generous ration of print. It was too much to hope that in the space of 188 pages there could be an adequate summary of all the topics which Dr. Ward has covered in his thesis, which included an historical survey of the political aspects of the Land Tax and its administra-

tion over a hundred years, the intellectual controversies regarding its place in the revenue system and "a contribution to the social history of the English Civil Service."

Indeed, for the purposes of publication within the specified limits of the Oxford Historical Series, it might have been more satisfactory to have omitted the three political chapters, which would have allowed for the account of the administration, both central and local, to have been given in more detail as it presumably was in the original D.Phil. thesis. Your reviewer has found particular interest in Chapter 8, "The Receivers General and the Balances," and Part IV, "The Receiver in Society," and is in full agreement with the view that too little is known of the ranks of society from which the Land Tax administration drew its personnel—the squires, younger sons of landed-gentry families, attorneys, town clerks and country bankers. Indeed, the country bankers themselves were not a professional class, but drew on exactly the same upper middling ranks of society, whose abundance contributed so much both to the stability of the English political scene, and her vigorous economic growth.

Dr. Ward's thesis is that the Land Tax, with all its defects, saw successive English governments through the vicissitudes of the century, and though initially it was a plaything of politics, gradually it became accepted as an inevitable piece of administrative furniture. As no attempt was made to exceed a 4s. rate, and as the quotas assessed for each county remained unchanged after 1698, the burden of tax lessened, and hence, too, its fiscal effectiveness. Its administration, too, illustrates the amateur nature of the century—self government at the King's command.

The footnotes to this book are copious, and show the wealth of sources consulted, but it would have been useful if some explanatory notes, particularly with regard to individuals, could have been added. The deficiency of the book is that it is a piece of highly specialised scholarship, made more difficult for the general reader, or even the general historian, by the inevitable condensation, but it remains abundantly clear that the author is thoroughly competent to discuss all the aspects of his large subject, and has given us a synopsis of his work in this field.

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The Tools of Social Science. By JOHN MADGE. (London: Longmans, 1953. Pp. x + 308. 25s.)

WHEN we look at a set of tools, it is difficult to judge their value unless we know something of the uses to which they are to be put. Mr. Madge, who has set out to present the tools available to the social scientist, must therefore devote part of his exposition to an account of his views on the nature and purpose of social research.

The term "social science" is nowhere explicitly defined in this book. It is clear, however, that Mr. Madge uses it in a different and more restricted

sense than is usually given to the expression "the social sciences." Economics and allied subjects are almost wholly excluded from his purview, and he is much occupied with the measurement of attitudes and other subjects bordering on the field of psychology. Social science to him is less an analytical tool designed to lay bare certain regularities of behaviour than a method of operational research, or as he calls it "social engineering." He renounces the concept of objective knowledge in social affairs, although he concedes that "when members of a group have aims in common they will also tend to reach agreement on questions of fact" (p. 5). A little later he writes: "To postulate an objective social science is to ask for something which is probably unattainable *and may even be undesirable*" (my italics) (p. 6).

What, then, is desirable? Mr. Madge's views on this subject are set out on p. 17.

"Instead of aiming to become the objective, value-free theorist, the social scientist may without shame take on the job of the social engineer. . . . In this capacity he can goad his fellow citizens on to discontent with those institutions whose efficiency is inadequate or dwindling, can help them to choose by experiment between different steps forward and can guide them to make better use of what social and material resources are available to them by attaining greater self-awareness and cohesion."

Mr. Madge is, of course, entitled to his views on the nature of social science and social research. They do not happen to be shared by this reviewer, and this is not the place to argue about them. But one who holds such views will find it extremely difficult to write about the tools of social science logically and clearly. It is difficult enough to discuss the methodology of a science with a clear-cut and well-defined subject matter, but it is almost impossible to write about the vast and amorphous mass of social science without some attempt to define its aims and scope.

The problem of eliciting and recording information is discussed at some length. Mr. Madge deals relatively briefly with the use of documentary material, but spends most of his time on a discussion of the interview. Indeed, the chapter on the interview is the longest in the book. Some of its contents, such as the discussion of techniques used by American case-workers in helping their clients, seem rather remote from social research and indeed from the remainder of the chapter. This, dealing with the mass interview, is either stressing the obvious (it seems difficult to avoid this pitfall when writing on the subject) or else—particularly where some recent developments in American techniques are discussed—so condensed as to be difficult to follow. The discussion on sampling techniques which follows is equally unsatisfactory; the statistician will find nothing new in it, but the novice will be bewildered by the variety of technical terms which are introduced in quick succession. The discussion is far too concise to serve even as an introduction to the subject, and this is true also of the treatment of controlled experiments which forms the subject matter of the next chapter. Indeed, it is difficult to know what type of audience the author had in mind when he was discussing these concepts.

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But there are more fundamental reasons why these chapters leave one with a feeling of dissatisfaction. In the first place, Mr. Madge is necessarily writing at second hand, and although he has obviously read widely, it is difficult to be interesting on other people's research methods. The second reason is, however, connected with Mr. Madge's views on social science. The tools are there, all shiny and new in their case, they are taken out, exhibited and then put back. There are a variety of them, ranging from the humble punched card and the general-purpose tool of sampling to the latest gadgets, such as latent structure analysis, scalograms (complete with instruction for assembly) to the euphonious "quintamensional questionnaire." But the reason why they should be used, or the purpose of the end product, is never quite clear. It would appear that the social scientist is not even a social engineer, but a social plumber. He sits in his office, waiting for a leak to spring somewhere. When it is mended or the problem is "solved" he presumably goes back home to wait for the next leak. It is unfortunately true that a good deal of research is of just that nature; one problem is investigated, the research grant comes to an end, and the next problem is tackled. But Mr. Madge appears to be making a virtue out of necessity. "Social theory," he declares, "has been more carefully conceived than methods of empirical testing. The result of this is . . . that the theory has constantly outstripped the known fact and has acquired a metaphysical flavour." Even if this statement had some foundation in the past, it is becoming less and less true. The difficulty to-day is to keep pace with the torrent of factual research on the most diverse topics that is constantly appearing. But we are not told what to do with these facts, how to appraise them, integrate them or make use of them or even how to select the questions which are to be asked. All we have is a bag of tools.

One is tempted to address to Mr. Madge the words which Roy Campbell wrote to some South African novelists:

You use the snaffle and the curb all right
But where's the bloody horse?

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E. GREBENIK

The Farming Kingdom. By N. HARVEY. (London: Turnstile Press, 1955. Pp. xi + 178. 15s.)

MR. HARVEY has written a little book which ought to become a minor classic of agricultural economics, comparable to those brilliant small books in which Geoffrey Garratt analysed the farming problems of the 1920s. It is seldom that one meets a dirty-boot writer. The dirty-boot farmer is, for all the reasons of tradition that Mr. Harvey describes, seldom as nimble with his pen as with his hands; on the other hand, too much of what one reads as agricultural economics smacks of the class-room or the research laboratory rather than of the farm itself.

Mr. Harvey, who has managed to combine an education as an historian

with a working life as a farm labourer and land agent, sets his current farming problems against the background of the agricultural history of England and Wales: first, the subjugation of the waste by the muscles of the early farmers, with little to help them but the plough; then the progressive addition of power through the water-mill and the windmill, the horse as well as the ox, the steam engine, and finally the internal-combustion engine. Throughout the emphasis is on the tools of farming—the human tools of the farmers and their labourers, the mechanical tools and the chemical tools, the animal tools of the stockyard and dairy, and the vegetable tools of changing crops and improving seeds. And somehow, though one feels one's boots getting dirty as one walks the farms of the different epochs with Mr. Harvey, one feels also that one's thought is clearer in the open air, and that under the seeing eye of a farmer one is being led to discern the real essentials of the changing situation—the movement from a farming system in which corn was the basis to one in which corn was subsidiary to stock and dairying, and the partial, but only partial, movement back more recently in the opposite direction. Here is as good a discussion as one can hope to find of the various contributions of different crops and products to the farming system and income of to-day.

And Mr. Harvey brings out excellently who the farmers are: the very small numbers of large farmers; the numerous farms of small size that are primarily family farms, supporting at most one or two workers other than the farmer, and in the majority of cases depending on other members of the family, so that, quite apart from the traditions which reinforce it, the wage-earning interest is more often than not less than the interest in the success of the crop and of the farm. And above all he brings out more clearly than any other writer of whom I can think what this means in terms of the sort of people that farmers are and the way they think.

Mr. Harvey rightly makes no attempt to elaborate the broader world trends and the trends of the United Kingdom balance of payments which have replaced the Mid-Victorian high farming with agricultural depression, and have then restored the need, perhaps temporarily, perhaps more permanently, for something a little nearer to the high farming of early years. But he gives the true feeling of real forces to which the farming policies of the day had to accommodate themselves, by dramatically changing areas of arable cultivation.

I have said enough to make it clear that I think that this is just the right book to put in the hands of those who like to visualise their economic problems in turnips well as in curves, and to help even those who are irremediably wedded to their curves and their statistics to see the agricultural realities which lie behind them.

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NOTES AND MEMORANDA

INSTABILITY OF PRIMARY PRODUCT PRICES: A REPLY

SPEAKING only for myself, and not for my colleagues with whom I was associated in preparing the United Nations report on *Commodity Trade and Economic Development*, I wish to take exception to most of Sir Sydney Caine's comments in the *ECONOMIC JOURNAL* of September 1954. Unhappily, Sir Sydney criticises at the same time our report and a statistical study by the United Nations Secretariat on *Instability in Export Markets of Underdeveloped Countries* without ever specifying whether a particular stricture is addressed to one report or the other, or to both. Indeed, most of his specific criticisms refer to statements which I cannot find in our report. Nowhere did we accept it "as axiomatic that instability is a bad thing"; that "variation is itself an evil"; or that it is better for primary producing countries to have "an absolutely steady income," than "one that varies more or less substantially from the average of the period under consideration." Nowhere did we deplore the refusal of prices "to stay put," but rather affirmed that price changes may indeed serve the useful function which is so well described in text-books; and we agreed that stabilisation measures should not interfere with it (pp. 3, 4, 25-6). Contrary to Sir Sydney's accusation, we did not assume that primary producing countries import nothing but manufactured goods or, for that matter, that they export nothing but primary commodities. We stated clearly that the model of the primary producing country is a simplification of reality and added the necessary qualification for the benefit of unwary readers (pp. 6-7, 8, 12). It is, of course, impossible to speak about general problems without making general statements, and it would be awkward if the inevitable qualifications were appended to each statement.

We did say that, for well-known reasons, price or volume fluctuations in primary commodity markets are frequently extreme if compared with markets for most manufactured articles and services, and that the equilibrating mechanism of these changes operates therefore with a great deal of inefficiency. This is scarcely a novel point. But far from being unduly prone to make axiomatic assumptions, we did discuss a large and distinct group of manufactures which are also subject to extreme fluctuations of price and sales volume (pp. 9, 20). We also pointed out that the gross instability observable in primary product markets may be highly unsettling to industrial countries which exchange imports of predominantly primary goods for exports which consist predominantly of manufactures and services (pp. 16, 17-18). We did not claim that such countries are unable to cope with this unsettling factor. In accordance with the instructions given to us, we concentrated on the effects of extreme market instability—not any degree

of instability—on primary producing countries that are in the initial stages of economic development, and described a number of ways in which extreme ups and downs in their export markets may lead to domestic instability and also upset and retard their economic development.

Sir Sydney takes us to task for pointing out in this connection that "whereas economically developed manufacturing countries tend to have a more favourable balance of payments in depression and a less favourable one in boom years, primary producers have the opposite pattern." Contrary to the impression given by Sir Sydney, we did not claim this to be either a novel or a startling observation. But it does have a direct bearing on the problems that we were expected to discuss, and we may be forgiven, therefore, for having mentioned it. We did not ignore the possibility that many primary producing countries could, by proper fiscal, monetary and investment policies, protect themselves better against the vagaries of external markets than they are accustomed to do. In fact, we said so explicitly and forcefully, and spelled out some of the means (pp. 73-6). We also recognised, however, that this prescription is more easily given than taken, and explained why most underdeveloped countries find it difficult to pursue proper stabilisation measures (p. 15). We did not claim that all primary producing countries have been unsuccessful in this respect. Yet the exceptions to which Sir Sydney refers (there are others), and of which we were not unaware, are interesting in view of one condition which unites them all. They are British colonial dependencies. Does this not suggest the intrusion into underdeveloped economies of an administrative competence and perhaps political control which originated in an economically developed country and are not precisely native to the areas concerned?

Of course, our report has—like most reports, and especially like most reports coming from a highly heterogeneous group of authors—weaknesses that merit criticism. But Sir Sydney's bill of particulars does not seem to me to be of this kind; and I find it difficult, therefore, to accept his judgment that we are guilty of naïveté.

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 INSTABILITY OF PRIMARY PRODUCT PRICES—A COMMENT

In his note "Instability of Primary Product Prices" (*ECONOMIC JOURNAL*, September 1954) Sir Sydney Caine seems to feel that, although there may be evils in fluctuating prices, the case has yet to be proven. Theoretically, the evil can be proven by the demonstration that, given the level of income, the marginal utility of a given increment to that income is smaller than that of a decrement of the same magnitude. Empirical proof is probably impossible, although empirical study can throw some light on the question. In this note we are concerned with the effects of fluctuating prices, and hence

fluctuating incomes, on the debt structure of farmers, in particular, of farmers who have purchased their farms borrowing on mortgage to do so.

When a farmer purchases a farm with borrowed money, he follows that course because he believes that he can repay the mortgage over its agreed life from the profits of his farming operations. Given the amount borrowed, the annual payments under the mortgage are higher the shorter the period and the greater the rate of interest. Fluctuations of income below the expected average matter more the higher the annual charges under the mortgage. From this it follows that the wisest course for the farmer is to attempt to minimise his fixed annual payments, not necessarily his total payments. This can be done by seeking the cheapest lender, by seeking the longest period or by borrowing from a lender who does not require fixed annual payments. At the same time, the farmer needs security in the tenure of the loan.

These aims may be conflicting. For example, the longest terms may be offered by a relatively dear lender; between August 1952 and May 1953 the Agricultural Mortgage Corporation was prepared to lend on mortgage for periods of up to sixty years, but at 6%, whereas some building societies and insurance offices were making similar loans at 4½–5%, but only for periods of up to twenty-five years, and often less. The joint-stock banks provide credit under the overdraft system, where no definite repayment terms are made, but the loans lack security. Despite this, bank credit was used to finance about half the new owner-occupations created in England between 1941 and 1950 which relied on borrowed money.

The farmer purchasing a farm is, therefore, faced on the one hand with figures of expected annual average incomes, subject to some fluctuations, for as far ahead as he dares expect. On the other hand, unless he is fortunate enough to stumble upon the two lenders in England who grant loans which are secure as to tenure and flexible as to repayments terms,¹ he has to decide between taking a secure loan requiring fixed annual payments over a period of years, or an overdraft subject to recall at short notice. If he decides upon the overdraft and has not the resources with which to reduce it when the banks desire to liquefy some of their loans, he has to borrow from some other source in order to repay his banker; for example, much of the early business of the Agricultural Mortgage Corporation was of this nature.

If he decides on the mortgage loan, then over the period of the loan he is committed to annual payments, the amount of which can be varied only with difficulty. Other things being equal, the longer the period of the loan, the less the payments. If a loan for a long period is taken as an insurance against income fluctuations, then, if income does not fluctuate the farmer has wasted the opportunity of profitably using the annual difference between the payments he could have made and those he has to make. If he shortened the period and increased the annual payments to a level nearer his available annual average income, if income does fluctuate he is in trouble. We are

¹ There may be more than two such lenders but our research has failed to reveal more; the two lenders in question operate only in a small way in this field.

not here concerned with the fact that the farmer's average income calculation may be incorrect, but merely with fluctuations around that average income.

Every mortgage deed contains clauses which empower the mortgagee to foreclose on the property in the event of default by the borrower. If the mortgagee so desires, foreclosure can follow the omission on the part of the farmer to make one payment on its due date; this is not often done, but was, for example, in the period 1910–14, when, on account of the Land Campaign, mortgagees became nervous about holding securities connected with land. When a farmer has a fluctuating income he is, therefore, often faced in years of low income with the alternatives of using working capital for debt retirement or defaulting on his mortgage payments. Whichever he does is serious. If the former, his capacity to earn income in the future is reduced,¹ if the latter he risks losing his farm and seeing it sold at forced sale. These things can happen even if the average-income calculations of the farmer, over a period of years, are correct, that is, the fall in prices is short-lived. The break in 1912–13 in the rising trend of farm incomes caused some owner-farmers to lose farms purchased in the years 1906–11, although the rising trend of prices was resumed in 1914. Again, after 1926 farmers who had purchased farms in 1924–25 were often in difficulties, although the main fall in prices did not occur until 1929–30. The price collapses of 1874 and 1921–23 were more spectacular, but here again the majority of the farmers who failed in consequence, failed almost immediately; they would not have been affected if prices had afterwards risen so that the falls were no more than strong fluctuations to a relatively even trend.

A fluctuating income, even if the average is satisfactory, is a matter of considerable importance to a farmer with fixed annual payments under a mortgage. This position occurs in all countries in which owner-farming (peasant proprietorship) is important. In England the security of tenure given to tenants in 1947, coupled with the prosperity of English farming, means that the purchase of a farm is often the only way in which a man can enter agriculture. This is likely to become more important, for, as death duties take their toll of large estates, owner-farming is becoming more widespread. With the Agricultural Mortgage Corporation granting loans for periods up to sixty years the position is less serious now than it was in the years after the First World War, when little credit was available for periods longer than twenty years.

Fluctuations of income will become more important if the average incomes of farmers should fall from their present levels; the nearer the average income to the fixed annual payments, the more a given percentage fluctuation matters. This was shown, for example, in the years 1937–38, when a relatively small fall in farm incomes from the existing low levels led to owner-farmers who had purchased their farms in the years 1935–36 failing. This is not submitted as an argument in favour of income stabilisation, although any measure pointing in this direction, which is not merely a

¹ If there is a cultivation covenant in the mortgage deed he may still lose his holding because he has allowed it to depreciate in order to maintain payments under the mortgage.

device for subsidising farmers in bad years and allowing them to fatten in good years, is probably deserving of support. What is needed, it is suggested, is a source of long-term credit for farmers, in the main for land purchase, which will allow the farmer to vary his repayment rate in accordance with his income. In good years he could then repay his loan at a rate faster than the annual average rate required to repay the loan over its agreed life, in this way using his surpluses to reduce his indebtedness and his fixed interest bill in future years. In bad years the fixed payment would be limited to interest on the outstanding balance of the loan.

In conclusion, one other point may be noted. Although the fluctuations in income may average out to a satisfactory level of income, the farmer will still be worse off than if his income had been steady at that level. If he has to borrow in the lean years, for example, to buy seed, he must pay interest on that borrowing, whereas it is doubtful if his surpluses in the fat years can be made to earn a similar rate—compare the rates banks charge on overdrafts and pay on deposits.

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S. G. STURMEY

A FINNISH CONTRIBUTION TO RENT THEORY

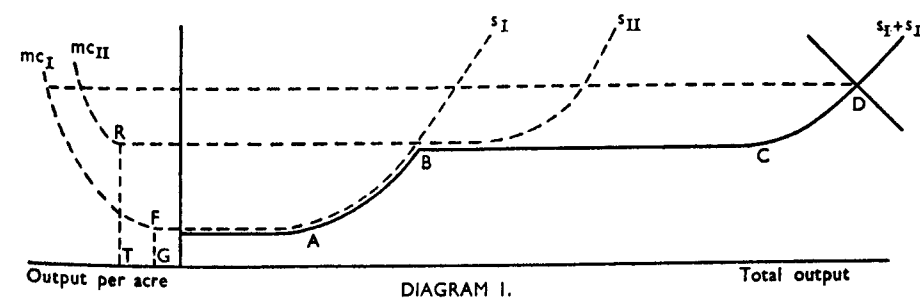
In his most ingenious monograph "The Economic Theory of Agricultural Production,"¹ Herr af Heurlin has made a contribution to rent theory of considerable originality. Although it is written in English, the book may not achieve wide circulation, so a summary of part of its analysis would seem to be called for. This is the easier to provide, because some of the conclusions can be derived by much simpler methods than those used by the author. The following pages, therefore, contain a brief re-statement of that part of his argument which illuminates an old controversy between Ricardo and Carey.

Suppose that wheat is the only agricultural product. Suppose there is perfect competition. Suppose that to produce wheat a combination of factors (labour, seed, etc.) is applied to land, that the prices of all these factors is given and that on each type of land there are constant returns to scale. Assume that there are only two types of land, I and II. The left-hand section of Diagram 1 shows the marginal-cost curves for production on one acre of each type. The right-hand section of the diagram shows the supply curves of wheat from land of each type (as it is drawn, Type II acreage considerably exceeds Type I acreage) and the total supply curve.

If the demand curve intersects the supply curve to the left of *A*, only Type I land will be used, and there will be no rent. A shift to the right will cause rent to be paid for Type I land; a shift bringing the intersection to the right of *B* will cause Type II land to be brought into cultivation. If, finally, the intersection is to the right of *C*, not only will all of both types of

¹ *Annales Academiae Scientiarum Fennicae*, Series B, Volume 87, 1 (Helsinki, 1954).

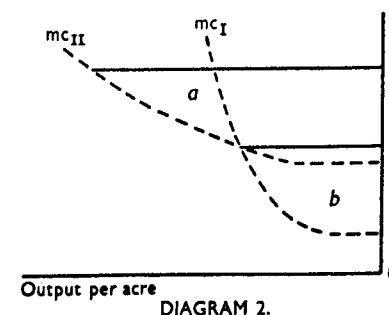
and be used, but both will bear rent. Thus if the intersection is at *D*, the rent per acre will be the area in the left-hand section between the dotted line and the marginal-cost curve.



Let "yield" be defined as output per acre and "exploitability" as output per £1 of cost at the least-cost point. It can be seen that, with conditions as shown in Diagram 1:

- Type I land gives the greater yield;
- Type I land is more exploitable ($FG < RT$);
- Type I land bears the higher rent.

Now suppose that conditions are as shown in Diagram 2. Then all the above statements are true only if the price be less than OJ . If the price be



between OJ and OK (where K is chosen such that area *a* equals area *b*) then:

- Type II land gives the greater yield;
- Type I land is more exploitable;
- Type I land bears the higher rent.

If the price exceeds OK then:

- Type II land gives the greater yield;
- Type I land is more exploitable;
- Type II land bears the higher rent.

Thus where marginal-cost curves cross, the ranking of types of land by yield and rent per acre will change as the price of wheat rises. af Heurlin

calls this result "the law of changing order of rent." A second conclusion is the evident one that different types of land will be taken into cultivation in the order of their exploitability.

The argument of Section 1 of Chapter V may now be summarised. Carey criticised Ricardo for stating that the most fertile lands are first taken into cultivation, then the next most fertile lands and so on. Marshall endeavoured to reconcile Ricardo's theory with Carey's fact by bringing in various non-economic factors, and Wicksell similarly raised the point of technical improvements. But the opposition can be reconciled entirely in the realm of theory: Ricardo was right under the conditions of Diagram 1, Carey under the conditions of Diagram 2. Ricardo thought in terms of a settled country, where high fertility and high exploitability go together. Carey saw that in new countries the most exploitable land may ultimately prove less fertile than the land which is more expensive to bring into cultivation.

In the second section of Chapter V the author points out that cases of intersecting marginal-cost curves are likely to occur when more fertile land is less accessible, for the transport costs which must be included in the marginal-cost curve of production on the more fertile type of land¹ render it less exploitable. An "increase in the price of the commodity has a tendency to raise the less easily accessible but more fertile land in the order of rent, compared with land which is more easily accessible but less fertile."²

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MR. WILES AND THE NORMAL COST THEORY: A FURTHER NOTE

THE object of my original Note³ was merely to argue that the normal cost theory (*i.e.*, Mr. Andrews' theory of *Manufacturing Business*) and the marginal analysis could not be reconciled *along the lines Mr. Wiles suggests*.⁴ That thesis still stands. Mr. Wiles does not deny it in his "Rejoinder."⁵

It would, therefore, be unnecessary to prolong the discussion were it not for the fact that in "defending" his own position,⁶ Mr. Wiles is led to attack mine and to prefer charges which are not valid. In reply, I would make the following points:

1. The "difference" between Mr. Wiles and myself is not (as he contends it is⁷) the trifling one of whether I will admit a divergence between

¹ Fertility can be compared only at a given price (received net by the farmer). * p. 62.

³ ECONOMIC JOURNAL, September 1952, pp. 666-74. (Hereafter referred to as "Note.")

⁴ In his article "Empirical Research and the Marginal Analysis," ECONOMIC JOURNAL, September 1950. (Hereafter referred to as "Wiles (1950).")

⁵ ECONOMIC JOURNAL, June 1954, pp. 350-7. (Hereafter referred to as "Rejoinder.")

⁶ In point of fact, the "criticisms" he attributes to me are no more than extracts from my own statements of our respective views; and he nowhere suggests that I have misrepresented his view.

⁷ Rejoinder, pp. 351, 356 (third par.).

average direct costs and "true" current-period marginal cost. I have never denied this; though in certain situations I would contend that the divergence is in a different direction from that envisaged by Mr. Wiles.¹

Rather the difference between us stems from this: that in separating (artificially) the partial adaptation/total adaptation and short run/long run dichotomies, Mr. Wiles would confine attention to cases where there is "always p.a."²—*i.e.*, where for some reason the firm cannot vary its plant in a "long" (*i.e.*, in clock-time) period. As against this, the normal cost theory—and, I think, most economic theories—would contend that such cases, if they exist at all, are exceptional; that normally the firm *can* vary its plant, and will do so if conditions warrant it (Wiles' "total adaptation"); and that the (operational) long period during which this will occur is normally short (*i.e.*, in clock-time) relative to the period the firm anticipates continuing in business thereafter.

With these presumptions I have argued (with Mr. Andrews) that the firm will normally supply an increase in demand beyond the "planned throughput" of its plant to the utmost physical limit of its capacity (including overtime, etc., where practicable) and at an unchanged price—in order to appropriate demand (goodwill) which may prove permanent, and which otherwise would assuredly be lost to rival firms. If this involves some temporary losses on the marginal units in the short (or transition) period, these will normally be more than offset by the more permanent gains anticipated; for the entrepreneur *expects* that, when the plant has been extended, the firm will produce all units at a lower average inclusive cost (thus gaining a higher margin of net profit per unit at the maintained price).³

Thus it is the normal cost viewpoint—as far as it can be expressed in so aphoristic a statement—that: "Profits are maximised with total but not with partial adaptation, and that the length of the run is irrelevant. . . ." ⁴ *I.e.*, the "run" is normally short relative to the expected life of the business.

2. Indeed, it is precisely to enable the firm the more readily to appropriate such an increase in demand (among other reasons) that the entrepreneur plans for a reserve of capacity in the first instance,⁵ *i.e.*, with expected throughput *OX* (in Mr. Wiles' figure) the entrepreneur installs the plant with

¹ See the footnote to p. 673 of my Note. Cf. also Andrews, *Manufacturing Business*, pp. 109-10.

² See, *e.g.*, Wiles (1950), pp. 518 (bottom), 524 (line 6—"granted p.a."), etc. Also Rejoinder, pp. 350 ("the whole discussion concerns partial adaptation only,") 355 (second par.).

³ See Andrews, *Manufacturing Business*, pp. 136-7. Even if some theorists will not go so far as to agree that the firm will normally be prepared to incur actual pecuniary loss, at least they would grant (I think) that the firm will have regard to actual s.r. marginal cost, *i.e.*, "s.r.m.c. (p.a.)" (which includes the pecuniary costs of "shift and Sunday working," if any—*contra* Wiles, Rejoinder, p. 356, first para. of §4) rather than "l.r.m.c. (p.a.)," in deciding its output policy in the transition period. See, *e.g.*, R. F. Harrod, *Economic Essays*, pp. 150 (second para.), 166-7.

⁴ Wiles, Rejoinder, p. 355. If this means that "profits are maximised in the long run" in a sense different from that of Mr. Wiles, at least it can be said that the present sense is more in accord with the traditional usage of "long run" than Mr. Wiles' own. Cf. the whole discussion of Rejoinder, pp. 354-6, and the statement of mine quoted by Mr. Wiles on p. 351.

⁵ It was just in the context of the firm deciding on the appropriate plant to install that Mr. Andrews first drew attention to the considerations noted by Mr. Wiles. See *Manufacturing Business*, pp. 87-95. Cf. Wiles (1950), last sentence of first par., p. 519.

minimum average cost at OY (to the right of OX), rather than OX ; and this might indeed be represented schematically by drawing a curve such as Mr. Wiles suggests, rising sharply from the s.r.m.c. curve at X .

But does Mr. Wiles seriously suggest that when an increase in demand (at the maintained price) in fact materialises, the firm will not use the reserve capacity which it has installed primarily for this very purpose? This would be to make the so-called "l.r.m.c. (p.a.)" curve do double—and inconsistent—duty. But no; Mr. Wiles is not guilty of this crude error. He states that "... for short periods we like to be producing OZ ," i.e., in excess of OX (see Mr. Wiles' fig.); "but in the long run we shall surely regret it, and must either enlarge the plant or produce OX ."¹ In a word: *if the possibility of "total adaptation" is open*, then l.r.m.c. (p.a.) is not operative in the short period; the demand being there, we adopt the course we "like" and produce beyond OX , subsequently enlarging the plant. If, however, we do not, presumably because we *cannot*, enlarge the plant, then indeed we revert to OX . In this latter—and, I am sure, relatively rare—case, I have granted the essential validity of Mr. Wiles' analysis.²

The position is, then, that if the possibility of "t.a." is admitted (as in the normal cost theory), the considerations embodied in the l.r.m.c. (p.a.) curve are relevant to the firm's *investment* policy (i.e., "in originally deciding the size of the plant,"³) but *not* also to the firm's short-period price and output policy once the plant has been installed (i.e., not "in deciding the use of that plant"³). To assert this, therefore, is not to "contradict oneself," as Mr. Wiles charges.³ Indeed, in that he contends earlier on that "... investment policy is infinitely too various to be subject to any sort of generalisation at all,"⁴ the boot is on the other foot.

3. Mr. Wiles, then, neglects the possibility of "t.a.," and concentrates attention on cases where the plant for some reason is more or less fixed. He is thus quite in order in referring to the 1945–51 experience in England; for this was a period of universal shortage of resources when no firm could readily expand its capacity, and the existing plants could not be overworked indefinitely.

But that is not all there is to be said. First, the 1945–51 "price rises" were not simply a matter of the price rising in accordance with an "almost vertical" l.r.m.c. (p.a.) curve at the planned capacity output. This may have been so initially, in some cases; in many others, the firms preferred to establish "waiting lists." Subsequently, however, with all firms competing for the available factors of production, the prices of the latter rose; this raised the cost curve throughout its length, and with it the price (or confirmed the initial price rise).

But in any event, second, Mr. Wiles' reference to this inflationary situation entirely misses the point of my Note. There I specifically posited a "normal" increase in demand, i.e., "a structural shift in consumers' pre-

¹ Wiles (1950), p. 519.

² My Note, p. 672 (third par.). Mr. Wiles seems to have missed this completely.

³ Wiles, Rejoinder, p. 352. ⁴ *Ibid.*, p. 350.

ferences" in normal conditions; not a cyclical (or inflationary) increase in demand.¹ In the former situation the entrepreneur will avoid a price rise such as Mr. Wiles envisages for the double reason, first, that it will alienate prospective additional custom (and also existing goodwill), and second, it will invite the entry of new competition.

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POSTSCRIPT

Let the existing fixed plant be A and the proposed expanded fixed plant be B . Then there is a long-run maximally profitable output from A , determined by the cut of some MR and MC curves. Mr. Edwards now practically admits that if there is no question of installing B the relevant MC curve is my l.r.m.c.(p.a.); though for some reason not clear he confines this concession to the case where it is impossible to instal B (owing, say, to building licences), and neglects the much more obvious and usual case where it is unprofitable to instal B . But if B is in fact going to be installed he rejects l.r.m.c.(p.a.) from A as a determinant of output from A in the meanwhile, in favour of the "utmost physical limit of (A 's) capacity." This is in order to preserve goodwill until B is in operation. Now although a firm would, of course, be well advised to act as Mr. Edwards suggests, the language he uses to describe its actions is very unfortunate. It leads him to his bold but self-defeating admission that my accusation was right: according to the normal cost theory "profits are maximised with total but not with partial adaptation, and the length of run is irrelevant."

Why not adopt instead my language? Our firm has so good a market that it feels some sacrifice worth while to preserve goodwill until B is ready. Therefore long-run marginal revenue has risen, enough for it to be most profitable to climb further up the l.r.m.c.(p.a.) curve of A . Thus, first, the absurdity is avoided that a profit-maximising firm could ever neglect its cost of production. L.r.m.r. thus correctly defined will still not fall below l.r.m.c.(p.a.) from A . The re-definition is simple, logically necessary and surely not new. Moreover, we have now allowed for variations in the value of this goodwill, which Mr. Edwards cannot—the rise in l.r.m.r. may be large or small; and for variations in that curious notion "full capacity," which is not, of course, a point but a long stretch (e.g., how many shifts a day does it mean, and may we or may we not postpone the monthly shutdown for maintenance?). These things must be weighed against each other in marginal terms. Thirdly, my contention remains unshaken that the marginal analysis is compatible with the facts of life in all cases where the firm does indeed maximise its profits. But how is the normal cost theory reconciled with either? No doubt I have not achieved a reconciliation I never had

¹ My Note, p. 674, and footnote to that page.

in mind, but ought it not now to be attempted? This theory is seen to provide an awkward analysis of profit maximisation in a highly particular case: the growing firm, not restricted by building licences, which has goodwill; but as yet no analysis, it appears, of any other case. Its strength lies, surely, in its analysis of price, not output, formation. It is incomplete.

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OFFICIAL PAPERS

THE INTERNATIONAL COMPARISON OF NATIONAL PRODUCTS

SUCH attempts as have hitherto been made to compare the national products of different countries have displayed a bold, rather than a careful or precise use of the available data. Now, for the first time, a really serious and thoroughgoing attempt has been made to compare the gross national products of France, Germany, Italy, the United Kingdom and the United States.¹ The published report contains both a clear and candid account of the main difficulties encountered and detailed descriptions of the practical methods of estimation, which by and large seem quite unexceptionable. It is obvious, indeed, that this is the work of a team of skilled and experienced national-income practitioners. It is all the more to be regretted that they have not paid more attention to the fundamental economic interpretation of any such international comparisons.

It is worth taking a glance, first, at the main results, which are summarised in the following table. The results are here expressed in the form of index numbers showing the *per capita* gross national product, and the three main divisions of the gross national product, of each of the European countries, in 1950, as percentages of the corresponding estimates for the United States. The results are bound to depend to some extent on the prices that are used in combining individual components of the national products. In each case three different sets of prices were used: those of the particular European country, those of the United States and the average prices in the four European countries combined. The choice of prices turns out to have very marked effects on the estimates. This is particularly noticeable in the case of government expenditure; but it also makes a considerable difference to the estimates of consumption, and—to a lesser extent—to those of investment.

What do comparisons of this kind really mean? We find that the total *per capita* value of the gross domestic product of the United Kingdom in 1950 was 63% of that of the United States if the individual components of the gross domestic product are valued, in both cases, at the prices which then

¹ *An International Comparison of National Products and the Purchasing Power of Currencies. A study of the United States, the United Kingdom, France, Germany and Italy.* By M. Gilbert and I. B. Kravis. (Paris: O.E.E.C., 1954. Pp. 203.)

Per Capita Levels of Gross National Product, Consumption, Investment and Government Expenditure in 1950

(U.S.A. = 100)

	Weighting.	G.N.P.	Consumption.	Investment. ¹	Government.
United Kingdom	U.K. prices	49	52	31	77
	Average European prices	53	53	34	91
	U.S.A. prices	63	66	35	107
France	French prices	39	39	35	62
	Average European prices	42	40	40	72
	U.S.A. prices	53	53	41	90
Germany	German prices	30	28	29	57
	Average European prices	33	32	33	54
	U.S.A. prices	43	42	39	70
Italy	Italian prices	18	18	15	20
	Average European prices	22	22	18	36
	U.S.A. prices	30	31	19	52

¹ Including investment in stocks.

prevailed in the United States. Can we draw any interesting conclusions from such a statement? At first sight it may seem to show the difference between the *per capita* national products of the two countries, after abstracting from all differences in prices—i.e., the difference between the physical volume of goods produced, per head of the population. But this cannot in fact be the correct interpretation, since the use of a different set of prices, e.g., those that prevailed in the United Kingdom in that year, gives a very different result; we cannot even say that the truth lies between the two results, since they purport to answer quite different questions. As the results are very substantially affected by the particular prices that are chosen as the basis of comparison, there must be a good reason for using one set of prices rather than another. How, then, do we justify the use of one particular set of prices, in preference to any other?

So far as the estimates for a single country are concerned, it is possible to give a definite answer, which is twofold. On certain assumptions, which need not here be elaborated, the market prices prevailing in a particular country at a particular date reflect the relative marginal utilities of the different products to the final consumers, or purchasers, in that country at that time. The national product, valued at those prices, can therefore be given a certain, albeit a rather limited significance in terms of economic welfare. The prevailing prices also reflect the prevailing costs of production; and these costs, again on certain assumptions, reflect the relative marginal productivities of different factors of production. Thus the valuation of the national product at such prices also has a certain limited significance from the standpoint of productivity. But since the proportionality property applies only at the margin, the significance of such aggregates is restricted, from either point of view, to relatively small changes in the neighbourhood of a given total.

We attribute a money value to a given aggregate of goods and services, not because the total is in itself of interest, but in order to have a starting point from which changes in the neighbourhood of that point can be measured. Comparisons can be made, from the standpoint of welfare, between points in the same general neighbourhood, provided that the relative marginal utilities of different commodities are more or less the same; and provided also—since the relationship between prices and marginal utilities holds good only for individuals—that the distribution of incomes is much the same in both situations. Comparisons between points in the same general neighbourhood can be made from the standpoint of productivity, provided that the relative marginal productivities of different factors of production are more or less the same in both situations. But if one situation represents a quite different constellation of commodities, or of factors, from the other, it is impossible to make any valid comparison unless we know the shapes of the marginal utility, or marginal productivity, curves; and unless, also, there is some way of measuring the relative marginal utilities of identical commodities, or the relative marginal productivities of identical factors, in the two situations.

Thus the problems involved in comparing the national products of two different countries are essentially different from those involved in comparing the national product of a single country at two points of time. Inter-temporal comparisons within a single country involve assumptions which are realised only to varying degrees of approximation.¹ But if the two dates are not very far apart the bulk of the goods and services produced, and the bulk of the factors used in producing them, are likely to be almost unchanged. The relative prices of different commodities (reflecting their relative marginal utilities) and the relative prices of different factors (reflecting their relative marginal productivities) show comparatively small changes in the short period; and a sudden and substantial general shift in the marginal utility (or productivity) curves is unlikely to occur very often. The composition of the population will, of course, be changing all the time; but (ignoring the possibilities of war or pestilence) it is largely the same people whose welfare at the two dates is being compared, and it seems fairly reasonable to assume that their tastes and capacities for enjoyment will be very similar. If largely the same factors are employed, and if the relative sizes of industries which enjoy different degrees of monopoly remain about the same, it also seems reasonable to assume that the *intra*-marginal productivities of the factors employed at the two dates will be very similar.

When, however, two populations have no members in common—where in fact conditions are as different as they are in, say, the United Kingdom, the United States and Italy—the basis for any direct comparison of welfare (to take this aspect first) is lacking. The differences in the relative prices of the same commodities, which are indicative of differences in relative marginal

¹ A fuller discussion of these assumptions and their implications may be found in my paper of "Problems in the Measurement of Real National Income," published in *Income and Wealth* Series IV (Bowes & Bowes, Cambridge).

utilities, are in themselves sufficient warning that the situations are not directly comparable. Furthermore, one cannot ignore the possibility of basic differences in the tastes and scales of preference of individuals in the two countries; or the fact that the distribution of incomes may vary considerably from one country to another.

Even if all such differences could be allowed for, it would still be impossible to make any strictly valid comparison between the welfare of, say, a typical American and a typical Britisher. The enjoyment of economic goods depends to a large extent on uneconomic factors—the proximity of friends and relatives, the lifelong associations of a particular part of the world, customs, traditions and even differences in temperament. They may, therefore, have different capacities for enjoying identically the same goods. The most that we can strictly do is to ask ourselves: how much better or worse off would an average American feel ¹ if he lived in this country and consumed what an average Britisher consumes, as compared with what he actually consumes in America (or *vice versa*)? We should not be surprised if we reached the conclusion that each man would feel a great deal worse off in the other man's shoes. But since no one is asking Americans and Britishers to swap places, the question is anyway of little interest.

We are not, indeed, faced with quite the same difficulty when undertaking comparisons in terms of productivity. It may not be altogether unrealistic to suppose that factors of production can be transferred from one country to another without seriously affecting their productivities.² Labour is to some extent, perhaps, an exception to this; but the difficulty here is rather to specify, and to be able to identify, labour of a particular grade or quality, without reference to differences in wages. The main stumbling block, however, in any general comparisons between the total domestic product, in the productivity sense, of one whole economy and another (the difficulties are much less serious if the comparison is restricted to a single industry) is that the relative supplies, as well as the relative prices, of different factors of production vary considerably from one country to another. If entirely different factors are embodied in the typical products of the various countries, there is no real basis on which to make productivity comparisons. In such circumstances, the proportionality between the prices and the marginal products of different factors within each country will not enable us to compare one country with another.

The authors of the O.E.E.C. study are unconcerned with any of these complications. They do indeed recognise "the fundamental difficulty involved in comparing the national products of very primitive and advanced economies," although they see this as primarily due to "the large amount of unique goods in the advanced society for which no meaningful price or cost can be imputed to the primitive society." They are forced to the conclusion that "the index number equations can be computed only on the basis of the

¹ Or more precisely: how much more would he have to consume in this country (or how much less in America) to feel indifferent as between the two situations?

² Except that an industry may enjoy a monopoly position in one country and not in another.

price weights of the advanced country." A lingering doubt then emerges, for they hasten to add that "this result may tell us something, but it is indeed quite limited, either from the standpoint of productivity or economic welfare" (§ 124). The authors do not see that the difficulties involved in comparing advanced and primitive economies, though taking a more acute form, are essentially the same as the difficulties involved in comparing two more or less advanced countries. Differences in climatic and other physical conditions, as well as in the needs of different communities and their capacities for enjoying life, are, of course, admitted. But all such complications are brusquely brushed aside. "The fact is," they inform us, "that comparisons of real national product cannot allow for any assumed (*sic*) lack of identity of needs" (§ 90); adding, somewhat wryly, that "there is always an infinite series of relative advantages and disadvantages, and it is impossible systematically to weigh one against the other" (§ 91). We must ignore all these complications, they seem to be saying, or we may find that we are unable to make any comparisons at all!

There are certain other points on which comments may be ventured. As we have seen, the authors adopt the convenient device of comparing the national product of each of the European countries with that of the United States at the average prices of the four European countries combined, as well as at the prices prevailing in the United States, and at the prices of the country in question.¹ Their justification for using average European prices is delightfully simple: it is adopted, they say, "in order to facilitate comparison and to avoid an unmanageable number of figures" (§ 12). No further justification is considered necessary. The mere fact of using the same set of prices does not, however, make the estimates for the four countries comparable with each other. Nor, unfortunately, can any real validity be attached to an estimate of the comparative position of, say, France and Italy, which is based on the separate comparisons of each country with the United States. There is no reason why the United States should be used as the standard by which to compare conditions in the other North Atlantic countries.

The assumptions involved in making productivity comparisons are different from, though in some respects closely analogous to, those involved in making welfare comparisons. It is important, therefore, to be clear about which is being undertaken. The authors of the present study have, no doubt wisely, restricted themselves to the productivity aspect. This is, at least, clearly stated to be their intention: "For this study the production approach is used as being more in keeping with its purpose of comparing the relative economic strength of the countries" (§ 73). And yet we find, curiously enough, that "the comparisons are not concerned with the goods physically produced by domestic establishments," which is surely the appropriate aggregate for purposes of productivity comparisons. Instead

¹ But, for certain groups of items (housing, motor cars), the different results produced by using the different sets of weights are inexplicably ignored, the results being averaged together to produce a single indicator for the group.

"the real national product comparisons are based on consumption and investment expenditure for all final products—whether home produced or imported—from the total of which the import surplus is deducted (or the export surplus added)" (§ 67). As to why this somewhat peculiar aggregate is chosen, or how the deduction (addition) is made for any import (export) surplus, there is not a word of explanation. One would expect productivity comparisons to be based on the total product of domestically employed factors of production—what is normally referred to as the gross domestic product, which includes exports and excludes imports. The total gross domestic expenditure, which includes imports and excludes exports, is appropriate for welfare comparisons, but not for productivity comparisons. If an addition (or deduction) were made to the total gross domestic expenditure for any export (or import) surplus, the result would perhaps be a measure of the "welfare-producing-power" of domestically employed factors of production. The adjustment for any export or import surplus is, however, bound to be very arbitrary, since an export surplus merely represents a claim on the resources of some other country (or countries); and no one can say in advance when, or how, or even whether, that claim will be redeemed. But why the authors have chosen this aggregate as the basis of their comparisons when they have disclaimed any interest in problems other than those of productivity—and they explicitly say that "goods are viewed from their cost aspect rather than their welfare aspect"—is a mystery.

It is generally believed that, for purposes of productivity comparisons, different goods and services should be valued at so-called factor cost, rather than at market prices. This view appears, however, to rest on a fallacy. It can be shown¹ that productivity comparisons should be based on market prices rather than factor costs.

The point of view adopted here may seem rather too severe, even nihilistic. My argument—or so it may be objected—practically amounts to saying that no two situations can be compared unless we know, beforehand, that they are not very dissimilar. The two situations must, indeed, have some common denominator before the difference between them, from some other point of view, can be measured. But is it not possible to make comparisons, if need be of a less rigorous kind, between two situations which are known to be different in many respects, but which appear to have certain general characteristics in common? In view of the undoubted interest in such comparisons it is worth seeing whether a limited attack on the problem can be made by partially relaxing some of the conditions specified above. A possible approach which suggests itself is as follows.

If we were interested in making welfare comparisons between two countries, whether at the same or at different dates, we would begin by selecting as many commodities as possible that have the same, or virtually the same, relative prices in the two countries, and of which approximately

¹ The problem is fully discussed in my article on "National Income at Factor Cost or Market Prices?" (p. 216 of this JOURNAL).

the same quantities are sold, per head of the population. The selection would be restricted to commodities which on the face of it appear to satisfy broadly the same needs in the two countries. This particular bundle of commodities—call it *Q*—would provide the necessary yardstick for purposes of comparison. It would be necessary to make the—admittedly rather drastic—assumption that the satisfaction obtained from this bundle was exactly the same in the two countries; in other words, we would be attempting to find out what the difference *would* amount to *if* this assumption were fulfilled. All other commodities could then be converted into an equivalent number of units of *Q*, simply on the basis of their total cost, relative to the cost of *Q*. The assumption would thus be made that, within each country, any other bundle of goods costing the same as *Q* would yield the same satisfaction as *Q*—an assumption which, of course, is valid (if at all) only for a single individual. We would have to be able to assume, therefore, that the distributions of incomes in the two countries was at least broadly similar. The larger the selection of commodities included in *Q*, the sounder, naturally, is the basis of comparison. Unfortunately it will not often be possible to find many commodities which are sold in similar quantities (*per capita*), or at virtually the same relative prices, in different countries. We can expect very few pairs of countries to be comparable to the extent that the difference between their *per capita* national products can be measured.

A similar method might be used for productivity comparisons. For this purpose the yardstick would consist of a selection of commodities which incorporate various factors of production in the same relative quantities, and at the same relative prices, in the two countries. The validity of the comparison would depend on whether a reasonably representative selection of commodities could be found, satisfying these requirements. The relative productivity within each country of factors embodied in other commodities would be assumed to be given by their total cost, relative to the cost of this particular selection. This is also a rather drastic assumption, since proportionality between costs and marginal products does not, as already noted, indicate much about intra-marginal productivity. But some such device as this is clearly necessary if we are to make any headway at all.

Curiously enough, the authors use a similar device when dealing with the problem that arises when different qualities, or very different quantities, of essentially similar commodities are produced in different countries. Fuel oil, for instance, was available only in very small quantities, at a correspondingly high price, in France; and it was recognised that to value the large quantities of fuel oil consumed in the United States at the prevailing French price “would be rather meaningless” (§ 120). Expenditure on fuel oil was accordingly divided by the price of a ton of coal, and so converted into an equivalent number of units of coal. A similar procedure was applied to certain other commodities, namely tobacco, housing and mattresses. This really gives the game away. For why should exceptions be made in favour of two or three commodities when the same difficulty arises, in varying degrees, over a very wide range of other commodities as

well? Clothing, heating, travel, education, entertainment, drink, and even food, are all available in substantially different qualities or quantities in the different countries. If a straightforward comparison is wrong in the cases of fuel oil, tobacco, housing and mattresses, it is wrong in a very large number of other cases as well. All this is not to deny that the present estimates, granted their general limitations, are a definite advance on any which have previously been produced.

The indices of comparative national products, and of the comparative supplies of particular commodities, are used in turn to obtain corresponding estimates of the purchasing power equivalents of one currency against another. Needless to say, the purchasing power equivalents turn out, in most cases, to be very different from the current exchange rates. The authors conclude that the use of exchange rates in estimating comparative real products may give quite false results. This conclusion may seem to be the most well established of all their findings; and it may still be true, even though it rests on a set of estimates the whole foundations of which have here been called in question. In present-day conditions it would certainly be very rash to assume that exchange rates reflect purchasing power parities; and any adjustments to the exchange rates of a by-gone era for subsequent changes in prices are bound to be unsatisfactory, if only because changes in relative prices have probably been accompanied by substantial shifts in demand. But if we were ever to return to a “normal” situation, with truly competitive markets for internationally traded goods, and if the same goods were also extensively used in both of the countries being compared, it is just conceivable that the use of exchange rates—due allowance being made for import duties—would provide a short-cut approximation to the method outlined above. The possibility cannot, at any rate, be dismissed. These are problems that still await investigation.

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CURRENT TOPICS

THE Annual Meeting of the Royal Economic Society will be held at the London School of Economics at 5 p.m. on Thursday, July 7. After formal business, Professor Robbins will address the Society on “The Teaching of Economics in Schools and Universities.”

THE Council of the Royal Economic Society has learned with some surprise that the sales both of *The Works and Correspondence of David Ricardo* and of *Jeremy Bentham's Economic Writings* on specially favourable terms to Fellows of the Society have represented a very small fraction of the sales on normal terms. Since there is some reason to think that an appreciable part of the sales has been to persons entitled to the special terms, and since the apparent reluctance of Fellows to take advantage of these terms seems

not to accord with the normally accepted theories of economic conduct, the Council has instructed the Secretary to invite Fellows to inform him of their reasons for departing from these normal principles of economic conduct. Any information may be sent to the Secretary at the Marshall Library, Downing Street, Cambridge.

The following have been admitted to life fellowship of the Society:

Armstrong, D. E.	Dell, H. C.	Kindleberger, C. P.
Banwayt, N. S.	Dexeus, J. S.	

The following have been admitted to fellowship of the Society:

Agarwal, R. M.	Holsen, J. A.	Onyemelukwe, G. E. N.
Anene, V. C. I.	Hoong, W. L.	Orchard, F. A.
Ashforth, R. A.	Hooson, T. E.	Pandit, S. B.
Barango, G. G. B.	Iyer, P. H. S.	Patel, P. A.
Barish, F.	Jagannadharao, P.	Percival, I.
Baxter, F. D.	Janes, F. J.	Potter, P.
Bhamburkar, S. G.	Jones, A. D. D.	Ramachandran, P.
Black, J.	Kian, T. C.	Reddy, B.
Britten, H. R.	Kothari, S.	Revill, B.
Campolongo, Prof. A.	Kwan, Y. C.	Roach, J. E., Jr.
Caplan, Dr. B.	Langdon, J. P.	Roca, G., Jr.
Carney, D. E.	Lawrie, J.	Seshadrinathan, K. N.
Cheung, A. N. K.	Lelli, Miss P. I.	Shaw, H. B.
Currihan, V. H.	Lewis, B.	Singh, M.
Dagnall, T.	McManus, M.	Sinniah, V.
Deen, N. U.	Morrissey, D. C. M.	Skowronski, F. S.
Disney, M. J.	Morton, J.	Standing, N. H.
Djuanda, R.	Murphy, C. M.	Taha, S. H.
Ekundare, R. O.	Myers, J. G.	Thomas, R. M.
Fung, A. Y. Y.	Neisser, A. E.	Vongsathorn, X.
Gardner, R. N.	Niculescu, B. M.	Wardle, K. N.
Germain, E. W.	Noblet, F. M. A.	Wharton, J. K.
Glik, Dr. J.	Okhiria, M. O.	Wilson, H. W.
Glover, J. W.	Olorode, J. A.	Young, A. L.
Griliches, Z.		

The following have been admitted to Library membership of the Society:

Ein Chams University.
 Jesus College, Oxford.
 Libreria Buchholz, Lisbon.
 London Export Corporation Ltd.
 Pomona College Department of Economics.
 Queens' College, Cambridge.

RECENT PERIODICALS AND NEW BOOKS

Applied Statistics

VOL. IV, NO. 1, MARCH 1955. *The Productivity Index in Active Service*: S. BEER. *A Method of Graphing Sales Figures for Executive Use*: A. W. SWAN. *An Application of Linear Programming to the Selection of Raw Materials*: N. WILLIAMS. *The Comparison of Means of Industrial Time Series*: G. H. JOWETT. *Some Makeshift Methods of Analysis Applied to Complex Experimental Results*: G. P. DAVIES and G. W. SEARS.

Economica

VOL. XXII, NO. 85, FEBRUARY 1955. *Industrial Production in the United Kingdom, 1900-1953*: T. M. RIDLEY. *The Purchasing Power of British Exports*: R. L. MARRIS. *Multiplier and Velocity Analysis: a Marriage*: V. LUTZ. *The Miners' Association of Great Britain and Ireland, 1842-48: a Study in the Problem of Integration*: A. J. TAYLOR. *Public Departments and Cheap Money, 1932-38*: D. S. LEES.

Bulletin of the Oxford University Institute of Statistics

VOL. 17, NO. 1, FEBRUARY 1955. *Growth and the Balance of Payments: a Symposium. Economic Expansion and the Balance of Payments*: H. G. JOHNSON. *Productivity Growth and the Balance of Trade*: P. STREETEN. *Productivity and the Balance of Payments: a Three Country View*: J. R. SARGENT. *The Methodology of Long Term Economic Policy*: R. L. MARRIS. *On Minimising the Risks of Growth*: D. SEERS. *Internal Growth and External Solvency*: R. NURSKE. *Industrial Efficiency and Growth*: C. KENNEDY. *Investment Policy*: W. A. LEWIS. *Investment and Economic Growth*: N. H. LEYLAND. *Flexibility and the Stimulation of Investment*: D. N. WORSWICK. *Some Comments*: P. D. HENDERSON. *The Savings Survey 1953: Response Rates and Reliability of Data*: T. P. HILL, L. R. KLEIN and K. H. STRAW.

The Manchester School of Economic and Social Studies

VOL. XXIII, NO. 1, JANUARY 1955. *Some Results of Distribution of Industry Policy*: J. SYKES. *The Monopolies Commission and Economic Welfare*: A. HUNTER. *The Prospects of British Shipbuilding*: L. JONES. *Normative Factors in the Supply of Labour*: H. BEHREND. *Land-use, Location and Transport*: K. LIEPMANN.

Scottish Journal of Political Economy

VOL. II, NO. 1, FEBRUARY 1955. *The Present Complexity of Wage Payments*: D. J. ROBERTSON. *The American Origins of a Scottish Industry*: W. WOODRUFF. *Business Men on Business Decisions*: G. L. S. SHACKLE. *Economic Welfare and Money Incomes in the Highlands, 1750-1850*: M. GRAY. *Some Economic Aspects of the Union of Parliaments*: A. M. CARSTAIRS.

The Economic History Review

VOL. VII, NO. 2, DECEMBER 1954. *The Economic Development of Russia*: A. BAYKOV. *English Foreign Trade, 1660-1700*: R. DAVIS. *London Private Bankers, 1720-1785*: D. M. JOSLIN. *An Index of Building Costs in the United Kingdom, 1845-1938*: K. MAIWALD.

The Sociological Review

VOL. 2, NO. 2, DECEMBER 1954. *Membership Participation in a Printing Trade Union*: K. J. W. ALEXANDER. *Impressions of Family Life in a London Suburb*: L. A. SHAW. *The Work and Status of Mental Nurses*: H. MADDOX. *The Settlement of North-west Sussex*: E. M. YATES. *Social Aspects of the Control of Industrial Location*: J. SYKES. *A Profile of Science Fiction*: S. E. FINER.

Political Studies

VOL. III, NO. 1, FEBRUARY 1955. *Parties and Politics in the Netherlands*: H. DAALDER. *Les Silences de Sir Frank Newsam*: S. E. FINER. *Texts in Political Theory*: W. HARRISON. *Petitioning in the Nineteenth and Twentieth Centuries*: C. LEYS.

Accounting Research

VOL. 6, No. 1, JANUARY 1955. *A Note on Interest, Depreciation and Economic Choice*: F. E. NOLAN. *The Effect of a Winding-up Order upon the Income and Capital of a Company*: J. HALL. *Blueprint for a Theory of Accounting*: R. J. CHAMBERS. *Accounting Dynamics—II*: F. SEWELL BRAY. *Computers and Accounting Systems*: R. H. GREGORY. *A Statistical Approach to Auditing Tests*: I. R. TAYLOR.

The Incorporated Statistician

VOL. 5, No. 3, NOVEMBER 1954. *The Contiguity Ratio and Statistical Mapping*: R. C. GEARY. *Statistics in Research and Management in the Cotton Industry*: L. H. C. TIPPETT.

Journal of the Institute of Actuaries

VOL. 80, PART II, 1954. *The Growth of Pension Rights and their Impact on the National Economy*. VOL. 80, PART III, 1954. *A Basic Curve of Deaths*: W. PHILLIPS. *Economic Problems*: SIR A. FORBES. *A Broad Analysis of the Problem of the Investment of Life Funds*: H. G. CLARKE.

The Banker

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VOL. XIII, No. 11-12, NOVEMBER-DECEMBER 1954. *Diritto ed economia nella crisi dell'Occidente*: C. E. FERRI. *Note in margine ad un nuovo libro di finanza*: A. SCOTTO. *Le equazioni della dinamica economica nel caso di due mercati parzialmente comunicati tra loro*: G. SENSINI. *Relazioni esistenti tra consumi e prezzi dei gas naturali negli Stati Uniti*: G. VERZI.

Economia Internazionale

VOL. VIII, No. 1, FEBRUARY 1955. *Some Aspects of Convertibility*: G. HABERLER. *Convertibility Problems*: R. HARROD. *Problems of the Return to Convertibility*: P. JACOBSSON. *International Economic Integration and Prosperity*: A. MAHR. *Misery and Bliss: a Comparison of the Effect of Certain Forms of Saving Behaviour on the Standard of Living of a Growing Community*: J. R. N. STONE.

Rivista Italiana di Economia Demografia e Statistica

VOL. VIII, No. 1-2, 1954. *L'andamento della mortalità in prossimità della "età estrema"*: B. DE FINETTI. *Su alcune applicazioni dei metodi di eliminazione nelle ricerche sperimentali*: G. POMPILJ. *Bertillon e Gumpowicz: considerazioni sociologiche sulle diminuzioni delle nascite in Francia*: F. SAVORGNAN. *Ulteriori considerazioni a proposito delle fluttuazioni stagionali delle nascite*: P. BANDETTINI. *Di alcuni criteri metodologici per la ripartizione del reddito nazionale fra le regioni d'Italia*: G. CUSIMANO.

Critica Economica

No. 1, FEBRUARY 1955. *Energia nucleare: un nuovo potente mezzo per lo sviluppo dell'economia*: F. VASETTI. *Questioni della cooperazione economica europea*: G. REGIS. *I ritmi di incremento della produzione dei beni strumentali e dei beni di consumo nell'economia socialista*: B. MINC.

Review of the Economic Conditions in Italy (Banco di Roma)

VOL. IX, No. 1, JANUARY 1955. *Development and Trends of Italian Trade*: H. E. MARIO MARTINELLI. *Indices of the Cost of Living in Italy*: D. MIANI CALABRESE.

Banca Nazionale del Lavoro Quarterly Review

No. 31, DECEMBER 1954. *The Case for Flexible Exchange Rates*: F. A. LUTZ. *The French Deposit Banks and the Banques d'Affaires*: J. S. G. WILSON. *The Monetary Problems of a Dependent Economy: The Australian Experience, 1948-52*: D. ROWAN. *Money Supply and Interest Rate in Recent Macro-Economic Conceptions: a Comment*: E. SCHNEIDER; *a Rejoinder*: A. GAMBINO. *The Future of Italian Natural Gas and Oil*: J. CAIRNCROSS.

Italian Affairs

VOL. IV, No. 1, JANUARY 1955. *Italy and Eritrea. Italy and the Industry of Trieste. Italo-Yugoslav Trade. The Institute for the Reconstruction of Industry. Education and the Defense of Italy's Artistic Heritage. The Press, Entertainment and Sports. The Birth-rate of Illegitimate Children. The Hat Industry. The Sewing Machine Industry. Musical Instruments. The Motorcycle Industry.*

L'Industria

No. 4, 1954. *Rapporti fra fattori produttivi nell'economia italiana*: P. N. ROSENSTEIN-RODAN. *Sperimentazione e calcolo su vasta scala in economia*: O. MORGENSTERN. *Sulla teoria della politica economica*: J. TINBERGEN.

Moneda y Credito

No. 49, JUNE 1954. *El Consejo de Europa*: W. HORSFALL CARTER. *Un banquero de Felipe II en Medina del Campo*: R. CARANDE. *La relación del crecimiento económico con las fluctuaciones cíclicas*: N. KALDOR. No. 50, SEPTEMBER 1954. *Crónica de la Septima Escuela Internacional Bancaria de Verano. La convertibilidad*: SIR D. ROBERTSON. *Las relaciones entre la política económica y la balanza de pagos*: O. VEIT. *La ortodoxia monetaria y la recuperación de Gran Bretaña*: W. KING. No. 51, DECEMBER 1954. *El ahorro voluntario y los bancos*: L. OLARIAGA. *La regulación de la banca española*: L. SAEZ DE IBARRA. *El sistema bancario español*: E. RIDRUEJO. *El mercado de capitales en España*: A. MORENO.

Revista de Economia

VOL. VII, No. 3, SEPTEMBER 1954. *Alguns aspectos dos censos da população portuguesa*: J. J. PAES MORAES.

El Trimestre Economico

VOL. XXI, No. 3, JULY-SEPTEMBER 1954. *La teoría del desarrollo en la evolución de la ciencia económica*: C. FURTADO. *El modelo de una economía en expansión*: JOAN ROBINSON. *La agricultura y el desarrollo económico en Colombia*: A. GARCÍA. *Reforma agraria y desarrollo económico en el Ecuador*: J. C. CÁRDENAS. VOL. XXI, No. 4, OCTOBER-DECEMBER 1954. *El problema del financiamiento del desarrollo económico*: M. KALECKI. *Aspectos demográficos del desarrollo económico*: F. PAZOS. *La teoría clásica, la teoría keynesiana y la teoría general del interés*: M. S. WIONCZEK.

Economic Bulletin of the National Bank of Egypt

VOL. VII, No. 4, 1954. *Egypt's Balance of Payments, January-June 1954. The Egyptian State Railways. A Quantum Index of Agricultural Production. The National Production Council.*

Statistikai Szemle (Hungarian text)

DECEMBER 1954. *The Position of Pigbreeding*: I. MOLNÁR and I. OROS. *Some Shortcomings in Industrial Organization and Their Effects on the Supply to the Population of Prime Necessities*: I. FENYŐ, J. GARAM and F. ZALA. *Variation in Finished Output in the Plans of the Ministry of Light Industry*: S. FÜLÖP. *On Accounting the Value of Production in Statistics and Bookkeeping*: G. GÖMÖRI. *Questions of the Quality of Coal*: D. NAGY. *Utilization of Working Time by Sales Staff in Retail Trade*: M. CSORBA.

JANUARY 1955. *The Evolution of the Population and its Social and Cultural Situation in the Decade Since Liberation. On the Repair of Dwellings*: G. LÁZ. *Variations in the Death Rate from Cancer*: A. KLINGER. *The Situation of the Building Industry As Shown by the Survey of Work in Progress in the Hajdú-Bihar Region*: L. ZOLTAN. *The Statistical Measurement of Fluctuations in Industrial Production*: Z. CZENDES.

FEBRUARY 1955. *For the Further Creative Development of Statistical Science. Statistical Survey of the Crop Results in Agricultural Co-operatives in the Szolnok Region*: G. PÁRNICZKY. *On Agricultural Construction*: I. BEREND and A. NIKLAI. *On the Rights of Directors of Industrial Enterprises*: M. SOMOGYI. *Crop Forecasts on the Basis of Meteorological Factors*: L. PINTÉR.

Voprosy Ekonomiki (Russian text)

No. 12, 1954. *J. V. Stalin—the Great Continuer of Lenin's Work*: A. SAZANOV. *Some Problems in Constructing the National Economic Balance*: P. MOSKVIN. *On Fixing Standard Production Stocks of Metal in Engineering Enterprises*: N. LISITSIAN. *Ways of Developing Livestock Breeding in State Farms*: M. NESMY. *The Mongolian People's Successes on the Road to Socialism*: A. YAKIMOV. *The Situation of the Working Class in West Germany*: YU. KUCHINSKY. *First Results of the Virgin Land Campaign*: V. OVCHINIKOVA. *Summary of the Scientific Meeting on Statistics*.

No. 1, 1955. *The All-nation Task for the Further Upsurge of Husbandry and Stock-breeding. Against a Revision of the Marxist-Leninist Theory of Accumulation. The Economic Situation of Russia on the Eve of the 1905-07 Revolution*: A. ALEKSEEV. *The Cyclical System—the Method of Raising Labour Productivity in the Coal Industry*: M. BAGASHER. *The Discovery of Internal Reserves by Statistical Methods*: M. EIDELMAN. *Successes in Restoring the Chinese Economy and the Beginning of the Achievement of the First Five-year Plan*: DI CHAO-BAI. *The Progress of Economic Co-operation Between Countries of the Socialist Camp and Under-developed Countries*: A. CHISTYAKOV. *Characteristics of the Cyclical Development of the U.S. Economy Since the Second World War*: A. MANUKYAN. *Exploitation of Plantation Labour in Colonial and Dependent Countries*: M. KOL. *An Eminent Revolutionary Democrat, Mikael Nalbandyan*: G. AKOPYAN. *Economic Construction in the National Areas of China. The Struggle of the American Monopolies to Capture the Sources of Atomic Materials in the Capitalist World*: A. SANTALOV.

Planovoe Khozyaistvo (Russian text)

No. 6, 1954. *The Great Continuer of Lenin's Work. Grain—the Foundation of all Agricultural Production*: B. SAVELEV. *Reserves for Increasing Labour Productivity in Engineering*: M. DEMCHENKO. *Cost Accounting in Building*: M. DYACHKOV. *For a Further Improvement in Railway Operation*: A. GALITSKY. *Ways to Improve the Accounting System and to Liquidate Delays in Payment in the National Economy*: P. MITROPOLSKY. *China on the Road to Socialist Industrialization*: G. ASTAFEV. *Planning Finance*: A. DUGINOV.

No. 1, 1955. *For Early Fulfilment of the Fifth Five-year Plan. Problems of Economics and Planning in Building*: I. OPARIN. *Reserves for Economizing Materials in the National Economy*: M. GORSHUNOV. *Co-operation—a Major Reserve for the Further Rise of Engineering*: I. MAKSIMOV. *Scope for the Development of the Cellulose and Paper Industry*: KH. DZHALILOV. *The New Standards and Regulations in Building and their Significance*: V. BURGMAN. *The Gradual Socialist Transformation of Chinese Agriculture*: N. NIKITIN. *Planning Retail Trade*: V. MOSKVIN.

Vestnik Statistiki (Russian text)

No. 5, 1954. *For a Further Creative Development of Statistical Science. Problems of the Measurement of National Wealth*: S. STRUMILIN. *The Industrial Development of China*: G. ASTAFEV. *Summary of the Scientific Meeting on Statistics*.

No. 6, 1954. *Towards New Victories in Building a Communist Society. On the Planned Balance of the National Income in the U.S.S.R.*: M. BOR. *On Methods of Evaluating the Height and Strength of Yield of Agricultural Crops*: I. PASKHAVER. *Problems of Analysing the Dynamics of Averages of Arithmetical Magnitudes*: B. PETROKANSKY. *Successes of Economic Construction in Czechoslovakia. How to Define "Semi-manufactures" as a Statistical Concept*: N. LYUBIMOV and A. PETROV.

Finansy S.S.S.R. (Russian text)

No. 12, 1954. *Improve Control by the Rouble for the Economy*: A. ZVEREV. *In Every Way Perfect the State Organization*: K. PLOTNIKOV. *The Cost of Production of Agricultural Output Delivered as Payment in Kind to Machine-tractor Stations*: B. GINSBURG. *Achievements and Shortcomings of the Financial Organs in Kostroma Oblast*: I. EMEL'YANOV. *Raise the Level of Economic Work*: S. EREMENKO. *On the Control of the Odessa Municipal Bank over Building*: I. NIKIFOROV. *For a Further Development of Private Insurance*: I. DROZDKOV. *The United States Budget for 1954/55*: A. BUKIN.

No. 1, 1955. *Tasks of the Financial System in 1955. The Role of the Financial System in the Establishment of the Law of Socialist Accumulation*: V. PERESLEGIN. *The Budget of the Turkmen Republic in the Service of the National Economy and Culture*: K. NIKITIN. *The Analysis of Town Accounts—an Important Tool of Control*: P. MOROZOV. *Internal Reserves in Engineering*: S. RYUMIN. *For Higher Quality Work*: A. TIKHANE. *In Competition with the Financial Organs of Moscow*: G. BARATOV. *For a Higher Level of Agricultural Tax Collection in 1955*: D. BURMISTROV. *The Analysis of Labour Productivity on the Basis of Enterprises' Reports*: I. SHOLOMOVICH.

Dengi i Kredit (Russian text)

No. 5, 1954. *Assist in a New Upsurge of the Socialist Economy. Financial and Credit Operations in Enterprises—New Tasks*: A. BIRMAN. *Ensure the All-round Fulfilment of the Cash Plan*: I. MATVEEV. *The Positive Influence of the State Bank on the Bad Work of Enterprises*: A. ROGULIN. *Work at the Planned Standard*: I. KOPYLOV. *The Role of the Money and Credit System in Building Socialism in Czechoslovakia. The Functions of Gold as a Measure of Value in the Period of Imperialism*: A. EIDELNANT.

Plánované Hospodářství (Czech text)

No. 12, 1954. *For a Better Organization of Fuel Utilization*: K. MATOUŠ. *Problems in the Further Intensification and Specialization of Livestock Breeding in the U.S.S.R.*: L. ZALTSMAN. *The Summary of the Discussion on the Economic Effectiveness of Investment in Soviet Industry. The Use of Statistical Data on Population and Population Movement in Regional Planning*: R. RYCHARIK. *Experience in Introducing Internal Cost-accounting in the Lenin Factory at Pilsen*: J. POSPÍŠIL. *Experience of the Rayon Plan in Agricultural Planning*: M. KRUTKIN. *Planning the Material Technical Base of the National Economy of the U.S.S.R.*: L. MATEJKA. No. 1, 1955. *Urgent Problems of the Czechoslovak Building Industry*: P. STAHL. *Certain Questions of Extending Accumulation in Individual Agricultural Co-operatives*: J. MATOUŠKOVÁ. *On Decentralizing the Planning of Agriculture in the 1955 Plan*: J. KOŘÁLEK. *The Rise in the Material Prosperity of the Workers in the European Popular Democracies*: E. YAKOVLEV. *Planning Overhead Costs in Production*: B. KLICKA. *Results of a Study of Manpower Needs in an Agricultural Co-operative*: J. SAXL.

Gospodarka Planowa (Polish text)

No. 1, 1955. *Some Problems of the General Proportions of the Five-year Plan*: CZ. PRAWDZIC. *For Full Attainment of the Production Costs Plan in 1955*: Z. AUGUSTOWSKI. *For Improving the Elaboration of Technical-Economic Plans*: S. HATT. *Industrial Production for Agriculture and Supplies to the Countryside*: W. SZULE. *The Granting of Credits—One of the Ways of Linking the Small-scale Sectors with the Socialist Economy*: T. WYSZOMIRSKI. *Advance Orders*: K. ŚWISTUN. *Decentralizing the Distribution of the Volume of Goods*: M. SKRZMOWSKI.

Planova Stopanstvo (Bulgarian text)

No. 5, 1954. *The Development of Our Economy in Ten Years of Popular Democracy. Our Agriculture and the Second Five-year Plan*: A. TSANEV. *For an Increase in Industrial Crop Production*: S. NESHEV. *For a Full Utilization of Reserves for Lowering Costs of Production in Industry*: G. SHOPOV. *The Progress of Socialist Trade in the Second Five-year Plan*: B. VARON and I. VIDENOV. *The Construction of Dwellings and Other Social Capital in the Second Five-year Plan*: I. KRUSTEV. *Planning Agreements for Tractor Work and Field Brigades*: T. CHERNOKOLEV and N. GAYDAROV. *The Work of the Planning Departments of Local Councils' Executive Committees*: M. ENEV. No. 6, 1954. *The Development of Our Industry in the Second Five-year Plan*: N. S. NIKOLOV. *For a Further Upsurge in the Electrification of the Country*: K. POPOV. *Water Transport in the Second Five-year Plan*: KH. MANOLOV and B. BAEV. *Some Problems in the Hard Coal Balance*: I. VRANCHEV. *The Overcoming of Seasonal Variations in Industry and Transport*: P. SHAPKAREV. *For a Continuous Rise in Industrial Labour Productivity*: N. TODOROV. *Planning Agreements for Tractor Work and Field Brigades*: T. CHERNOKOLEV and N. GAYDAROV. *On the System of Index-number Norms in the Economic Plan*: B. GLUSKER and P. KRYLOV.

No. 1, 1955. *For a New Upsurge of the National Economy. Mechanization and Its Effect on Building*: A. BELCHEV. *For a Further Improvement of the Variety and High Quality of Production in the Light and Food Industries*: I. NEDEV. *The Economic Effects of the Stalin Hydro-electric Plant*: V. UZUNOV. *The Scientific Basis of Economic Planning*: G. SOROKIN. *Economic Agreements and Plan Fulfilment*: T. KRICHEV. *The Importance of Inventions and Rationalization Proposals in Plan Fulfilment*: P. PENEV. *Industrialization in the U.S.S.R.—a Great Example for the Industrialization of the Popular Democracies*: S. KHARALAMBOV.

Izvestia na Vishia Finansovo-Stopanski Institut (Bulgarian text)

VOL. VII, No. 3. *Speech on the Tenth Anniversary of the Establishment of People's Power*: V. CHERVENKOV. *The Uninterrupted Rise of the Material Prosperity and the Cultural Level of the Life of the People Towards Socialism*: S. LALEV. *The Development of Livestock in the Co-operative Sector and Its Planning*: P. MASTIKOV. *Turnover Costs in the Light of Commercial Calculations*: V. RANKOV. *A Needed Improvement in Planning State Farms by Accounting their Credit Finance*: L. RALCHEV.

Probleme Economice (Rumanian text)

No. 11, 1954. *The All-union Agricultural Exhibition in Moscow—A High School of Soviet Experience*: C. GRIGORE. *The Rise in Labour Productivity in the U.S.S.R.*: D. JOITA. *A Current Problem in the Technical-material Supply of Metallurgical and Engineering Enterprises*: H. STERIAN. *On the Territorial Distribution of Agricultural Production*: V. PAȘCOVSCI. *The German Democratic Republic—An Expression of the German People's Desire for Peace and Unity*: S. GALERIU. *On the Role of Productive Relations in the Pre-socialist Order*: P. DAN. *On the Methods of Calculating Labour Productivity in Industry*: S. OSIAS. *The Functions of the State Bank in Control by the Leu*: C. BAZNO.

Ekonomist (Serb text)

No. 5-6, 1954. *Symposium on the Teaching of Economics in Yugoslavia*: Contributions by R. BIČANIĆ, K. VASILJEVIĆ, S. ZARKOVIĆ, S. KRASOVEC, D. LOPANDIĆ, M. MACURA and J. POKORN. *The System of Income Distribution*: M. FRKOVIĆ and S. POPOVIĆ. *The Choice of Investments and Planning Under Capitalism*: A. SAUVY. *The First Serb Revolution and the Agrarian Problem*: C. KOSTIĆ. *The Movement of Exchange Rates Under the New Exchange Control System*: D. DIMITRIJEVIĆ. *Problems of Multilateralism in World Trade and the Revision of GATT*: M. RISTIĆ. *The World Economic Situation as Seen by the Bank for International Settlements at Basle*: T. MARKOVIĆ. *The Chief Causes of West German Expansionism*: V. GLIŠIĆ. *Italian Foreign Trade, 1948 to 1953*: M. STEVOVIĆ.

NEW BOOKS

British

AARONOVITCH (S.). *Monopoly. A study of British monopoly capitalism*. London: Lawrence & Wishart, 1955. 7½". Pp. 191. 9s. 6d.

[This is a work of standard Marxist-Leninist polemic. The analytical level is not impressive, and the handling of statistics is indiscriminating in the extreme. It is not therefore likely to have a wide appeal outside the ranks of the faithful. At the same time it is not altogether lacking in merit. The author is well read, and some of his points are cogently put: for example, his rejection of the thesis that the "separation of ownership from control" has involved a revolutionary change in the seat of industrial power, and his contention that the increase in the economic activities and power of the government has meant in large measure an increased participation of business leaders in government rather than a diminution of the power of business. It is easy to scoff at Mr. Aaronovitch's lurid picture of the scheming monopolists in their secret councils; but less easy to deny that in a world of oligopolies, where there are strong personal links between business leaders in different industries and between them and politicians, the impersonal forces of the kind which economists are best equipped to analyse become of less importance in the shaping of economic events, and more comes to hang on conscious personal or political decisions. Readers who have no sympathy with Mr. Aaronovitch's dogmatic premises and who are not attracted by his picture of a British People's Democracy may none the less find food for thought in some of the facts which he presents.]

ABEL-SMITH (B.) and TOWNSEND (P.). *New Pensions for the Old*. Fabian Research Series, No. 171. London: Fabian Publications, 1955. 8½". Pp. 27. 1s. 6d.

[A large part of this stimulating pamphlet is concerned with occupational pensions; that is to say, pensions paid by employers whether with or without prior contributions by the worker. The authors give some estimates to suggest that in twenty-five years time the amount paid out under such schemes may exceed the total of retirement pensions paid under the National Insurance Act. Occupational pensions are, they argue, a matter of public concern for a number of reasons. In the first place, they enjoy tax concessions estimated to cost about £100 million a year (twice the amount paid to the elderly in National Assistance). In the second place, they diminish the mobility of labour. Finally, occupational pensions have been made a basic part of the provision for old age by the rejection of Beveridge's subsistence principle—a rejection that has been implicit in the rates of retirement pension actually paid and that has now been made explicit by the Phillips Committee. The net result of our present arrangements for old age is to make the inequality of income substantially greater for the elderly than for those of working age. This defect would not be avoided even if the subsistence principle were restored. The authors accordingly favour a more radical change. They suggest a compulsory state scheme under which both benefits and contributions should vary (though not necessarily in exactly the same way) according to income during working life, subject to certain minima and maxima—a national superannuation scheme, as they put it, in place of national insurance. The least convincing part of the authors' interesting and eloquently stated argument is perhaps their rejection of the doctrine that provision for benefits above the subsistence level should be made voluntarily through private channels. Apart from anomalies in the pattern of tax concessions, which in principle could presumably be removed, their chief objections to this appear to be on administrative grounds and because of the power conferred on private insurance companies by the volume of funds in their hands.]

ASHTON (T. S.). *An Economic History of England. The Eighteenth Century*. London: Methuen, 1955. 8½". Pp. 257. 18s.

[To be reviewed.]

BANK OF CEYLON. *Annual Report 1953-1954*. Colombo: Bank of Ceylon, 1954. 10". Pp. 15, and charts.

[This contains a brief survey of developments in the Ceylon economy during the year ended September 1954, a year that witnessed a striking improvement in the country's balance-of-payments position. The report is embellished by a number of well-designed charts.]

BARTLETT (M. S.). *An Introduction to Stochastic Processes, with special reference to methods and applications*. London: Cambridge University Press, 1955. 8½". Pp. xi + 312. 35s.

[To be reviewed.]

BAUER (P. T.). *West African Trade. A study of competition, oligopoly and monopoly in a changing economy*. London: Cambridge University Press, 1954. 9½". Pp. xv + 450. 55s.

[To be reviewed.]

BELSHAW (C. S.). *Changing Melanesia. Social economics of culture contact*. Wellington and London: Oxford University Press, 1954. 9". Pp. ix + 197. 17s. 6d.

[To be reviewed.]

BIRCH (A. H.). *Federalism, Finance and Social Legislation in Canada, Australia, and the United States*. London: Oxford University Press, 1955. 9". Pp. xi + 314. 35s.

[To be reviewed.]

British Trade Unionism. *Five Studies by P.E.P.* A new and revised edition. London: Political and Economic Planning (16 Queen Anne's Gate, S.W.1.), 1955. 9". Pp. 199. 16s.

[The first edition of this appeared in 1948 and was reviewed by J. B. Jefferys in the *Economic Journal* of June 1949, p. 233. The present issue is not altered in general structure and scope, but the text has been thoroughly revised to take account of changing conditions.]

CENTRAL BANK OF CEYLON. *Report on the Sample Survey of Ceylon's Consumer Finances conducted in May 1953*. Colombo: Department of Economic Research, Central Bank of Ceylon, 1954. 9½". Pp. 34, and appendices. 3s. 6d.

[This is a valuable addition to the growing literature on economic conditions in backward countries derived from sample surveys. It is based on a stratified sample of all consuming units in Ceylon. The chief topics inquired into were income and expenditure, with less detailed treatment of occupations, employment, housing, education and a number of other particulars.]

COPEMAN (G. H.). *Leaders of British Industry. A study of the careers of more than a thousand public company directors.* London: Gee & Co., 1955. 9". Pp. 173. 15s.

[To be reviewed.]

FEDERATION OF BRITISH INDUSTRIES. *United Nations Technical Assistance. Reports on visits to the Technical Assistance Administration of the United Nations in New York, in September 1954, and to the Food and Agriculture Organisation in Rome, in October 1954.* London: Federation of British Industries, 1955. 8½". Pp. 38. 2s. 9d.

[This report describes in outline the functions of the Food and Agriculture Organisation and the Technical Assistance Administration. The authors then go on to discuss briefly in the light of the experience so far gained some of the general problems about the form in which technical assistance can most usefully be given.]

FORD (P. and G.). *A Guide to Parliamentary Papers. What they are: how to find them: how to use them.* Oxford: Basil Blackwell, 1955. 9½". Pp. 79. 7s. 6d.

[This is a valuable addition to the series of works on Parliamentary Papers that have been undertaken by Professor and Mrs. Ford. Its chief use will be to research students and others embarking for the first time on the study of Parliamentary Papers, but more experienced users of them are likely also to learn much that is new to them. The authors have some cogent remarks to make about the confusion that results from the present division between Command Papers and Non-Parliamentary Departmental and other papers, and this is not the only respect in which they think that present publication policy compares unfavourably with that of the nineteenth century. In a second edition the authors might perhaps consider adding a list of those libraries in the British Isles in which full sets of the various classes of papers may be found.]

FRANKEL (H.). *Controls and Subsidies on Agricultural Products and Requisites. Supplements to the Farm Economist.* Vol. VII, No. 4, Pigs and Bacon, 1939-53, Eggs, 1939-53. Vol. VII, No. 5, Meat and Livestock, 1939-53, Hill-sheep and Hill-cattle Subsidies, 1939-53. Vol. VII, No. 6, Wheat, Flour and Bread, 1939-53. Vol. VII, No. 7, Sugar-beet and Sugar, 1939-53. Vol. VII, No. 8, Potatoes, 1939-54. Oxford: University of Oxford Institute for Research in Agricultural Economics, 1954. 8½". Pp. 51, 57, 57, 46 and 76. 2s. each.

[To be reviewed.]

FRANKLIN (N. N.). *Economics in South Africa.* 2nd edition. Cape Town and London: Oxford University Press, 1955. 7½". Pp. 247. 21s.

[This is a revision of a book first published in 1948. It is intended as an introductory survey of the economic problems of South Africa for students and the general reader. The first edition contained also a fair amount of straightforward elementary theory, and some of this has now been removed to make room for a fuller treatment of South Africa's external position and other new material.]

FUSSELL (G. E. and K. R.). *The English Countryman, his life and work, 1500-1900.* London: Melrose, 1955. 9½". Pp. xi + 172. 30s.

[This is a history of the way of life of farmers and farm labourers rather than a history of farming. The emphasis is rather more on the farmers than on the labourers. The authors have used their wealth of knowledge to produce an entertaining work, written in leisurely and discursive style. The many illustrations add notably to the reader's pleasure and help to give a vivid impression of aspects of rural life that are thinly treated in the standard histories. *The English Countryman* is not an academic work, and the authors have not chosen to burden their pages with statistics or with assessment of evidence on debated questions.]

HARVEY (N.). *The Farming Kingdom.* London: Turnstile Press, 1955. 8". Pp. xi + 178. 15s.

[Reviewed in this issue.]

HUNT (K. E.). *The State of British Agriculture, 1953-4.* Oxford: University of Oxford Institute for Research in Agricultural Economics, 1954. 13". Pp. 120. 10s.

[This is a useful and rather unusual piece of work. It consists of nearly a hundred charts indicating the behaviour of a wide variety of statistics relating or relevant to British agriculture, carried back in most cases to before the war and in some cases to considerably earlier. There is no continuous text, but each page of charts is accompanied by a page or so of commentary. This commentary calls attention to the chief trends emerging from the figures and discusses briefly the causes and significance of these trends, providing at the same time particular items of supplementary

information relevant to the general pattern. The chief purpose of the compilation is stated to be to assist farmers and their advisers by providing them with background information against which they may view their own economic problems. These problems, Mr. Hunt suggests, are likely to become more complex and difficult as government price guarantees become less detailed and absolute. Academic and other students of the industry are, however, likely also to find it a most useful source of information.]

The Irish Pound 1797-1826. A reprint of the Report of the Committee of 1804 of the British House of Commons on the Condition of the Irish Currency, with selections from the minutes of evidence presented to the Committee and an introduction by F. W. FETTER. London: Allen & Unwin, 1955. 9". Pp. 136. 16s.

[To be reviewed.]

LEE (W. A.). *Thirty Years in Coal, 1917-1947.* A review of the coal mining industry under private enterprise. London: The Mining Association of Great Britain, 1954. 9". Pp. 255. 16s.

[To be reviewed.]

LEWIS (J. SPEDAN). *Fairer Shares.* A possible advance in civilization and perhaps the only alternative to Communism. London: Staples, 1954. 8½". Pp. 244. 8s. 6d.

[Mr. Lewis here describes the type of producer co-operation exemplified by the John Lewis Partnership. He deals with the general principles on which it is based and with some of the ways of applying these principles that have been evolved in the light of the Partnership's forty years' experience. Mr. Lewis' book does not exactly dispel the charge commonly made that the John Lewis Partnership is more a benevolent despotism than the "constitutional monarchy" to which he likes to compare it. But anyone seeking to find fault on this score will be disarmed by Mr. Lewis' very candid admission that "producer co-operation at the stage that it has reached so far in the John Lewis Partnership, could reasonably be said to be hardly more than an attempt to secure that the managers of such organisations, while having to a very great extent the responsibilities and therefore the powers of ordinary employers, will always use those powers as they might be used by an ordinary employer of the best kind" (p. 10).]

LOCKWOOD (W. W.). *The Economic Development of Japan. Growth and structural change, 1868-1938.* London: Oxford University Press, 1955. 9½". Pp. vii + 603. 63s.

[To be reviewed.]

MACRAE (N.). *The London Capital Market. Its structure, strains and management.* London: Staples, 1955. 9". Pp. 285. 25s.

[To be reviewed.]

The Middle East. A survey and directory of the countries of the Middle East. Fourth edition. London: Europa Publications, 1955. 10". Pp. vii + 425. 60s.

[The present edition of this well-known reference book has been revised to take account of the many important changes that have occurred in Middle Eastern countries in the last two years. A general outline of the geography of the region and a general bibliography are followed by a country-by-country survey, giving information on history, political and legal structure, economic conditions, the Press, etc. A Who's Who of leading personalities in the Middle East is also included.]

DE NEUMAN (A. M.). *Industrial Development in Indonesia.* Cambridge: Students' Bookshops, 1955. 8½". Pp. 40. 4s. 6d.

[Dr. de Neuman here outlines the development of the Indonesian economy since the beginning of the nineteenth century and analyses its problems at the present time. Both the narrative and the analysis contain much that is of interest, although the large mass of information given might perhaps have been made easier for the reader to digest by the inclusion of a few summary statistical tables. A theme which the author emphasises at several points is the important part that has been played by political events and political decisions in shaping Indonesia's economic development, from the time of Sir Stamford Raffles onwards.]

RICHMOND (A. H.). *The Colour Problem. A study of racial relations.* Harmondsworth: Penguin Books, 1955. 7". Pp. 371. 3s. 6d.

[The author describes the origins and nature of the colour-bar and the present state of relations between negroes and whites in South Africa, British Colonial Africa, the West Indies and in Great Britain itself. Problems of racial relations in other parts of the world are not specifically discussed, but the conclusions put forward are of general applicability. Mr. Richmond takes his stand on principles of uncompromising liberalism.]

ROBERTSON (SIR DENNIS). *Wages. The Stamp Memorial Lecture 1954.* London: The Athlone Press, University of London, 1954. 8½". Pp. 20. 2s. 6d.

[Sir Dennis' central theme in this lecture is that there is a sense in which it is possible for the general level of wages to be too high, even disregarding the danger of wage-induced inflation and the relation between the level of wages and the balance of payments. A high share of the national income going to labour will lead to correspondingly lower rates of reward being paid to the other factors of production. This will cause the supply of these factors (capital and enterprise are those which Sir Dennis has chiefly in mind) to be too low, and it will presumably also make the demand for them too high (though he does not stress this aspect so much). Sir Dennis admits that the old-fashioned concept of a "proper" level of wages is open to theoretical objections as well as being difficult to apply in practice, but he does not regard these objections as fatal, though he does not deny the force of some of them. The concluding sections of the lecture deal with the problems of wage fixing in a particular industry against the background of the foregoing discussion of the level of wages in general. The lecture has all its author's characteristic wit and subtlety and persuasiveness, even though his desire to avoid technicalities obliges him to leave some of the trickier parts of the argument in rather an undecided state. In the present revised edition the opportunity has been taken to correct one or two statistical slips present in the original version.]

ROLL (E.). *A History of Economic Thought.* Revised and enlarged edition. London: Faber & Faber, 1954. 9". Pp. 540. 30s.

[The author has undertaken a complete revision of his well-known work and has added a new chapter on "Political Economy Today." This chapter is concerned particularly with post-Keynesian developments in income analysis and with recent contributions to statistical economics.]

LORD SIMON OF WYTHENSHAW. *Some Aspects of World Population and Food Resources. Occasional Papers on Eugenics, No. 9.* London: The Eugenics Society and Cassell, 1955. 8½". Pp. 19. 2s. 6d.

[This is a reprint of a lecture previously published in the *Eugenics Review*. In it Lord Simon of Wythenshawe surveys in very general terms the problem of population growth and food supply illustrating his argument by a comparison of the historical experience of India and Japan with that of Western Europe.]

STRAFFA (P.) (Ed. with the collaboration of M. H. DOBB). *The Works and Correspondence of David Ricardo. Vol. X. Biographical Miscellany, including the Journal of a Tour of the Continent.* London: Cambridge University Press, for the Royal Economic Society, 1955. 9". Pp. ix + 424. 24s.

[To be reviewed.]

SZCZEPANIK (E. F.). *A Study in the Economic Problems of Central and Eastern Europe.* London: Free Course of Central and Eastern European Studies (32 Bolton Gardens, S.W.5), 1954. 8". Pp. 49.

[The first part of this is a vehement general onslaught on the economic and other policies currently being pursued in the satellite countries of Eastern Europe. In the second and more interesting part, Mr. Szczepanik considers the likely future consequences of the integration of this part of Europe into what is effectively an economic unit. This is a development which he regards as a *fait accompli*, unlikely to be reversed, whatever political changes the future may hold. He concludes by discussing the lines along which the economic development of the region might proceed in the event of communist power being overthrown. He has here some interesting suggestions, particularly in relation to agriculture. Some economists, however, may feel misgivings at the optimistic view of the state of our science implied by Mr. Szczepanik's remark that "the future economic development of Central-Eastern Europe will have to be based not on the principles of Marxism-Leninism-Stalinism, but on the western economic theory of economic growth."]

THOMAS (J.). *A History of the Leeds Clothing Industry.* Yorkshire Bulletin of Economic and Social Research, Occasional Paper No. 1. Hull: Department of Economics & Commerce, University of Hull, 1955. 9½". Pp. 62. 7s. 6d.

[In this competent and well-written monograph, Mrs. Thomas starts by describing the introduction of ready-made clothing manufacture to Leeds in the middle of the nineteenth century following on the invention of the sewing-machine. She then traces its subsequent development up to 1914, with briefer treatment of its experience in the 1920s and 1930s. Perhaps the most noteworthy of her findings is that although clothing is now considered a "footloose" industry, in which costs are not much affected by location, this was so far from being the case in the early stages of its history that not merely did the industry grow much faster in Leeds than elsewhere, but within Leeds itself the clothing factories were concentrated into a small district. It would be interesting

to know what other industries afford examples of diminution over time in the economies of regional concentration. Among other topics discussed by the author are the part played by Jews and Jewish immigration in the industry, relative rates of wages and conditions of work in Leeds and other clothing centres such as London in the nineteenth century, and the origins of wholesale bespoke tailoring.]

THORELLI (H. B.). *The Federal Antitrust Policy. Origination of an American Tradition.* London: Allen & Unwin (Stockholm: Norstedt), 1954. 10". Pp. v + 658. 60s.

[To be reviewed.]

UNIVERSITY OF BRISTOL, DEPARTMENT OF AGRICULTURAL ECONOMICS. Report No. 80, July 1954, Costs and Returns of Fattening Sheep on Roots in Devon, a study of 37 sheep fattening enterprises, 1952-3, by E. T. DAVIES. Pp. 23. 1s. 6d. Report No. 81, January 1955, Some Technical and Economic Aspects of the Combine Harvester, by A. H. GILL. Pp. 47. 2s. 6d. Report No. 82, February 1955, Costs and Returns of Wheat Growing in 3 Areas of South West England. Pp. 21. 1s. 6d. Newton Abbot: Department of Agricultural Economics, University of Bristol. 13".

[These three documents are intended for professional students of agricultural economics, but they contain a number of points of general interest. It appears that although there has been some shift away from wheat-farming in parts of the South-West, wheat-farming is still decidedly profitable where the scale of operations is sufficiently large: "the Dorset wheat-farmer's costs are probably lower at this moment than those of his Canadian competitor." The report on the combine harvester provides some evidence to suggest that its use may be advantageous even when acreages are comparatively small, especially if farmers can make arrangements for joint ownership or exchange.]

URWICK (L.). *The Load on Top Management—can it be reduced?* London: Urwick, Orr & Partners, 1954. 8½". Pp. 50. 2s.

[Col. Urwick discusses the effect of the increasing size and complexity of business units on the burdens of those occupying the most senior managerial posts. The keynote of the recommendations which he makes is that the organisation of top management functions must be clear-cut and even formal, so that the powers and responsibilities of all concerned are unambiguously defined. He emphasises also the importance of distinguishing between policy-execution, which is the function of management, and policy-making, which is the function of the Board of Directors.]

WHETHAM (E. H.). *A Record of Agricultural Policy, 1952-54.* Cambridge: Farm Economics Branch, University of Cambridge School of Agriculture, 1955. 10½". Pp. 23. 2s.

[This convenient factual survey brings up to date Miss Whetham's previous *Record of Agricultural Policy 1947-52*. Information is given on agricultural legislation, output and incomes, prices and price reviews, marketing and administration.]

WILSON (H. A. R. J.). *Spicer & Pegler's Income Tax and Profits Tax.* Twenty-first Edition. London: H.F.L., 1954. 9". Pp. 685. 30s.

[This new edition of a standard text-book incorporates the important changes made in the 1954 Finance Act. The book is lucidly written and gives the essential references to the case law.]

WOOTTON (B.). *The Social Foundations of Wage Policy. A study of contemporary British wage and salary structure.* London: Allen & Unwin, 1955. 9". Pp. 200. 15s.

[To be reviewed.]

WRIGHT (H. R. C.). *Free Trade and Protection in the Netherlands, 1816-1830. A Study of the first Benelux.* Cambridge Studies in Economic History. London: Cambridge University Press, 1955. 8½". Pp. ix + 251. 31s. 6d.

[To be reviewed.]

The Young Worker. Education for Human Relations. Report of the fifth conference held at Oxford in April 1954 by the University Department of Education. London: Heinemann, 1955. 7½". Pp. 64. 3s. 6d.

[The subject of the conference whose proceedings are here reported was the educational problems that arise in relation to working boys and girls between the ages of fifteen and eighteen.]

Indian

ALL-INDIA RURAL CREDIT SURVEY. Report of the Committee of Direction. Vol. II, The General Report. Bombay: Department of Research and Statistics, Reserve Bank of India, 1954. 10". Pp. 578. Rs. 5/-.

[This large-scale report describes present conditions in India with regard to the supply of agricultural credit, considers the reasons for the relative failure of the Co-operative Movement to date and makes a number of recommendations for future policy. The authors do not have any new panaceas to offer; they recognise that the credit problem is only one aspect of the more general problem of rural poverty, and they are convinced that there is no real alternative to some form of co-operative association.]

DAS (N.). Studies in Indian Economic Problems. Calcutta: Mukherjee & Co., 1954. 9". Pp. 131. Rs. 3/-.

[This is a collection of eighteen short essays contributed by their distinguished author to various newspapers and journals in India over the past two years. Taken together they comprise an admirably clear and realistic survey of India's economic problems to-day.]

A Fact Finding Enquiry into the working of Co-operative Primary Agricultural Credit Societies in the Taluks of Manvi (Raichur District), Banswada (Nizambad District), and Degloor (Nanded District). Hyderabad-Deccan: The Indian Institute of Economics, 1954. 9½". Pp. 73. 8s.

[The findings of this thorough and systematic inquiry are largely negative. Co-operative societies are still unknown in a large majority of the villages in the parts of Hyderabad-Deccan studied. As a source of agricultural credit they are less important than private money-lenders even to their members. The authors suggest a number of measures by which the effectiveness of the co-operative movement in the area could be increased, and they are of opinion that this aim should be treated as a matter of urgency.]

GHOSH (S. K.). Trends in Economic Thinking. Calcutta: published by the author (15 Mahendra Road, Calcutta, 25), 1953. 9". Pp. 57. Rs. 2/-.

[In his brief space the author surveys the present state of doctrine in a very wide range of theoretical topics. His treatment is clear and concise, and his acquaintance with the recent literature is sound if not very wide. His grasp of some of the more difficult points is, however, a little uncertain, as evidenced in his unsatisfactory treatment of the acceleration principle and in the dubious statement that "the instantaneous multiplier is of no direct use for the explanation of the trade cycle."]

JOSHI (H. S.) and DHEKNEY (B. R.). Irrigation and Agriculture in the First Five-Year Plan: an Appraisal. Vol. 1. Poona: Deccan Book Stall, 1954. 10". Pp. 110. Rs. 6/-.

[On the basis of a detailed quantitative analysis, the authors arrive at a very critical assessment of the irrigation and related schemes projected under the Indian Five-Year Plan. They find that the officially published statistics relating to these schemes are full of anomalies. Their criticisms are on both economic and engineering grounds, and include some detailed discussion of particular schemes. They argue that the attempt to combine the aim of regional famine protection with that of securing the maximum increase in total production has led to a confusion of purpose in a number of instances, and they can see little justification for the assumption implicit in the officially published figures that the rate of return over cost will be much higher in the projected irrigation schemes than it has been in the case of irrigation schemes carried out in the past.]

SRIVASTAVA (K. N.). Industrial Peace and Labour in India. Allahabad and Bombay: Kitab Mahal, 1954. 9". Pp. 499. Rs. 7/8.

[This is designed as a comprehensive survey of labour problems in India to-day. Topics covered include the history of trade unions and the labour movement in India, collective bargaining, industrial disputes, wages, employment, working conditions, social security, housing and industrial democracy.]

SWARUP (RAM). Communism and Peasantry. Implications of Collectivist Agriculture for Asian Countries. Calcutta: Prachi Prakashan, 1954. 9". Pp. 194. \$5.00.

[Mr. Ram Swarup analyses the theory and practice of Soviet Communism in its treatment of the peasantry, as seen in experience in Russia itself and in present attempts to force other agrarian countries to follow the Russian example. The author is well read and writes effectively. His own standpoint is a Gandhian one, and he finds little more to admire in western capitalism than in

communism. Both are in his view guilty of making a fetish of production and establishing an artificial concept of the standard of living. He argues that many items that are customarily included in measures of real income in western countries are really costs of production rather than ultimate goods (e.g., expenditure on travelling to work). More generally, the author holds that many of the forms of consumption in which western countries are pre-eminent do no more than pander to artificially developed tastes and are to be deplored rather than admired on a profounder assessment of human and divine values.]

VARSHNEY (R. L.). India's Foreign Trade, during and after the second world war. Allahabad and Bombay: Kitab Mahal, 1954. 9". Pp. 340 and appendices. Rs. 7/8.

[This gives a detailed account of the behaviour of India's balance of payments and foreign trade since the end of the war. The author also discusses in more general terms the foreign-trade policy which it would be appropriate for India to pursue at the present time. He thinks that the devaluation of the rupee was a mistake and should be reversed. He regards it as essential that controls on foreign trade should be retained for the present, but he finds a great deal of room for improvement in their present form and the way in which they are exercised.]

American

AITKEN (H. G. J.). The Welland Canal Company. A study in Canadian enterprise. Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1954. 9½". Pp. vii + 178. 28s.

[The Welland Canal connects Lake Erie and Lake Ontario. Mr. Aitken traces its history from the time around 1818 when it was first mooted, through its period of construction (1825-33), up to 1841, when control of the company passed into the hands of the provincial government. He has produced an extremely interesting monograph, which picks out the important issues and presents them with admirable directness and economy of phrase. The story has much in common with that of many other early transport undertakings in the old world as well as in the new: the mixed motives of the promoters, the enormous excess of the cost of construction over the amount estimated, the competition with alternative routes (in this case the Erie Canal) and the difficulty of realising an adequate revenue until ancillary facilities had developed and time had increased the volume of traffic. The Welland Canal Company was originally a private concern, but the provincial government became increasingly involved as time went on, until finally it took over the entire control. This was partly because of the military importance of the canal and its position in the Great Lakes-St. Lawrence navigation system as a whole. But the decisive factor was that it was only from the government that enough capital could be obtained. The chronic shortage of cash suffered by the company was no unusual experience in early canal and railway enterprises, but the special circumstances of the Welland Canal made its problem unusually acute. Private capital in Upper Canada was quite insufficient for the purpose, and there were political objections to raising too large a proportion of the amount needed in the United States. The only other possible source was the London market. Had the company's efforts to raise money in London been less unlucky and less grossly mismanaged, its subsequent history might well have been very different.]

ALHADEFF (D. A.). Monopoly and Competition in Banking. Berkeley, California: University of California Press (London: Cambridge University Press), 1955. 9½". Pp. 254. 34s.

[Reviewed in this issue.]

BELLMAN (R.). Dynamic Programming of Continuous Processes. Santa Monica, California: The Rand Corporation, 1954. 9½". Pp. iii + 141.

[To be reviewed.]

BUCHANAN (N. S.) and ELLIS (H. S.). Approaches to Economic Development. New York: Twentieth Century Fund, 1955. 9½". Pp. v + 494. \$5.00.

[To be reviewed.]

CARROLL (C. R.). Private Investments Abroad. National Economic Problems, No. 454. Washington D.C.: American Enterprise Association, 1954. 8½". Pp. 83. \$1.00.

[The author surveys the history of American foreign investment with special reference to the period since the end of the war. His viewpoint is that of the American investor, and his tone is that of a tract rather than of a dispassionate analysis. The chief conclusion drawn is that the extent, character and direction of American lending has been and is dictated chiefly by the attitudes adopted by foreign governments to American capital.]

CLELAND (S.). *The Influence of Plant Size on Industrial Relations*. Princeton, New Jersey: Industrial Relations Section, Princeton University, 1955. 9". Pp. 65. \$2.00.

[This is the second of a series of reports based primarily on interviews conducted with the managements of eighty-two manufacturing plants in Trenton, New Jersey. The first report dealt with labour recruitment. The present one compares plants with more and less than 500 workers with regard to strength of trade unionism, wages and hours, personal relationships, industrial disputes and a number of similar issues. Small plants are found on the average to offer lower wages, with some offsets in more opportunities for overtime and steadier year-round employment. Trade-union strength was less and strikes were fewer in the smaller plants, and union leaders in the small plants tended to be older, more skilled and less militant. The author's general assessment gives a good deal of weight to the intangible advantage in personal relations which the smaller plants are considered to enjoy. His conclusions on this are not altogether satisfactory, because there was a wide divergence of opinions between the managers interviewed. Moreover, the opinions of the workers might appear to be at least as relevant here as the opinions of management, and these were not systematically canvassed.]

FISHER (I.). *The Theory of Interest*. Reprints of Economic Classics. New York: Kelley & Millman, 1954. 9". Pp. 566. \$8.50.

[A photographic reprint of Fisher's classic 1930 volume, which was a complete rewriting of his 1907 *The Rate of Interest*. It was described by Schumpeter as "the peak achievement, as far as perfection within its own frame is concerned, of the literature of interest."]

FRIEND (I.). *Individuals' Saving: Volume and Composition*. New York: John Wiley (London: Chapman & Hall), 1954. 9½". Pp. 288. 40s.

[To be reviewed.]

GERVAISE (I.). *The System or Theory of the Trade of the World*. A Reprint of Economic Tracts, with a Foreword by J. VINER and an Introduction by J. M. LETICHE. Baltimore, Maryland: John Hopkins Press (London: Geoffrey Cumberlege), 1955. 9½". Pp. v + 24. 16s.

[This is a reprint of a scarce tract published in 1720, the only known work of its author. It has been described by Professor Viner, the first modern writer to take note of it, as a more comprehensive analysis of the mechanism of adjustment in international trade than any other to appear before the nineteenth century. The introduction by Dr. J. M. Letiche gives the results of researches he has undertaken into Gervaise's life.]

GLOVER (J. D.). *The Attack on Big Business*. Boston, Mass.: Harvard University Graduate School of Business Administration (London: Bailey Bros. & Swinfen), 1954. 8". Pp. vii + 375. 48s.

[To be reviewed.]

HODGMAN (D. R.). *Soviet Industrial Production, 1928-1951*. Cambridge, Mass.: Harvard University Press, 1954 (London: Geoffrey Cumberlege, 1955). 9½". Pp. vii + 241. 40s.

[To be reviewed.]

Investment for Jobs. Washington, D.C.: Chamber of Commerce of the United States, 1954. 9". Pp. 29. 50 c.

[Estimates are shown of the amount of capital investment needed to provide sufficient jobs to maintain a high level of employment over the next ten years in the United States. Attention is then directed to the various obstacles to investment, particularly those imposed by government in the form of excessive control of business and unduly heavy taxation of the well-to-do.]

IRWIN (H. S.). *Evolution of Futures Trading*. Madison, Wisconsin: Mimir, 1954. 9". Pp. ix + 95. \$3.00.

[This book is devoted chiefly to a detailed historical study of trading in egg futures in Chicago, based on the author's personal contacts with dealers. The evolution of futures dealing in butter, grain and cotton is more briefly treated. Organised dealing in egg futures came only after the First World War, but time contracts had been common since around 1900. Mr. Irwin's leading thesis is that this development at the beginning of the present century was the consequence of accumulated stocks having become for the first time an important element in the market situation as a result of refrigeration. He suggests that similar changes in market conditions may have been responsible for the development of time contracts in grain and cotton half a century earlier, and he points out that the gradual transition from occasional time contracts to organised futures trading has passed through roughly the same stages in each of these markets. As far as the earliest stages of the evolution are concerned, the parallel between grain and cotton on the one hand and eggs and

butter on the other seems to be rather less close than Mr. Irwin suggests, since there has never been a time when stocks were unimportant in the grain and cotton markets. Mr. Irwin does not mention the part played in the original development of futures trading in these commodities by the invention of telegraphy, which for the first time made it possible for market information to travel much faster than the goods themselves.]

KUZNETS (S.) and RUBIN (E.). *Immigration and the Foreign Born*. National Bureau of Economic Research, Occasional Paper 46. New York: National Bureau of Economic Research, 1954. 9". Pp. v + 104. \$1.50.

[The chief statistical contribution of this monograph lies in a comparison between the figures of foreign born given in successive United States censuses with estimates based on particulars of net migration and mortality. The accompanying discussion of the conclusions to be drawn from the figures deals both with the migration statistics themselves and with the statistics of foreign born. The analysis of the migration figures does not reveal a great deal that was not familiar before, although some interesting details are shown. Net immigration as a percentage of population is seen to be at its highest in the period before the Civil War. Arrivals of immigrants as a percentage of population were higher in the early years of the present century, but this was offset by a much larger proportion of departures. The authors discuss the well-known relation between migration and residential construction, and they also find some relation between these two and gross national product per worker expressed as a percentage of trend. This last finding is interesting, but as the authors partially acknowledge, not too much should be made of it, because the elimination of trend from the GNP series puts it on a different basis from the other two. For example, the relative timing of the turning points in the three series seems of doubtful significance for that reason. In the remaining part of the analytical section of the monograph, figures of numbers of foreign born and native-born are analysed both for the labour force and for the total population. Some curious consequences are shown to stem from the fact that roughly the same circumstances as encourage immigration tend to encourage births to native-born parents. Also noteworthy is that fluctuations in the rate of addition to the native-born labour force appear not to be adequately accounted for by demographic factors.]

LENT (G. E.). *The Ownership of Tax Exempt Securities, 1913-1953*. National Bureau of Economic Research, Occasional Paper 47. New York: National Bureau of Economic Research, 1955. 9". Pp. 139. \$1.50.

[This monograph analyses the volume and composition of securities, interest on which is exempt from tax, and their distribution between the government, institutional holders and individuals over the period 1913-53 in the United States. Practically the whole of these securities consist now of the obligations of state and local governments, which have been exempted from tax because of doubts about the constitutional validity of federal attempts to subject them to taxation. Mr. Lent's work provides much interesting material for the student of the bond market. Trends in distribution of tax-exempt securities between different classes of holders have naturally reflected changes in tax rates. Recent increases in corporation tax rates compared with tax rates on individual incomes have led to a relative increase in institutional holdings, and commercial banks now own about 40% of the total privately held. Individual holdings, as is to be expected, are concentrated chiefly in the highest income brackets where income-tax rates are most severe. Mr. Lent finds, however, that the demand for tax-exempt securities from the wealthiest class is rather less than might be expected on *a priori* grounds. The yield on these securities exceeds the yield on taxable corporation bonds by a large margin for those with the highest incomes, and the proportion of tax-exempt securities held by less well-off individuals is not negligible. The reason is no doubt partly that the very rich are often less interested in bonds of any description than in common stocks. It is interesting to observe that the responsiveness of prices to changes in tax rates have not prevented the latter from bringing about large fluctuations over time in the critical level of income above which tax-exempt securities have a higher net yield than taxable bonds—presumably investors' elasticity of expectations with respect to tax rates is below unity. Mr. Lent is sparing in his conclusions, but it emerges fairly plainly that the chief beneficiaries from the tax-exemption system are the state and local governments, which it enables to raise money on terms so much more favourable than other borrowers.]

MALTHUS (T. R.). *Definitions in Political Economy*. Reprints of economic classics. New York: Kelley & Millman, 1954. 8". Pp. 261. \$7.50.

[A photographic reprint of one of Malthus' less well-known works—a work that was none the less described by James Bonar as containing the most pleasant examples of Malthus' style outside the first *Essay on Population*.]

MAVERICK (L. A.). *Productivity*. A critique of current usage. Carbondale, Illinois: Published by the author (701 South Oakland Avenue, Carbondale), 1955. 9". Pp. 30. 50c.

[The author criticises severely the practice of drawing sweeping conclusions from measures of productivity that take no account or incomplete account of inputs other than labour. A useful bibliography is included of books and articles on productivity.]

MOLEY (R.). What Price Federal Reclamation? National Economic Problems, No. 455. New York: American Enterprise Association, 1955. 8½". Pp. 70. \$1.00.

[An attack on federal land reclamation policy, principally on the grounds of its expense. The author makes no bones about his position in the controversy, and although he provides much interesting information, his demonstration of the poor financial results of most of the schemes so far undertaken is inconclusive as an argument against them without a more sustained treatment than he gives of the question of "indirect" benefits. The argument is none the less not unimpressive, and the author strengthens it by pointing to the present surplus stocks of agricultural products as evidence of the impolicy of spending large sums in order to increase the area under cultivation. Mr. Moley acknowledges that population increases may quite soon absorb present surpluses, but he suggests that should any shortage appear there are other ways of increasing supply which are much less costly than those he is criticising.]

RANDALL (C. B.). A Foreign Economic Policy for the United States. Chicago: University of Chicago Press (London: Cambridge University Press), 1955. 8½". Pp. 83. 15s.

[In these lectures Mr. Randall puts forward an eloquent and well-reasoned plea for a more liberal United States foreign trade policy. He emphasises the direct American interest in allowing freer imports, both for the sake of the consumer and because of the likely future increase in the importance of exports to the American economy. Especially interesting are his candid remarks on the thorny questions of East-West trade and of the American agricultural surpluses.]

SIMMEL (G.). Conflict. Translated by K. H. Wolff. The Web of Group-Affiliations. Translated by R. Bendix. Glencoe, Illinois: The Free Press, 1955. 8½". Pp. 195. \$3.50.

[This consists of translations of two long chapters from the *Soziologie* of Georg Simmel, the German scholar who died in 1918. It supplements *The Sociology of Georg Simmel*, issued by the same publishers in 1950, which contained translations of other parts of Simmel's work.]

SOLO (R. A.) (Ed.). Economics and the Public Interest. Essays written in honor of Eugene Ewald Agger. New Brunswick, New Jersey: Rutgers University Press, 1955. 9". Pp. vii + 318. \$5.75.

[The twenty essays in this collection are grouped into four parts, under the headings of methodology, empirical analysis, problems of policy, and growth and development. The majority of the contributors are on the staff of Rutgers University, where Professor Agger was for many years Chairman of the Department of Economics. The remaining contributors include among others G. H. Moore ("The Diffusion of Business Cycles"), Milton Friedman ("The Role of Government in Education") and David A. Morse ("International Employment Problems and Policy").]

THORP (W. L.). Trade, Aid, or What? A report based upon a conference on international economic policy at the Merrill Center for Economics, Summer 1953. Baltimore, Maryland: Johns Hopkins Press (London: Geoffrey Cumberlege), 1955. 9½". Pp. vii + 224. 36s.

[Reviewed in this issue.]

VERNON (R.). America's Foreign Trade Policy and the GATT. Essays in International Finance, No. 21. Princeton, New Jersey: International Finance Section, Princeton University, 1954. 9". Pp. 25.

[The author has participated in many of the activities of GATT as an official of the United States Government. He here describes its origins and assesses its achievements. In his opinion it has made a substantial contribution to the liberalisation of world trade, notwithstanding its failure in a number of important instances. Mr. Vernon fears that the future of GATT is threatened by recent protectionist trends in American policy, but he finds some encouragement in the trend in the opposite direction manifested by official policy in Great Britain.]

WHITE (D. J.). The New England Fishing Industry. A study in price and wage setting. Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1954. 8½". Pp. 205. 32s.

[The special interest of the New England fishing industry from the analytical point of view lies in the method of wage determination. The fishermen receive a set proportion of the value of the catch, without any basic minimum time-wage. This arrangement is of very long standing, and it is commonly regarded as an essential protection for the weaker vessel-owners against the risk of a sequence of unlucky trips. So far from leading to unity of interest between the men and their employers, however, the system has in recent years been operated to the accompaniment of bitter dissensions between the two sides. The peculiar feature of the situation is that (especially in

Boston) most of the trawlers are owned by the dealers to whom the catch is sold. The fish auction is therefore essentially a sale of fish by the fishermen to their employers, and the rate of wages depends directly upon the price fetched. The men have repeatedly alleged that the process of price-fixing on the Fish Exchange is manipulated to their disadvantage, and in bargaining between their union and the owners this issue has figured no less largely than the proportions in which the value of the catch is to be divided between the two sides. The interrelation between wages and prices provides the author with a fascinating central theme, which he describes and analyses with much skill—though the theoretical model of the market given in an appendix does not perhaps add a great deal and does less than justice to the complexity of the situation and to the subtlety of the author's own realistic account of it. Labour relations are Professor White's chief topic, but he deals also with the more general problems of the industry, such as its marketing difficulties and the effects of dwindling supplies of certain classes of fish.]

French

ALLAIS (M.). Les Fondements Comptables de la Macro-Économie. Les équations comptables entre quantités globales et leurs applications. Paris: Presses Universitaires de France, 1954. 10". Pp. 91. 900 frs.

[This short study, made first in 1945 and modified since then in presentation, is in two parts: the first, an exhaustive analysis of the concepts of national income accounting and of the relations between them, and the second, some brief notes on their possible applications. A large number of concepts and relations are isolated, and their symbolic treatment (as the author admits) makes great claims on the reader's powers of memory and concentration. Prof. Allais' treatment is rigorous and thorough but contains no substantial novelties. He disagrees with the manner in which government activity is conventionally introduced into national income accounts and proposes that the Government should be regarded as an enterprise selling services to other enterprises and to individuals in exchange for the taxes which they respectively pay, the services to enterprises being regarded as costs rather than final output. The difficulties of this approach need hardly be mentioned. In discussing the savings-investment relationship, the need to consider undistributed profits and changes in individual cash balances is pointed out. The "confusion" and "incoherence" of Keynesian analysis are sharply criticised and, with almost fatiguing insistence, the need is stressed for precision, rigour and clarity.]

ALLAIS (M.). Traité d'Économie Pure. Second edition, in four volumes and annexes. Paris: Imprimerie Nationale, 1954. 12". Vol. I: Pp. 279; Vol. II: Pp. 198; Vol. III: Pp. 301; Vol. IV: Pp. 352. 5500 frs.

[This work, entitled a second edition of M. Allais' earlier work *À la Recherche d'une Discipline Économique*, published in one volume in 1943, is in fact no more than an exact reprinting of it, without modification except in title, in form and in the addition of a new introduction. The introduction contains a reply to the author's critics, with a defence of the comprehensive type of treatise and of the mathematical method. It gives his views on the reasons for the backwardness of economics in France, the principal one being the too close attachment of the subject to the law faculties. The most fruitful directions of advance for economics are discussed, the need for works of synthesis being stressed. Finally, there is a list of those parts of the work which M. Allais considers to be original contributions to the subject.]

BROWALDH (E.) and THUNHOLM (L. E.). Changes in Bank Balance Sheets 1938-1952. In English and in French. Paris: Institut International d'Études Bancaires, 1954. 9½". Pp. 21, and appendices.

[This interesting short paper provides comparative particulars of certain banking ratios in eleven European countries for the nine years 1938, 1945-52. The countries are Belgium, Denmark, England, Finland, France, Holland, Italy, Norway, Spain, Sweden and Switzerland, and the ratios are: (a) cash to deposits; (b) government securities to total assets; (c) loans and discounts to total assets; (d) time and saving deposits to total deposits; (e) capital to deposits; and (f) capital to loans and discounts. One might wish that the authors had added to these the ratio of deposits to national income. The figures are given in tables and in some well-designed charts. The accompanying brief commentary is suggestive but does not attempt to build up from the figures any general picture of trends in banking structure and functions.]

INTERNATIONAL POLITICAL SCIENCE ASSOCIATION. Working Papers and Discussion Reports of a Conference on Comparative Public Administration, with special reference to Bureaucracy. Paris: International Political Science Association, 1954. 10". Pp. 56. 7s.

[This contains the texts of "working papers," mostly of three or four pages or less, that were submitted at the Conference, together with reports of the discussions that followed them. The brevity of the papers causes some of them to be little more than statements of problems, but many stimulating ideas are put across none the less.]

JAMES (E.). *Histoire de la Pensée Économique au XX^e Siècle*. In two volumes. Paris: Presses Universitaires de France, 1955. 9". Vol. I: Pp. 308; Vol. II: Pp. 309-711. 2200 frs.

[To be reviewed.]

Rural Modernization in Morocco. Rabat: Société d'Études Économiques, Sociales et Statistiques, 1954. 9½". Pp. 104.

[This is an account of the work of the Rural Modernisation Sectors set up by the High Council of the Peasantry in Morocco. These organisations were sponsored and are partly financed by the state, and their aim is to raise economic and social standards by irrigation and other public works, by the building of schools, by the demonstration of modern farming methods, on plots of land directly cultivated and by a variety of other means. Most of the report is occupied by descriptions of the work of each of the fifty-three regional sectors, which enjoy a large measure of autonomy.]

German

ALBERT (H.). *Ökonomische Ideologie und Politische Theorie*. Monographien zur Politik, No. 4. Göttingen: Otto Schwartz, 1954. 8". Pp. 156.

[This is a contribution to the methodology of political economy. As its straw man it takes some of the more extreme views of the continental writers on pure theory. Unfortunately the author seems to be unaware of Mill's contribution to this subject in 1836.]

CARELL (E.). *Allgemeine Volkswirtschaftslehre*. Heidelberg: Quelle & Meyer, 1954. 9". Pp. 318. DM. 14.

[This is the sixth edition of a deservedly popular and concise text-book of economic theory. It follows the classical order of discussion, the author's opinion being that many of the recent "revolutions" in economic thought are no more than "putsches." The treatment of interest and capital is in many ways more satisfactory than that to be found in the English first-year texts; in fact, a translation of the book would be a useful addition to the English student's library.]

FÖRSTER (K.). *Wasserstrassen und Raumplanung*. Duisburg: Zentral-Vereins für deutsche Binnenschifffahrt, 1954. 8". Pp. 102.

[This booklet provides a quantitative survey of the development of canal and river transport in Germany. It includes some reflections on the effects of this form of transport—with its relatively low running costs—on the location of industry.]

HEECKT (H.) and STENDER (H.). *Der Wiederaufbau der deutschen Handelsflotte*. Volkswirtschaftliche und juristische Grundsatzfragen der Wiederaufbaufinanzierung. Kiel: Institut für Weltwirtschaft, 1954. 9". Pp. 98. DM. 8.

[This is a study of the post-war reconstruction of the German merchant fleet; particular attention is given to the problems of financing the capital outlays involved and the various taxation provisions affecting the industry.]

KUNZE (H. J.). *Die Lagerungsordnung der westeuropäischen Eisen- und Stahlindustrie im Lichte ihrer Kostenstruktur*. Kiel: Institut für Weltwirtschaft, 1954. 9". Pp. 100. DM. 7.50.

[This study of the European iron and steel industry argues that costs would be minimised if output were concentrated in two centres, Great Britain and the Ruhr, and the industries in France, Belgium and Luxembourg were made subsidiary to these centres.]

SALOMON (R.). *Begriff und Problematik der wirtschaftlichen Engpässe*. Dargestellt am Beispiel der Bundesrepublik Deutschland in den Jahren 1948 bis 1952. Kiel: Institut für Weltwirtschaft, 1954. 9". Pp. 185. DM. 15.

[The German economy came to a stop at the end of the war, but, as this book shows, by 1948 investment in real terms had recovered to the 1936 level and the output of many commodities was increasing at a very rapid rate. Thus, as is shown by a remarkable chart on p. 148, many of the output indices more than doubled in the two-year period 1949-51. Under such conditions there is a constantly changing pattern of relative shortages, and these form the subject of the present study.]

Italian

LA FERLA (G.). *Vilfredo Pareto, Filosofo Volteriano*. Florence: "La Nuova Italia," 1954. 8". Pp. 175. Lire 700.

[An essay on the philosophical foundations and purpose of Pareto's work. Professor la Ferla suggests that Pareto's inspiration, like Voltaire's, was basically a satirical one, and lay in his awareness of the follies and superstitions in the popular doctrines of his day.]

GRIZIOTTI (B.). *Prime Elementi di Scienza delle Finanze*. 5th revised edition. Milan: Giuffrè, 1955. 9". Pp. 206. Lire 800.

[This is a ~~text~~-book of public finance, along traditional lines, with special reference to Italian conditions. The present edition has been brought up to date and simplified in a number of respects.]

DEL VECCHIO (G.). *Diritto ed Economia*. Nuova edizione riveduta con una postilla. Rome: Editrice Studium, 1954. 9". Pp. 66. Lire 300.

[The first edition of this essay on the philosophical and ethical foundations of economics was published in 1935. The author has added a postscript chiefly devoted to the discussion of certain views that have been put forward in writings of President Einaudi.]

Austrian

TAUCHER (W.). *Beschäftigungspolitik*. Vienna: Springer, 1954. 9". Pp. 126. 10s. 6d.

[This fairly popular discussion of employment theory takes the point of view developed in the English literature. The discussion is topical throughout and considers, among other matters, the questions raised by the Marshall Plan, European integration and the prospect of rising productivity.]

Swiss

DÜRR (E. W.). *Wesen und Ziele des Ordoliberalismus*. Winterthur: Keller, 1954. 8". Pp. iii + 166.

[Ordoliberalism is the name (invented by Moeller) attached to the political views of economists such as Eucken and Röpke; these views have much in common with those of various neo-liberal movements—believing in "the natural harmony of individual interests"—and are especially closely associated with those held by the Mont Pèlerin Society. The present dissertation gives a clear account of the aims and history of the movement; it is, however, rather uncritical (no mention is made, for example, of Popper's views).]

GUTERSOHN (A.). *Das Gewerbe in der freien Marktwirtschaft*. Vol. 1, *Das Wesen des Gewerbes und die Eigenart seiner Leistungen*. St. Gallen: Polygraphischer, 1954. 9½". Pp. 315. Sw. Fr. 26.

[This is the first volume of an economic study of small-scale entrepreneurship; it is chiefly devoted to a description of the fortunes of craftsmen and small retailers in Switzerland in the last hundred years.]

Dutch

MENDERSHAUSEN (H.). *Two Postwar Recoveries of the German Economy*. Contributions to Economic Analysis VIII. Amsterdam: North Holland Publishing Company, 1955. 8½". Pp. 130. 24s.

[The purpose of this interesting study is to compare the economic recoveries of 1919-28 and 1946-53 in Germany and by so doing to help set in perspective contemporary experience and problems. The author systematically compares the movement in the two periods of leading economic variables, including population, size and distribution of income, investment, consumption, the absolute and relative prices, money supply and external relations. The greater strength of the recovery after the Second World War has to be viewed in relation to the much lower level of production relatively to pre-war in 1946 compared with 1919. Despite the spectacular rise in total outputs since 1946, Germany had not yet in 1953 gone so far towards regaining its pre-war proportion of total European production as it had done in 1928, and real income *per head* in the Federal Republic was still below the 1938 level. Mr. Mendershausen does not make these comparisons in order to belittle recent German achievements. He points out that the loss of national

wealth due to the war was as much as about two-thirds, and he suggests various explanations of why it has proved possible to recover so soon from such a staggering loss. Many of the parallels which he draws between the two post-war periods are very illuminating. However, there is, as he points out, no parallel to be found in the 1920s for the recent tendency for Germany to develop a chronically favourable balance of payments which she is unwilling or unable to eliminate by increasing either imports or capital exports. After the First World War the import surplus persisted up to the onset of the depression.]

THEIL (H.). *Linear Aggregation of Economic Relations. Contributions to Economic Analysis, VII.* Amsterdam: North Holland Publishing Co., 1954. 9". Pp. vii + 205. 36s.

[To be reviewed.]

Egyptian

HUNOLD (A. C.). *The Industrial Development of Switzerland. National Bank of Egypt Fiftieth Anniversary Commemoration Lectures.* Cairo: National Bank of Egypt, 1954. 10". Pp. 45.

[The author begins by describing briefly the geographical, racial, religious and social background of Swiss national life. He then outlines the historical evolution and present state of four of Switzerland's leading industries: cotton, engineering, watches and chemicals. The prosperity of the country and the high productivity of its industry he attributes largely to the personal qualities of the Swiss and to those factors that may be subsumed under the head of "the social order." Dr. Hunold points out the paradox that Switzerland has become one of the most industrialised countries in Europe notwithstanding its almost complete lack of mineral resources or other raw materials, but he is not at all willing to infer from this that industrialisation is a practicable or desirable policy to be followed by other countries such as Egypt which also lack mineral resources.]

Icelandic

ERIKSSON (B.). *Outline of an Economic Theory.* Reykjavik: Helgafell Publishing Co., 1954. 9½". Pp. 493.

[To be reviewed.]

Official

BRITISH

DEPARTMENT OF AGRICULTURE, STATES OF JERSEY. *Milk Production Costs in Jersey, 1953-4. Agricultural Costing Survey, Report No. 7.* St. Helier: Department of Agriculture, 1954. 13". Pp. 119.

DEPARTMENT OF AGRICULTURE, STATES OF JERSEY. *Milk Costs, 1953-4. Agricultural Costing Survey, Supplement to Report No. 7.* St. Helier: Department of Agriculture, 1954. 13". Pp. 12.

[These two documents provide a very detailed analysis of costs designed to help farmers to assess their own results. Particular attention is devoted to the cost of manual labour, which, it is pointed out, amounts to about half of the cost of milk production.]

CANADIAN

RESTRICTIVE TRADE PRACTICES COMMISSION, DEPARTMENT OF JUSTICE, OTTAWA. *Report Concerning an Alleged Combine in the Distribution and Sale of Coal in the Timmins-Schumacher Area.* Ottawa: Department of Justice, 1954. 9½". Pp. 56.

RESTRICTIVE TRADE PRACTICES COMMISSION, DEPARTMENT OF JUSTICE, OTTAWA. *Report Concerning an Alleged Combine in the Manufacture, Distribution and Sale of Wire Fencing in Canada.* Ottawa: Department of Justice, 1954. 9½". Pp. 116.

RESTRICTIVE TRADE PRACTICES COMMISSION, DEPARTMENT OF JUSTICE, OTTAWA. *Report Concerning Alleged Instance of Resale Price Maintenance in the Distribution and Sale of Television Sets in the Toronto District.* Ottawa: Department of Justice, 1954. 9½". Pp. 54.

[These three documents follow the usual lines of reports by the Restrictive Trade Practices Commission, extensive use being made of verbatim extracts from papers and evidence taken in the course of the inquiries.]

INDIAN

Agricultural Labour. *How they work and live. All-India Agricultural Labour Inquiry.* New Delhi: Ministry of Labour, Government of India, 1954. 10". Pp. 137.

[This is a summary of the findings of a sample survey of conditions of agricultural labourers in India, covering 800 villages. The full results of the survey, which is the largest of its kind ever undertaken, are being separately published in documents which run to some thousands of pages. The topics covered include size of holdings, employment and unemployment, wages and earnings, child labour, cost and standard of living, and indebtedness. These are analysed by region and with a variety of other subdivisions, and the figures are accompanied by an interesting interpretative commentary.]

Estate Duty for the Layman. New Delhi: Central Board of Revenue, Government of India, 1954. 10". Pp. 144.

[This is designed as a guide to the Indian Estate Duty Act. "An endeavour has . . . been made to acquaint the layman with his rights, duties and obligations under this new piece of legislation."]

INTERNATIONAL

EUROPEAN COAL AND STEEL COMMUNITY. *Report on the Situation of the Community laid before the Extraordinary Session of the Common Assembly, November, 1954.* Luxembourg: The High Authority, European Coal and Steel Community, 1954. 9½". Pp. 149.

[This report maintains the precedent established by the previous publications of the High Authority in giving a detailed and thoughtful analysis of current trends in production and trade in coal and steel within the Community as well as describing the activities of the High Authority itself. The authors call attention to the similarities and contrasts between the present prosperity, which originated chiefly within the Community itself, and the boom of 1951, when the stimulus came largely from sales to outside the area.]

The International Bank for Reconstruction and Development, 1946-1953. Prepared by the staff of the Bank. Baltimore, Maryland: The Johns Hopkins Press, for the IBRD (London: Geoffrey Cumberlege), 1955. 9". Pp. 273. 32s.

[The three parts of this report contain respectively an account of the organisation and structure of the Bank, a survey of the general principles and procedures it follows in its work, and a country-by-country summary of its activities to date. The lucid discussion of principles makes the book more than merely a work of reference, although the official tone is preserved throughout and there is no sustained treatment of the more general context of the Bank's activities.]

INTERNATIONAL LABOUR OFFICE. *Systems of Social Security: the United States.* Geneva: International Labour Office, 1954. 9½". Pp. 106. 4s. 6d.

[This description of the social security system of the United States has been prepared for the International Labour Office by the United States Department of Health, Education and Welfare. It is a work of reference and does not engage in any critical discussion of principles. The legal provisions described are those in force at the end of 1952.]

INTERNATIONAL LABOUR OFFICE. *Year Book of Labour Statistics, 1954.* Fourteenth issue. Geneva: International Labour Office, 1954. 12". Pp. 397. 30s.

[This yearbook is perhaps the most useful of the many publications of the International Labour Office. The present issue follows the usual form. The chapter headings under which the tables are arranged are: total and economically active population, employment, unemployment, hours of work, wages and labour income, consumer price indices and retail prices, family living studies, social security, industrial injuries, industrial disputes and migration. Text, table-headings and notes are given in English, French and Spanish.]

INTERNATIONAL MONETARY FUND. *Summary Proceedings of the Ninth Annual Meeting of the Board of Governors September 1954.* Washington, D.C.: International Monetary Fund, 1955. 9½". Pp. 209.

[This contains the speeches made by delegates at the Conference of the Board of Governors of the Fund held in September 1954. The central topic of the annual report presented on that occasion was "The Prospects for Convertibility," and this is the chief subject which the speakers deal with. The introductory addresses by Mr. J. van de Kieft, who presided at the joint sessions of the Boards of Governors of the Fund and the Bank, and by Mr. Ivar Rooth, the Managing Director of the Fund, do not altogether avoid triteness in their emphasis on the theme that, as Mr. Rooth puts it, "the real cause of post-war payments difficulties was the attempt of many countries to do more than they could."]

ORGANISATION FOR EUROPEAN ECONOMIC CO-OPERATION. Private United States Investment in Europe and the Overseas Territories. Paris: O.E.E.C., 1954. 9½". Pp. 137. 8s.

[An analysis is given of the extent and character of this investment, of attitudes towards it in America and Europe, and of possible means of increasing it. Total net exports of private American capital had no upward appreciable trend between 1947 and 1953, and the share of the total going to O.E.E.C. countries diminished. The recommendations put forward do not contain any startlingly novel ideas, though some useful suggestions are made of a more or less technical nature. The report is followed by lengthy annexes setting out the regulations governing private American investment in the O.E.E.C. countries and their overseas dependencies.]

SVENNILSON (I.). Growth and Stagnation in the European Economy. Geneva United Nations Economic Commission for Europe, 1955. 11". Pp. 342. 32s. 6d.

[To be reviewed.]

UNITED NATIONS. Economic Survey of Europe in 1954, including studies of Regional Problems in European Countries and the Structure of the French Economy. Prepared by the Research and Planning Division of the Economic Commission for Europe. Geneva United Nations, 1955. 11". Pp. 315. 17s. 6d.

[To be reviewed.]

UNITED NATIONS. Statistical Yearbook, 1954. Prepared by the Statistical Office of the United Nations. New York: United Nations, 1955. 11½". Pp. 594. 40s.

[The coverage of the Yearbook has been extended in the present issue in a number of respects both in subject and in number of countries included. The amount of pre-war data given has been somewhat reduced in order to save space.]

UNITED NATIONS ECONOMIC COMMISSION FOR LATIN AMERICA. International Co-operation in a Latin American Development Policy. New York: United Nations, 1954. 9". Pp. 147. 9s.

[This contains a statement and set of recommendations on problems of Latin American economic development drawn up by a group of leading Latin American citizens, appointed by the Economic Commission for Latin America, preceded by a longer preliminary report prepared by the Commission's Secretariat. Foreign investment policy is the chief subject discussed. Other matters treated in their relation to the economic development of Latin America are technical assistance, trade policy and anti-cyclical policy. The importance of the whole subject is brought into vivid perspective by the estimate quoted that Latin America's population, which has the fastest growth rate in the world, is likely to rise from its present level of 167 millions to over 400 millions by the end of the century.]

UNITED NATIONS FOOD AND AGRICULTURE ORGANISATION. Disposal of Agricultural Surpluses, by G. BLAU. Commodity Policy Studies, No. 5. Rome: FAO, 1954. 11". Pp. 42. 2s. 6d.

[This interesting and well-reasoned survey provides an orderly classification and assessment of the many devices that have been proposed for disposing of agricultural commodities in excess supply. The author begins by discussing the alternative definitions of an agricultural "surplus." She then classifies the various possible remedies under the heads: (1) holding or segregation of stocks; (2) expansion of consumption, either (a) without special concessions on prices or terms, or (b) on concessional terms to specified market sectors; (3) restriction of supply. She concludes by analysing the types of supply and demand conditions in the market for particular commodities that are favourable or unfavourable for the success of each of the various remedies, having regard to the requirements laid down at the Seventh Session of the F.A.O. Conference of avoiding "harmful interference with the normal patterns of production and trade."]

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ECONOMIC FOUNDATIONS OF WAGE POLICY¹

TWENTY-SIX years ago, when the British Association was meeting at Cape Town, the President of Section F was Henry Clay, and he took as his subject "The Public Regulation of Wages in Great Britain."² I remember, from that time, how great a stimulus that paper was to my own thinking, and I have not changed my opinion of it. Of the problem of wages, as it then stood, Clay gave what I still believe to have been a substantially correct analysis. But a tide of events, which set in almost as he spoke, was to bring about a great transformation. The revolutions which have occurred in the world of fact, quite as much as those which have occurred in the realm of theory, have presented us with a wages question which looks very different from the wages question of 1929. Nevertheless, underlying the differences, some of them real differences, some of them seeming, there is a certain continuity. I propose, in this paper, to survey some aspects of the developments which have occurred, and to attempt an estimation of their significance. I believe that the time has come when it is desirable to make an attempt to bring the whole matter back into focus.

The first thing on which Clay had to remark, from the standpoint of the 1920s, was the spread of collective bargaining (and other forms of public regulation) from the mere fraction of the wage-earning population (perhaps a quarter) which had been covered some twenty years previously, to a point where (as he said) "we may safely conclude that there are few important areas left in the provision for the settlement of wages by collective bargaining in Great Britain." But then he went on³:

"The precise nature of this change is worth some consideration. It was not the introduction for the first time of standardised rates of pay in time-work occupations. Even if we leave out of account the considerable part of the field covered by Trade Unionism at the beginning of the century, it is probable that in most districts, in which an occupation was followed by considerable numbers, there were customary rates commonly recognised, which the majority of employers observed. These rates were not so definite and secure as they became when they were embodied in a collective agreement; but outside the so-called 'sweated trades,' they were a limitation on the freedom of the individual

Presidential Address delivered to Section F of the British Association, Bristol, September 1955. *ECONOMIC JOURNAL*, Vol. XXXIX, p. 323.
P. 324.

employer to vary rates. Immediately, wages were fixed for him rather than by him, although ultimately they had to conform to the demand for labour, of which he was the channel. Nor was the change a universal substitution of collective for individual bargaining about rates. In piece-work industries after the change, as before, the vast majority of rates were settled by an individual bargain between the workman and the employer's representative. . . . The significant and essential change was the change in procedure. Wage-rates in any case have to be adjusted to changes in the demands for different kinds of labour, changes in the purchasing power of money, changes in the general prosperity and activity of industry. Before the war, outside the organised industries, the adjustment was made by the individual action of the employers, who first felt the need; today the process of general wage-changes has, we may say, been constitutionalised."

I have quoted this passage from Clay's paper because it seems to me to describe, with considerable precision, just what it was that had happened. It has never been the general rule that wage-rates have been determined simply and solely by supply and demand. Even on pure grounds of efficiency, it is desirable that the wage which is offered should be acceptable, acceptable both to the worker himself and to those with whom he is to work. There has in consequence always been room for wages to be influenced by non-economic forces—whether by custom (which, economically speaking, means supply and demand of the day before yesterday), or by any other principle which affects what the parties to the wage-bargain think to be *just* or *right*. Economic forces do affect wages, but only when they are strong enough to overcome these *social* forces. Now what happened, as a result of the spread of public regulation, was that the social forces grew in strength. As Clay put it:

"The mere fact of publicity, or organised discussion, invites appeal to social and ethical standards of 'fair' and 'living' wages, to pseudo-principles such as the sanctity of pre-war *real* wages, to the unpopularity of reducing the rates of wages of the lower paid workers, none of which have any bearing on the capacity of industry to pay wages and provide employment."

The main thing is that the new procedure insulated the wage structure from its old exposure to economic pressures, so that it could move—to a considerable extent—on a course of its own.

But the economic forces were not abolished by the increased resistance which could be offered to them; if they were not allowed to influence the determination of wages, they would express themselves in other ways. If the actual wage-level drew too far away from the "equilibrium" wage-level, being (as in fact it would be) above the equilibrium wage-level, the discrepancy would express itself in a growth of unemployment. And though the "social" wage-structure could stand up to a certain amount of unemployment, there must (so Clay thought) be a limit beyond which it must give. Then, after much pain and grief, there would be a return to something nearer to an "equilibrium wage."

That is what Clay expected to happen; but, as we know, it is not what did happen. Unemployment did increase, as he expected; but though the wage-structure yielded a little, on the whole it did not give way. What did give was another link in the chain—the Gold Standard.

In the new world which began after 1931 the problem of wages is bound to have a distinctly different character from that which it had in the older time. Since 1931, wages questions have been closely associated with monetary questions; it is even true that the *general* level of wages has become a monetary question. So long as wages were being determined within a *given* monetary framework, there was some sense in saying that there was an "equilibrium wage," a wage that was in line with the monetary conditions that were laid down from outside. But the world we now live in is one in which the monetary system has become relatively elastic, so that it can accommodate itself to changes in wages, rather than the other way about. Instead of actual wages having to adjust themselves to an equilibrium level, monetary policy adjusts the equilibrium level of money wages so as to make it conform to the actual level.¹ It is hardly an exaggeration to say that instead of being on a Gold Standard, we are on a Labour Standard.

I should like to make it quite clear, before going farther, that I myself regard the Labour Standard as an unquestionable benefit. So long as we retain it, we are protected against the unemployment that arises from a discrepancy between the actual wage-level and the "equilibrium wage-level"; and though there are other causes of unemployment than this, it has been one of the main causes of unemployment in the past, and it is a great gain that this cause of unemployment has been removed. It is not a gain which anyone should desire to give up; it is nevertheless not a simple matter to find ways by which we can be sure of preserving it.

For the Labour Standard, in our twenty years' experience of it, has been shown to possess a number of defects, of which some are decidedly dangerous. The first set of defects, which merit attention, though they fall rather outside my present subject, relate to the international consequences of the new arrangements. If the value of the pound is fixed in terms of British labour, and the value of the mark is fixed in terms of German labour, the pound-mark exchange will not remain steady unless the value of British labour in terms of German labour remains steady. But this last is a matter of the real economic progress and economic policies of the two countries; it requires something more than a monetary arrangement to control it. While the Gold Standard was an international standard, the Labour Standard is a national standard; even at its best, it is bound to be a source of difficulty in the sphere of international currency relations. But these difficulties are very familiar; I need do no more than allude to them in this place.

Already, in the first years of the Labour Standard, these international repercussions were a grave preoccupation; indeed, at that time they were

¹ I do not want to suggest that it does this perfectly; but this is what it is trying to do. The problems which arise when demand is extended too far, or not far enough, to maintain the desired general level of employment, are of major importance; but they lie outside the scope of this paper.

the only consequence of the change which aroused much anxiety. But as time has gone on another weakness has been revealed, which (at least for the time being) has pushed the international weakness into the background. Whereas, under the Gold Standard, the value of the national money in terms of the Standard was fixed by the State (and the maintenance, or in a few cases the regulation, of this gold value was recognised as a major responsibility of the State), under the Labour Standard the value of money in terms of labour undergoes no deliberate determination. It is a mere by-product of the process of wage-fixing; wage-fixing being sectional, the value of money in terms of the standard comes to be determined by impersonal forces, and those forces seem to have a strong tendency to pull it one way.

It is not surprising that this danger took some time to declare itself. In the last days of the old system, when the new (fortified) wage structure was resisting the monetary pressures that were being exerted upon it, successful resistance expressed itself in the form of rigidity. Economic forces were pressing wages downwards; social forces held them up. The net effect was that the level of money wages held firm. It was very natural for Clay, in 1929, to think in terms of rigid wages. Over the years 1924-28 (the only "normal" years which were available to him as a basis for generalisation) the Bowley index of weekly wage-rates in Great Britain had been rock-like—it had never moved by as much as a point. Under the impact of the Depression, there was indeed a marked *fall* in wages (though much less than the fall in the cost of living); but it was some time before the relief of that pressure led to a rise which went beyond the previous level. As late as 1937, the wage-index was within 1% of its 1924-28 figure. Thus the Labour Standard started operations with the very natural assumption that the level of wages (or the value of money in terms of labour) could, at least in Britain, be taken as given. With rigid wages, the problem of the new standard was one of external stability; internal stability did not seem to be a problem.

During the war years the position was, of course, very different; but war inflation is no new experience, and the significance of war inflation for the future of the Labour Standard did not reveal itself at once. It is only in the years since 1945, which have been marked by a continual rise in the wage-index, rarely falling short of 4% per annum, that the existence of a special problem of the Labour Standard has become apparent. Must we conclude, from the experience of the last ten years, that the Labour Standard has an inherent inflationary bias? If so, is it much more dangerous than the similar biases which have been detected in other monetary systems? These are the main questions which I want to discuss in the rest of this paper.

One further point must be cleared out of the way before I can begin. It is possible to argue that the main evil of monetary instability, as it was known in past times, was the unemployment which periodically accompanied it; if we have to expect an age of monetary instability, but are guaranteed against the accompanying unemployment, the expectation can be borne with equanimity. There is something in this argument, but the optimism which it engenders can be carried too far. A rapid rate of wage-inflation must

surely be an evil, if only because of the diversion of effort into fixing and re-fixing of wages and hitherto stable prices, effort which might otherwise be used for more productive purposes. A very rapid rate of wage-inflation could threaten the continuance of the Labour Standard altogether. I would, however, admit that there is some rate of wage-inflation which, if it can be prevented from accelerating, is by no means intolerable; the question is what means exist for keeping it within tolerable limits.

Let us, then, go back to the labour market, and look at it more closely. Granted the labour standard, can we lay down any general principles about the ways in which wages are likely to be determined? What are the factors making for inflation, and what (if any) are those by which the inflation may be held in check? These are questions which can, I believe, be answered if we tackle them in the spirit of Clay's analysis, though we get no sensible answers to them if we persist in treating them as pure problems of economics, in a narrow sense.

The purely economic analysis of collective bargaining, in terms of the theory of bilateral monopoly, used to conceive of wage-rates being fixed, on a balance of bargaining advantage, between a trade union which sought to push wages as high as possible without causing intolerable unemployment, and an employers' association which sought to press wages as low as possible without causing a shortage of labour. If one thinks in those terms the prospects of anything like stable wages, under a Labour Standard, do indeed look bleak. For the labour market then becomes a pure case of unstable equilibrium. It is not necessary to suppose that each trade union is completely safeguarded against the danger of unemployment in its own trade. If it is laid down that a rise in wages in the A-industry is not to produce any general increase in unemployment, that is enough. For effective demand (for goods in general) will then have to be expanded somewhat when A-wages rise.¹ But that will increase the bargaining power of the workers in other industries, so that if wages in these other industries are determined on the same bilateral monopoly principle, they will rise too. But that, under the assumptions we are making, will call forth a further increase in effective demand, which provides an opportunity for a further rise in the A-industry. The only thing which would slow down the general rise in wages would be the time taken to negotiate wage-changes; and that, if it was to people's interest to speed it up, could presumably be speeded up.

Now I would quite admit that there are some occasions on which the actual process of wage-fixing takes a form which is not far away from that implied in this model; but I find it hard to believe that it has any general validity. We are now learning that the pure theory of monopoly has a very limited application to the behaviour of business-men on the markets on

¹ How far this rise in demand comes about *naturally* (if monetary and fiscal policy does not prevent it), or how far deliberate intervention is needed to procure it, is a question that I do not have to raise in this paper. It will be simpler to talk as if "steps have to be taken" to procure the increase in demand; but by using such expressions I do not mean to prejudge the question whether these steps are of a positive or negative character.

which they sell their products; it is even less likely that it has much application to the labour market—on either side. We get a better clue to actual behaviour if we think of wages as being determined by an interplay between social and economic factors, instead of being based on economic factors—and crude economic factors at that—alone. As we have seen, this was true to a considerable extent under the old conditions. It is still more likely to be true under the Labour Standard, when everyone is bound to have some realisation that the number of shillings in the pay packet are not the thing that really matters. Money wages are not demanded for their own sake, but as a means towards something else.

The only exception to this rule which I can think of, and it is a very partial exception, is that a wage claim may sometimes be made on the basis of comparison with what the wage of that class of labour has been in the past. It certainly was true, in the old days, that a wage-cut would be followed, at the first opportunity, by a demand for a restoration of the wage to its former level. But with the increased strength of the unions, under the Labour Standard, all that is left of this point is the general resistance to any cuts in previously agreed wage-rates, which is one of the principles on which the new wage-system seems to proceed. It is true that if wages can go up, but cannot go down, that is enough in itself to give the system an inflationary bias; it does not, however, follow that the bias will be so strong as to be unmanageable.

Otherwise, if we think of the grounds on which cases are made for a rise in the wages of any section of labour, the mere money value of the wages received has nothing to do with them. Wage disputes are not concerned with money wages; they are concerned with the relations of money wages to the money values of other things. But the things with which comparison is made differ from one wage-dispute to another; it will be useful to classify them under three heads. Of course, it may often happen that more than one sort of comparison is playing a part in some particular claim; nevertheless, the distinction between them is readily recognisable in practice. And the economic significance of claims on one ground or another is decidedly different.¹

The three things with which comparison is most naturally made are: (1) the prices of the things labour buys—the cost of living; (2) the wages of other workers—differentials; (3) the profits earned by the employer. I propose to discuss these three comparisons rather separately, but in each case from a double point of view. On the one hand, I want to ask about the conditions in which wage-claims on the basis of each comparison are most likely to be pressed—a question which, if we can answer it, may throw some light upon the probable extent of wage-inflation in the future; on the other

¹ I should like to emphasise that the classification I am making does not merely refer to the grounds on which claims are put forward by the Unions; the same motives play a part in determining the attitude taken by employers to the claims which the Unions make. Doubtless it is true that supply-and-demand considerations have more influence on employers than they have on the Unions; but it is impossible to make sense of what happens unless one admits that the same general principles of equity in wage-determination are accepted, in a large measure, by both sides.

hand, I want to say something about the attitude which other members of society should take towards wage-claims made on one basis or another, with special reference to the economic arguments by which that attitude may be (or perhaps I may dare to say should be) affected.

The first of my three heads is the cost of living. The ratio of wages to the cost of living is what the economist calls real wages; the desirability of having real wages as high as possible, consistently with high employment, is a social objective which he is inclined to take for granted. Nevertheless, it is clear that wage-claims are not ordinarily made on the mere ground that the workers would like to have higher real wages; rises in real wages do for the most part come about in fact as a consequence of rises in productivity (either at home or abroad) without wage policy playing, at bottom, any more than a passive part in the process. When the cost-of-living motive does become important, in relation to wage-claims, is when extraneous factors are tending to produce a rise in the cost-of-living relatively to wages—or what comes to the same thing, a fall in real wages. It is in such circumstances that the cost-of-living motive takes the lead, and becomes, under the Labour Standard, an independent force making for inflation.

But in a modern economy, what has normally to be expected is rising productivity; and rising productivity, combined with constant money wages, means falling prices. So long as this tendency remains dominant, there is no need for there to be any pressure for rising money wages on account of the cost-of-living. The cost-of-living appears as an independent cause of wage inflation only at times when the normal course of economic progress is interrupted; its appearance is a symptom that something more fundamental is going, or has gone, wrong. Thus it is, of course, a major issue in war-time; it is also important whenever the march of rising real wages suffers a setback, due (for instance) to some change, adverse to this country, in our economic relations with the world outside. The novelty of the Labour Standard is that in the latter case, as well as the former, the cost-of-living motive becomes a source of inflationary pressure. In this respect the lessons of the Korean episode were perhaps more significant than those of the war with Hitler.

The only anti-inflationary measures which are available, under the Labour Standard, to deal with such situations are price-control and, if necessary, rationing; it is one of the costs of the Labour Standard that these measures require to be introduced in order to deal with slighter and more temporary falls in real wages than would previously have required such drastic treatment. Further, though this is the only way out, it is difficult to make it wholly effective; if it is not wholly effective, it brings other troubles with it.

Suppose, for instance, that some external event (say an adverse movement of the terms of trade) makes it necessary to reduce consumption by a small percentage. If the reduction could take place by a rise in prices, without wages rising, prices would fall again when the shortage was over, and consumption would recover without further action. Alternatively, if the rise

in wages could be wholly prevented by control over prices, the reduction in consumption (which cannot be avoided) would be brought about by an excess of demand over supply; supplies would recover when the shortage was over, and the controls could be lifted forthwith. But if the controls do not wholly prevent the rise in wages, or are introduced too late to have that effect, there may be an *apparent* rise in real wages amid the shortage; though consumption has to be diminished, the ratio of the money wage to the controlled price-level rises. In this case a mere recovery of supplies to their old level will not immediately enable the controls to be lifted without a renewal of inflation. For though the old real wage could be re-established, the apparent real wage (in the sense of the ratio of wages to prices) cannot be made effective on a free market until productivity has risen further. I think one can detect an element of this story in our own recent experience. It is one of the drawbacks of using controls to meet a temporary emergency that a "phony" relation of wages to prices can be established under the shelter of the controls, a relation which does not truly measure the real gains of labour; yet it is this "phony" relation which is sought to be maintained, in place of a maintenance of the real standard of living, when the controls are removed.

I turn to my second heading—relative wages in the narrower sense, the relation of one wage to another. If we have to take it for granted that it is hardly possible, under the Labour Standard, for the money wages of any group of workers to be *reduced*, it follows that troubles about wage differentials can themselves be a cause of inflation. In the simplest possible terms, if A-workers think that their wages should be 10% higher than those of B-workers, while B-workers think that their wages should be equal to those of A-workers, the satisfaction of the claims of one party must necessarily give rise to claims by the other. If both sets of workers are employed in the same industry, a series of concessions to such claims may push the costs of this industry right out of line with those of other industries; then, even under a Labour Standard, the industry will find itself in difficulties. But if troubles about differentials become widespread, this brake on the wage-rise may disappear. The increase in effective demand, which has to be induced in order to prevent the first wage-rise from causing unemployment, facilitates wage-increases elsewhere. The industries which have been left behind in the advance then become sensitive in their turn, both because of the inter-industry differentials which have come into existence through the sectional advance and because of the rising cost of living. It accordingly appears, without going farther, that though wage-differentials can give rise to a certain amount of soreness without causing more than localised trouble, they must, on the whole, be moderately acceptable if they are not, under a Labour Standard, to be themselves a source of inflation.

But how can wage-differentials be acceptable? To those who feel the ethical urge to equality as a guiding impulse, the clearest thing about wage-differentials is that they ought always if possible to be reduced. Such sentiments have lately been expressed with cogency by Mrs. Wootton, the title of

whose book ¹ I have deliberately echoed in the title of this paper. Nevertheless, one can appeal to Mrs. Wootton herself for a demonstration that these sentiments, though they are without doubt *one* of the "social" forces at work on the wage-structure, are in practice overlaid by other "social" forces which work in the opposite direction. In practice, differentials do tend to be acceptable if they have custom behind them—if they are in accordance with what the people who suffer from them, as well as those who gain from them, have come to expect. Thus in conditions when the level of money wages is, broadly speaking, stationary, the purely egalitarian urge to raise the wages of the lower-paid workers relatively to others is not often in practice very strong. It is true that egalitarian sentiments have more power when wages are changing. Especially if the impetus to a wage-rise is derived from the cost-of-living motive, it is recognised that a fall in real wages is a more serious matter for the lower-wage than for the higher-wage groups; the former have a stronger case for a cost-of-living bonus than the latter. In such circumstances wage-differentials do tend to narrow: sometimes actually in money terms, but more often by giving both groups the *same* rise in money terms, in spite of the difference in the wages from which they began. This has in fact the effect of diminishing the real advantage of the better paid, in view of the higher price-level.

Thus, if one looks entirely at these "social" forces, custom is the static and equality the dynamic element; time, especially when aided by inflation, might be expected to iron all differentials flat. Certainly there is a tendency in that direction; but how far it can go depends upon the economic obstacles which may lie in its path. There are economic factors to be taken into account, though the precise way in which they can operate under a Labour Standard needs some consideration.

Let us begin from a state of all-round full employment of labour, in which there is yet no "over-employment"; the demand for labour equals the supply in all trades. Now suppose that wage-rates, in some particular trade, are raised to such an extent as would cause a substantial reduction in employment in that trade, if there were no expansion of demand in general. If, however, demand is expanded, the appearance of unemployment may be prevented. But the expansion of demand will have to take a particular form (involving special protection for the high-wage industry) if its difficulties are thereby to be overcome. Otherwise, though the demand for its products will indeed be expanded (so that employment of the high-wage labour will fall less than it would have fallen if the expansion had not occurred), the demand for other products will be expanded at the same time. Among the labour producing these products we have assumed that there is no unemployment. A moderate increase in demand will accordingly produce a situation in which there is some fall in employment in the A-trade (as we may call it) combined with an excess of demand over supply (involving unfilled vacancies) in other (B) trades. There are now two cases, according

¹ *The Social Foundations of Wage Policy.*

as the workers who are unable to get employment in the A-trade can, or cannot, step into the vacancies which have appeared elsewhere. If they can, there will be no net unemployment as a result of the change in relative wages; all that will have happened is a transfer of labour from A to B. But if there are difficulties in the way of the transfer, it may be necessary to create a severe shortage of labour in the B-trades before the labour displaced from the A-trade can be absorbed. The maintenance of full employment then implies the creation of severe labour shortages.

But let us take the milder case first. It is highly probable that the situation implied in this case is no novelty. If the workers in skilled trades, by the use of bargaining power, push their wages to an unnecessarily high level, they limit the scope for employment in those trades, but they do not necessarily cause any labour to be unemployed; all that happens is that some people, who might have got employment in those trades, have to seek it elsewhere. This sort of thing could occur under the old conditions, and it can still occur under a Labour Standard. Differentials which owe their origin to no better cause than this can last a long time, and become hallowed by custom. And differentials which did once have an economic function, but are maintained by custom after they have lost it, fall from the economic point of view into a similar category.

It is obviously probable that the wage-structure, at any particular time, will contain many "unnecessary" or "uneconomic" differentials of this type; but their identification can never be a simple matter. The test which the economist would be inclined to use, whether or not a reduction in wages would increase employment and output in the trade affected, is not easy to use, nor is it in all cases quite conclusive. It is true, if this test is satisfied, that the additional employment is a clear gain to the workers who move (for they need not move unless they think it is to their advantage to do so); while the consequential increase in output is a clear gain to the consumers who take the additional units (for they need not take them unless they conceive themselves to gain by so doing). It is true that these shifts are clear gains, while the loss to the workers who were previously employed (and whose wages are reduced) is in some sense "balanced" by a reduction in cost which is a gain to other parties. But though these principles may be accepted, some weight can nevertheless be given to the counter-contention that the lowering of (relative) wages may lower standards of skill and craftsmanship, in such a way as to wipe out in the longer run much or all of the short-run gain. Those concerned have a strong interest to make as much as they can of this counter-argument; we can recognise that, and still admit that there are cases in which it does have a certain validity.

It does nevertheless seem clear, in the light of this analysis, that actual differentials are always, to a considerable extent, historically determined; their correspondence with those which would ensure maximum efficiency in the distribution of labour cannot be expected to be very close. It follows that the "squeezing" of differentials (which we have seen to be a feature of cost-of-living inflation) has some economic as well as social function. It

squeezes out differentials which have become fossilised; in doing so, it serves the cause of efficiency as well as that of distributive justice.

All the same, the fact that it does so is really no more than an accident. Since it is not itself impelled by any motive of economic efficiency, it can easily go too far. If it overshoots the mark, and reduces differentials below the amounts which are economically justified, we get a new problem, which is in fact a problem of the second case which I left over a little while back, and to which I must now turn.

If the differential between skilled and less skilled is fixed too low, so that it is the relatively low-wage labour which is overvalued, an intensity of demand which is sufficient to maintain full employment among skilled workers will be insufficient for the full employment of the less skilled; an intensity which is sufficient to employ the less skilled will cause a shortage of labour in the skilled trades. An intensity which is between these two limits will leave some unemployment among the less skilled, and some unfilled vacancies among the skilled; but the less skilled will *not* be able to move over to fill these vacancies. Those who are unemployed are unlikely to be suitable to fill the vacancies, even if they are trained; while those who would be suitable will not move, because the incentive is insufficient. It is accordingly impossible, if differentials are too narrow, to maintain full employment without creating a scarcity of skilled labour.

Such a scarcity need not be inflationary, but it is only too likely to work out in such a way that it will be. For it is necessary, at this point, to distinguish between those trades in which the collectively agreed rates have a close correspondence with actual earnings, and those in which the agreed rates are minima, so that actual earnings can easily move out of line with what has been collectively fixed.¹ If the skilled trades, whose wages had become relatively depressed, were all of the first class, then (so far as I can see) the shortage of skilled labour would create inefficiencies, but would not lead to any general movement in wages. If, at the other extreme, they were all of the second class, it would be impossible to reduce *earnings* differentials below the amount which was economically justified. Any attempt to do so would merely cause the earnings of the higher-wage group to rise above their minima; the market for their labour, under the conditions of scarcity, would become a competitive market. In fact, however, we have neither of these extreme cases; the actual situation is a mixture of the two, some skilled trades belonging to one type, some to the other. The effect of labour scarcity must then be a rise in earnings in the "free-wage" trades; but this creates a disparity (which is felt to be a disparity) between them and the other skilled trades in which wages are "fixed." Conditions thus become favourable for a rise in wages in the "fixed-wage" skilled trades; and such a

¹ The importance of this point was brought home to me by the studies of Mr. Kenneth Knowles, which have appeared in the *Bulletin* of the Oxford Institute of Statistics from 1951 onwards. (See in particular his "Structure of Engineering Earnings," *Bulletin*, September 1954.) But this is not the only place in which my reflections have been stimulated by a consideration of the facts which Mr. Knowles has so ably brought together.

rise, in the circumstances supposed, is not without economic justification. But these "fixed" wages are a part of the regular structure of agreed wages; a rise in any part of it tends to produce a general tendency to an upward movement, working through the "social" links which tie the various parts of the structure together. This is the way in which an attachment to "wrong" relative wages can be an inflationary element; its inflationary influence cannot be removed (consistently with full employment) until people become prepared to accept economically reasonable differentials—differentials which are sufficient, that is, to ensure that lasting shortages of important classes of skilled labour are avoided.

I would emphasise the word "lasting." It does not follow from my analysis that a temporary scarcity of some particular kind of skilled labour, even if it leads to a sharp increase in the earnings of that trade, out of line with those of other comparable trades, need have very far-reaching effects on the wage-structure in general. Since it takes time, often a considerable time, to select and train additional workers for any specialised trade or occupation, it must be expected that the wage (or earnings) which will equate supply and demand in the short run, after a rise in demand has taken place, will be higher than that which would induce a sufficient supply in the long period. This is indeed one of the common ways in which unnecessarily high differentials come into existence; wages are pushed up at a time of initial scarcity, and they fail to come down at the later stage when there has been time for the supply of labour to become more ample. Ideally, what should happen in such cases is that the agreed minimum should be kept in relation with the long-run supply-price of labour, while the incentive to move (only temporarily required) should be given by a temporary rise in wages above the minimum. For sufficiently temporary scarcities, one can perhaps detect a tendency for the wage-system to be operated in something like this manner. It is indeed more in accordance with trade-union principles that negotiated wages should reflect what can be maintained as a regular thing over a period than that they should fluctuate up (and, at least relatively, down) with every fluctuation of demand and supply on the labour market.

This brings me to my last heading, profits—on which I shall have to be brief, and must therefore do much less than justice to the subject. It is obvious that when businesses are earning high profits they can be more easily brought to concede claims for higher wages; it follows for this reason alone that it is in conditions of high profits that claims for higher wages are most likely to be made. But under the Labour Standard we have the complication that profits in general are not compressed by a rise in wages in general; thus if it should be the case that the level of profits necessary to induce full employment was itself so high as to call forth wage claims automatically, indefinite wage-inflation would be inevitable from this cause alone. But though it is easy to make our flesh creep with this argument, the assumptions on which it is based are not really very convincing. If wages were centrally negotiated, between a Grand National Trade Union and a National

Employers' Association, inflation might indeed proceed in this manner for a time; but the futility of the proceeding would rapidly become apparent, so that the wage-bargain would have to be merged in a treaty which would cover far more than the determination of wages. But as things are, both the structure of the trade-union movement and the variety of the systems of wage-payment that are practised (on the whole for good reasons) in different trades make such centralisation exceedingly unlikely. So long as wage-bargaining remains sectional, the profit comparison, though it must always be an element in the determination of wages, can hardly become so dominant as it has been assumed to be in the argument to which I have just been alluding.

Though wage-claims on other grounds are more likely to be pressed in conditions of high profits, a direct claim for higher wages on the grounds of the profits that are being made by employers is a dangerous claim to make. It can so easily be turned the other way up. If it is laid down as a rule that wages should go up when profits are high, the consequence, that they should not go up (or should even go down) when profits are low, cannot easily be resisted. This is a lesson which trade unions have had much opportunity to learn in the past; and on the whole their history would suggest that it is a lesson which they have learned. Even in conditions of full employment, there remain enough industries with relatively low profits to ensure that the lesson will not quickly be forgotten. The principle that it is wiser to put forward wage-claims on other bases than the profits of the employer is one which may be reckoned, for British trade unions at least, as a permanent acquisition. It is an acquisition for which (I believe) the economist has every reason to be thankful. Not only does it diminish the danger of inflation; it has also some effect in diminishing the danger of business monopolies defending themselves by a *de facto* collaboration with labour monopolies—handing over to their employees a share in their monopoly profits, in order to have the help of their employees in defending themselves against potential competition.

In its relation to the present situation of this country, the argument of this paper has been intended to be rather optimistic. For it is implied in what has been said that the continual rise in money wages since 1945 is not a necessary consequence of Full Employment (or of the Labour Standard); it is sufficiently explicable in terms of factors that are peculiar to the time through which we have been passing. Especially over the last four years, the main factors pushing up wages have been: (1) the dismantling of the controls, with its somewhat "phony" effect on the cost of living, and (2) the difficulty that has been experienced in the establishment of a new pattern of relative rates after the war-time disturbance. But these are difficulties which, in the absence of external shocks, we can expect to overcome. A condition in which the wage-level has again become relatively stable, so that movements in basic rates are exceptional rather than normal, should be coming into reach. Even if this expectation is too optimistic, I would still contend that it is for this condition that we must strive, and for which we

should do our planning. For it can hardly be doubted that any serious disturbance to our rate of progress would itself push the level of money wages, under conditions of full employment, in an upward direction. If this push is superimposed upon a wage-level that is otherwise stable, then (within broad limits) it can be borne; but if it is superimposed upon a wage-level that is already rising as fast as is tolerable, the additional strain of a more rapid rise must be very dangerous.

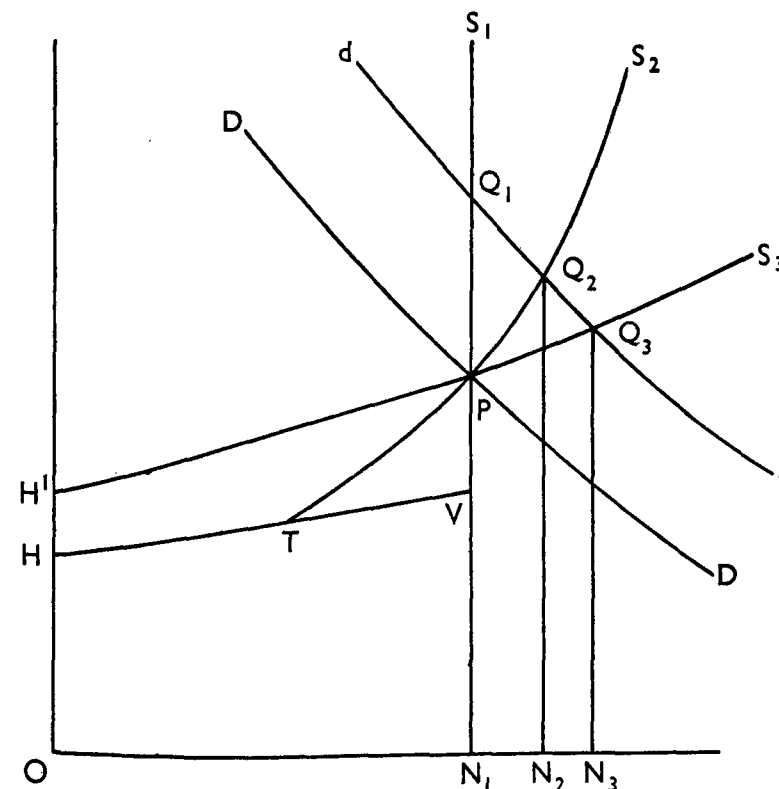
NOTE

What is said about differentials in the body of this paper can be filled out a bit with the aid of a diagram. This diagram is of the conventional supply-and-demand type, but in order that it should give satisfactory results it must be interpreted in a somewhat special manner. In the first place, the wage-level which is measured on the vertical axis is the wage-level in the particular (skilled) trade under consideration, deflated by an index of wages in comparable occupations; what it shows is the relative wage, in this sense, in the occupation we are considering. In the second place, the quantity of labour supplied is taken to be measured by the number of workers, having at least a certain prescribed efficiency in that trade, who are available for employment in it in the circumstances we are going to examine. Thirdly, when we speak of the labour supplied at a given wage, we imply that the given wage (the relative wage) is expected, so far as such things are expected, to be permanent; the effects of purely temporary differentials, which are felt to be abnormal, would require a different treatment.

With these understandings, a supply curve of labour to our trade can be constructed, but the form of the curve will still depend upon the time allowed for adjustment. We may speak of a short-period curve and a long-period curve; but it is better to think of a family of curves, varying continuously in form as more time is allowed. The shortest of the short-period curves will be sharply kinked at the actual number (ON_1) who happen to have the required capacity just at the moment; it will accordingly follow the course HVS_1 where the stretch VS_1 is vertical and the stretch HV may be nearly horizontal or rise quite gradually—the successive ordinates along HV measuring the wages at which successive existing employees would leave the trade, in order to seek less skilled but more remunerative employment elsewhere.

A rather less short-period curve would take the form $HTPS_2$. A wage which is between VN_1 and PN_1 will keep existing workers attached to the trade, but the supply of labour will nevertheless diminish by normal wastage, a wage at this level being insufficient to attract enough labour to fill the gaps. Above PN_1 there will be sufficient recruitment to fill the gaps, both from new entrants into employment and (at a suitable level) by transfer from occupations with neighbouring skills. On the whole, one would expect this recruitment to be more rapid, the higher the wage offered; but bottlenecks in training facilities will sometimes set a limit on the rate at which new labour can be absorbed. The curve HPS_2 may therefore become vertical after a certain point.

As more time is allowed, T will move to the left, S_2 to the right, so that the ultimate shape of the curve (in the *very long period*) will approach $H'PS_3$. In general, it would seem right to suppose that this long-period curve is upward-sloping, like the rest; but if the skill in question is such that almost anyone can acquire it if he is willing to undergo the necessary training, the upward slope will be very slight. If, on the other hand, the skill cannot be successfully acquired unless one possesses the capacity to acquire it, even the long-period curve may slope upwards quite steeply. For it is then not merely necessary to offer a sufficient wage to induce a sufficient number of suitably



gifted persons to enter the trade, as against the competition of other uses of these same gifts; it has also to be remembered that such a person will not know that he can acquire the skill successfully until he has endeavoured to acquire it, so that enough must be offered to make him willing to bear the risk of lack of success. Different people are bound to vary in the importance which they set upon such risks, so that this also is a factor making the long-period curve slope upwards.

Let us now start from a position in which the actual supply of qualified labour is ON_1 , and the longer-run supply curves are as shown. If the demand curve for the labour were DD , and the wage were at PN_1 , the existing labour would be fully employed, and there would be no tendency for supply to vary. If, while demand remained at DD , the wage were pushed above

PN_1 , some of the existing labour would be unable to get employment in this trade; and while the wage itself would attract more labour, the attraction would be offset by the difficulty of getting employment. Again, if the demand curve were at dd , the wage (of the existing labour) could be pushed up to Q_1N_1 without causing unemployment; if the labour is unionised, and the Union pursues an aggressively monopolistic policy, this is presumably the wage which it will try to fix. But neither of these is the case which I want primarily to consider. If wages are raised by competition among employers, they may well be reluctant to go so far as Q_1N_1 , a wage at which they will have to abandon hope of drawing labour from outside, but are reduced to poaching from one another. I accordingly suggest that the wage which would be established by competition would be more in the nature of Q_2N_2 ; at this wage there is still a shortage of labour in the very short run, but it is a shortage that will be overcome if some more time is allowed. Nevertheless, even if the wage is at Q_2N_2 , the time will come when the supply of labour, which could be available at that wage, will be greater than the demand for it; thus if the wage is fixed at Q_2N_2 , the monopolistic situation (of Q_1N_1) will in time be repeated, though at a lower wage and a higher supply of labour. It is only if the wage is at the long-period equilibrium level Q_3N_3 that there is no tendency to monopolistic restriction; but if the wage is fixed at that level, and never rises above it, the shortage of labour may persist for a very long time.

What, then, is the economist to recommend? There is a certain sense in which the ideal solution is to begin with the short-period equilibrium wage and gradually to reduce it to the long-period level. But this would be bound to cause trouble in practice, if only because it means cheating the expectations of those who will have acquired the skill because the wage was at the higher level, and would not have done so if the wage had been lower. It does, however, seem that the economist could look with some satisfaction upon an arrangement by which basic agreed rates are kept in some relation with the differentials that are appropriate in the long period, while short-period scarcities are reflected in (no doubt relatively disorderly) bonuses above the agreed minima. This is far from being a perfect solution, but the problem is in its nature very difficult; it does not look as if it can admit of any simple way out. If relative wage-rates are to exercise their full influence upon the supply of labour, they ought to be steady and reliable; but steady differentials will not exercise a proper effect if demands (and supplies) are changing, as they must often be expected to change.

In an opening page of my *Theory of Wages* (1932) I committed myself to the foolish remark that these problems (of the distribution of labour among occupations) are "one of the easiest parts of wage theory." For this I was most properly rebuked by Gerald Shove, in his admirable review of my book in the *ECONOMIC JOURNAL*. On this, as on several other matters where he corrected me, I have come to know better.

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WHAT ALL IS UTILITY?¹

"When I use a word," Humpty Dumpty said in rather a scornful tone, "it means just what I choose it to mean—neither more nor less."

"The question is," said Alice, "whether you *can* make words mean so many different things."

"The question is," said Humpty Dumpty, "which is to be master—that's all."

Lewis Carroll, *Through the Looking Glass*

In "Utility and All What?"² Sir Dennis Robertson examines the suggestion that gambling be made consistent with the hypothesis that individuals choose among alternatives involving risk as if they sought to maximise expected utility by taking the marginal utility of income to increase for some range of incomes. He then asks whether acceptance of this suggestion, as set forth by Savage and me or, in a modified form, by Markowitz, "or perhaps some other variation on the same theme . . . [would] dispose of the whole issue? In other words," he continues, "was the law of diminishing utility of income the sole obstacle to our accepting the principle of maximisation of mathematical expectation of income as an all-embracing explanation of representative action, or at least of rational action, in the face of uncertainty? I do not believe that it was. Let us allow ourselves for the moment to suppose the marginal utility of income to be *invariable*, so that there is no discrepancy between the mathematical expectation of income and the mathematical expectation of utility derived therefrom.³ It seems to me probable that we should still find . . . Mr. A . . . preferring the certainty of £75 to an even chance of £50 or £100 and Mr. B the reverse. . . . For this reason, *i.e.*, because they ignore the pleasures or pains of uncertainty bearing *per se*, I am less excited than . . . I should wish to be by the additional evidence in favour of cardinalism which has been turned out by the N and M and F and S machines."⁴

Sir Dennis uses the same word when he supposes the marginal *utility* of income to be *invariable* as we use when we suppose the individual to maximise

¹ I am deeply indebted to Sir Dennis Robertson for correcting in an earlier version of this note a serious misunderstanding on my part of his argument and to L. J. Savage for helpful comments. Need I remind the reader of the distinguished precedent for using the quotation at the head of this note (D. H. Robertson, *Money*, Ch. II)?

² *ECONOMIC JOURNAL*, December 1954, pp. 665–78.

³ I am uncertain about the precise meaning of this sentence in two respects. (1) Since mathematical expectation of income (call this I) is in units of money, say £s; and mathematical expectation of utility (call this U), in units of utility, these two magnitudes are in general not directly comparable. What does it mean to say that there is no discrepancy between some number of pounds and some number of utiles? U and the utility of I are comparable, or I and the sum that has a utility equal to U , or the choices that would be made by an individual according as he sought to maximise I or U , but not I and U themselves. (2) How interpret "derived therefrom"? It seems at first glance to stand for "derived from the mathematical expectation of income," but this cannot be right whether the derived is taken to modify "expectation" or "utility"; the utility of a sum equal to I is a single number, so there is little point in speaking of its mathematical expectation. For income, the mathematical expectation in question is the mathematical expectation of a probability distribution of income; for utility, it is the mathematical expectation of a corresponding probability distribution of utility.

⁴ *ECONOMIC JOURNAL*, December 1954, p. 674.

expected *utility*; but this word means very different things in the two contexts. To us, if Mr. A does prefer the certainty of £75 to an even chance of £50 and £100, this can only mean—in accordance with the definition of utility incorporated in the expected-utility hypothesis—that the provisional assumption of an invariable marginal utility is wrong; for Mr. A, the marginal utility of income is diminishing in the neighbourhood of £75. If Mr. B does prefer the reverse, then—again according to the definition we have agreed to accept as part of the hypothesis—marginal utility must be increasing for him. Alternatively, if the marginal utility of income is *invariable* for Mr. A and Mr. B—in the meaning of these terms as we use them—then Mr. A and Mr. B will be indifferent between £75 and an even chance of £50 and £100. For, within the terms of reference of the expected utility hypothesis, utility is nothing else than that quantity the expected value of which individuals seek to maximise. There is no outside source of information on its behaviour.

To Sir Dennis, on the other hand, the statement that the marginal utility of income is invariable to Mr. A, and the statement that Mr. A prefers the certainty of £75 to an even chance of £50 or £100 are apparently two independent statements. It is implied that the first statement is, or at any rate can be, derived from information other than Mr. A's choices among alternatives involving risk; and that it can then be seen, as a matter of interest, whether, when it is so derived, it can be used to predict his choices. It is not at all clear to me what the outside source of information on marginal utility is, or what evidence Sir Dennis would regard as contradicting his provisional assumption that the marginal utility is invariable. What seems clear is that utility as he uses it in his hypothetical example is a different thing from utility as we use it.

The tendency exemplified by this passage for the word utility to stand for different things to different people without the difference being recognised explicitly accounts for much of the lengthy and unsatisfactory literature on the measurability of utility. Utility is used as if its meaning were self-evident and did not depend on the context in which and the purpose for which it is used, itself, I believe, a reflection of a failure to recognise that a concept used in the interpretation of observable phenomena has no meaning independently of the operations specified for measuring it. For example, "length" is that property of a thing to which a number is assigned by the operation of laying a rule alongside the thing. "Intelligence" is that property of a person to which a number is assigned by the operation of scoring an "intelligence test." "Utility" is that property of a thing for a person to which a number is assigned by one or another set of operations. It cannot be too strongly emphasised that so long as we restrict ourselves to the interpretation of observable phenomena, no such concept has any meaning aside from such a definition, though the same term may well be used in a very different sense outside this restricted domain—whence, of course, arises the confusion referred to.¹

¹ This position is defended at length by D. Ellsberg, "Classic and Current Notions of Measurable Utility," *ECONOMIC JOURNAL*, September 1954, pp. 528–56.

From this point of view, the question "Is utility measurable?" is, strictly interpreted, a meaningless question. If, in Humpty Dumpty's words, I "choose" utility "to mean" that property of a person's position in life which is measured by the product of the number of hairs on his head and the number of books on his shelves, then utility is measurable by a scale that is unique with respect even to origin and unit of measure. The relevant questions are, rather: (1) whether a particular definition of utility is useful, and (2) what the properties are of the set of numbers (or other identifying marks) which the operations embodied in that definition generate.

The confusion between "utility" as a neutral concept that is simply a convenient summary word for a particular set of (hypothetical) operations and as a value-charged concept that has some direct bearing on social policy is in the main simply a modern example of John Neville Keynes' observation that "confusion between them [positive science, normative science, and art] is common and has been the source of many mischievous errors."¹ But is doubtless it also reflects defects of exposition on the part of those of us who have written about the subject in its "positive" aspect. We have apparently not succeeded in making clear the difference between the definition of utility, on the one hand, and the empirical hypothesis whose acceptance renders the definition useful, on the other, presumably because we have not been sufficiently explicit in pointing out where the definition ends and the hypothesis begins. A fully explicit separation of the two goes somewhat as follows.

Definition of Utility of Income for a Particular Person

1. Choose two arbitrary incomes, say £100 and £1,000 [or more generally, I_l and I_u , where I_l is the smaller of the two].
2. Assign the number 0 to £100 [I_l], and the number 1 to £1,000 [I_u].
3. To assign a number to any other income, say an income of I , offer the individual in question a (hypothetical) choice between (α) the certainty of I_l and (β) a chance $1 - P$ of I_u and P of I_l . Vary P until a value $P = p$ is found for which the individual is indifferent between (α) and (β).
 - (a) If the income I to which a number is to be assigned is greater than £1,000 [$I > I_u$], set $I_1 = £1,000 [I_u]$, $I_2 = £100 [I_l]$, $I_3 = I$, and assign the number $1/p$ to I .
 - (b) If I is between £100 and £1,000 [$I_l < I < I_u$], set $I_1 = I$, $I_2 = £100 [I_l]$, $I_3 = £1,000 [I_u]$, and assign the number p to I .
 - (c) If I is less than £100 [$I < I_l$], set $I_1 = £100 [I_l]$, $I_2 = I$, $I_3 = £1,000 [I_u]$, and assign the number $-\frac{p}{1-p}$ to I .
4. Call the number so assigned to any income, the *utility* of that income; and the set of numbers, the *utility function*.

Comments on Definition

Strictly speaking, this statement is not a definition, but a family of definitions, one for each pair of values I_l and I_u . There is nothing about

¹ *The Scope and Method of Political Economy* (London: Macmillan, 1891), p. 35.

the definition proper to assure that the numbers obtained by starting with one pair of values of I_i and I_u , say £100 and £1,000, will bear a specifiable relation to the numbers obtained by starting with another pair, say £10,000 and £100,000, just as there is nothing about the definition of length proper to assure that the numbers obtained by using a wooden ruler will bear a specifiable relation to those obtained by using an aluminium ruler (as they might well not to those obtained by using a ruler of flexible rubber).

It is an implication of the empirical hypothesis for which this definition is convenient that the set of numbers obtained by choosing another pair of values in step 1 will be the same as those obtained by using £100 and £1,000 except for origin and unit of measure, so that the word "arbitrary" can be included in step 1 rather than a particular pair of values (see below). This is the sense in which the definition yields a utility that is "measurable up to a linear transformation."

Empirical Hypothesis

Of a set of alternative probability distributions of income, an individual will choose that one for which the mathematical expectation of utility [the mathematical expectation of the numbers assigned to income by the preceding definition] is the largest, if such a distribution exists; if it does not, he will choose one of the group of two or more distributions that have equal mathematical expectations of utility larger than for any distribution not in the group.

Comments on Empirical Hypothesis

Suppose we assign numbers to all incomes by starting with incomes of £100 and £1,000 in step 1 of the definition, and suppose that the empirical hypothesis is valid. From these numbers we can then predict the choices the individual would have made if we had started from another arbitrary pair, and hence, can predict the set of numbers that would have been assigned if we had started from another pair. This is how we can prove the assertions in the second preceding paragraph.

If the alternatives regarded as available to the individual were solely those used in computing utility, the hypothesis would be a tautology like the definition. It has empirical content because the alternatives include a wider class than those used in computing utility, e.g., alternatives involving three possible incomes with probabilities p , p' and $1 - p - p'$.

The definition and hypothesis use the undefined term "probability." This is done here solely for simplicity. A definition of "probability" can be given in terms of individual choices that is strictly parallel to that given for "utility," and the hypothesis broadened correspondingly.¹

"But what I find it hard to see," writes Sir Dennis after the sentences quoted at the outset of this note, "is why F and S themselves . . . should be so concerned to proclaim that their results carry 'no welfare implication at

all,' even for the individual. I am very doubtful whether they have produced the baby they say they have produced, though if I thought they had I should welcome him with open arms. They, having as they believe produced the baby, are inclined to . . . apologise for calling him by his true and honourable name Utility, for fear of suggesting that he is of some normative interest. Surely in this disclaimer they go much too far."

The empirical hypothesis so summarily presented above may be acceptable or not; it may be that observed choices of individuals will deviate from those it predicts sufficiently infrequently or by small enough amounts to justify its acceptance at least for the time being; or it may be that the deviations will be so frequent and so large as to justify its rejection. Its acceptance or rejection may very well affect the predictions we make about the observable effect of one or another course of social policy, and the confidence we attach to such predictions. In this sense, its acceptance or rejection is clearly "of some normative interest." But I continue to be unrepentant in believing that its acceptance or rejection has no bearing on the criteria by which we judge the desirability or undesirability of the predicted implications. Am I required to shift my moral, ethical, normative, welfare—or whatever other word one may use for such absolutes—position according as experience in using the hypothesis leads us to accept, reject or modify it? Alternatively, should my willingness to accept, reject, or modify an hypothesis about observable phenomena be determined or altered by my ethical and philosophical position? I wonder whether Sir Dennis is really prepared to answer these questions in the affirmative, despite the implication in the passage just quoted that he is.

Science is science and ethics is ethics; it takes both to make a whole man; but only confusion, misunderstanding and discord can come from not keeping them separate and distinct, from trying to impose the absolutes of ethics on the relatives of science.

To put it in Humpty Dumpty's words again: "It is a—most—provoking—thing," he said at last, "when a person doesn't know a cravat from a belt!"

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¹ See L. J. Savage, *The Foundations of Statistics* (New York: Wiley, 1954), esp. Chapter 3.

WHAT ALL IS UTILITY? A REJOINDER

1. IN his comment on the sentences quoted from my article, Professor Friedman has stated very clearly the difference between us. I distinguish between the utility expected to be *derived from* the receipt of a given income,¹ and the utility—positive or negative—associated with facing the uncertainty whether that income or some other will be received. Hence to my mind there is no inconsistency between the hypothesis that the marginal utility derived from income is invariable and the supposition that a man will *not* be indifferent between the certainty of an income of £75 and an even chance of an income of £50 and of one of £100. Professor Friedman uses the word utility in a sense which entails that there *is* such an inconsistency.

2. It would be impertinent of me to go on trying to make Professor Friedman prouder of his baby than he wants to be. But if I could believe that his theory accounts in a unified and logical manner for all the phenomena of economic choice, including gambling, I should regard it as “of normative interest” in a much fuller sense than he does. For I am prepared to make the heroic “value judgment” that *prima facie* it is a good thing that (within the law, written and unwritten) people should do what will make them economically better off. But of course it is *only* *prima facie*; for instance, the stern voice of Marshall warns us that gambling may corrupt their souls.

3. While Professor Friedman, like the good positivist that he is, has done his best to drain the word “utility” not merely of ethical but of any other kind of subjective content, I cannot think he has succeeded. For when it comes to explaining² the reasons for that concave-upwards tract of the curve of total utility of income, surely he means by the word just what the rest of us mean; he means that Mr. X thinks that if he can only work (or gamble) his way into a higher social class, he will get more fun (of one kind or another) out of the $(n\%1)^{\text{th}}$ £ of income than he is getting now out of the n^{th} £.

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¹ In the sentence which has puzzled Professor Friedman, “derived” refers to “utility,” and “therefrom” means “from income.” To say that there is no discrepancy between two things is not, I think, to say that they are identical, but that their juxtaposition does not give rise to a discordant creaking (Latin *crepare*). In the case supposed, the consumer will act in the same way whether he is trying to maximise the mathematical expectation of income or the mathematical expectation of utility-derived-from-income.

² See his article reprinted in *Readings in Price Theory*, p. 88.

THE ECONOMICS OF SOCIALISM RECONSIDERED

PROBABLY the most valuable social function of the economist is to remind people, and other economists, of things which are so obvious as to be easily forgotten. He is not very good at prediction, because so many of the main forces in economic life are extra-economic in origin, and for that reason he is not very useful as an adviser. Yet as a reminder he has still some value: as Wicksteed reminds us, “*Ein jeder lebts, nicht vielen ist's bekannt.*” There is nothing in this article which is new, except perhaps the pattern in which a few familiar facts and arguments are arranged.

One further word in preface is inevitable: to write on this subject now, after the publication of Schumpeter's *Capitalism, Socialism and Democracy*, involves defining one's attitude to his work. Mine, like I suspect that of many others, is an amalgam of profound respect and equally profound disagreement. I agree with him that changes in the existing social structure are inevitable, while I rate the vitality and adaptability of a free-enterprise economy more highly than he does. The remainder of this article will reveal how complete is the disagreement. But two points must be made in advance. He defines a socialist society as “an institutional pattern in which the control over means of production and over production itself is vested with a central authority” (Fourth edition, p. 167). This seems to me, in the light of Eastern European experience, to be an inadequate definition. Further (p. 206), he says, “I for one cannot visualize, in the conditions of a modern society, a socialist organization in any form other than that of a huge and all-embracing bureaucratic apparatus,” and, later, “This should not horrify anyone who realizes how far this bureaucratization of economic life—of life in general even—has gone already.”

The more it changes, the more it is the same thing! Mrs. Robinson's review of the first edition in the *ECONOMIC JOURNAL* for December 1943 foreshadowed my disagreement. I am here concerned with socialism as the realisation of the aspirations of the early (mainly) working-class theorists, whose work has been so admirably summarised by H. L. Beales in *The Early English Socialists*. They proclaimed the right of the worker to the full product of his labour, to an adequate standard of living and to freedom in his daily life; seeking to put “liberty, equality and fraternity” into economic terms, their definitions varied in detail, but they all sought a classless society.

1. There are two currents of thought and action in the contemporary world, different in temper and content, and both labelled “socialist.” The western social democrats have in many countries either constituted or influenced governments; their achievements are many. Not the least, and almost the most universal, of these has been the creation of groups of non-communist critics within their own parties, who complain that the sum of their achievements falls far short of socialism, but are unable to formulate

clearly what they mean by this criticism, nor to frame proposals for legislation designed to fulfil the lack.¹ The communists have not, for obvious reasons, produced a similar body of articulate (or inarticulate) internal criticism. All observers with any claim to impartiality, however, deny that they have yet produced a socialist society, unless the term "socialism" is to lose all ethical and economic content and to be equated with the all-pervading tyranny of the state.² They deny also that there is any discernible trend towards greater equality or greater personal freedom in the future. Most critics, even when they are not social democrats comparing their own unrealised and unformulated final ideals with Soviet achievement, fail to produce a standard by which Soviet shortcomings can be measured, except in as far as they diverge from a "liberal" economy. Both yardsticks are inappropriate: what, in both cases, is needed is a more precise formulation of the concept of socialism. The object of this article is two-fold: first, to restate briefly the fairly well-known reasons for which the concept has so far escaped adequate and universally accepted definition in economic terms; second, to attempt such a definition and to embark upon a (necessarily superficial) examination of what is implied. It is necessary to approach the problem in this way, because the former analysis indicates the due weight which should be placed upon the various economic aspects of a concept which is more than merely economic.

2. The basis of western or democratic socialism, whether it be as empirical as the doctrines of the British Labour Party or pays lip-service to a revision of Marxism like the bulk of the continental parties, is criticism of the justice in distribution and the efficiency in production of unregulated free enterprise. Taking the existence of a free-enterprise economy for granted, without any very profound examination of its history, and expecting its survival, such criticism is based upon the current standards of morality and upon reason, applied equally to all persons and all institutions. In spite of the fact that Sidney Webb claimed to have read Marshall's *Principles* in an afternoon, and (not surprisingly) to have got little out of it, the justification for all that the Labour Party has achieved in Britain is probably to be found in the work of Marshall and his disciple Keynes.

The distribution of income in a perfectly free economy is unequal because of the unequal distribution of land and capital and educational or social opportunities as the result of inheritance, and also because the process of "voting with the pennies" of the consumer as a means of steering economic resources into the channels desired by the consumer leads to inequality: the

¹ For example, in *New Fabian Essays*, where one would expect to find definite and constructive proposals and lucid definitions.

² Cf. Maurice Dobb, *Political Economy and Capitalism*, 1937, on the question of economic law in a socialist economy. "Any examination of a socialist economy, if it is to be concrete, must clearly start from this essential fact: that the fundamental character of socialism consists in its abolition of the *class relation* (my italics) which forms the basis of capitalist production through the expropriation of the propertied class and the socialization of land and capital." Land and capital cannot surely be said to be socialised if the result of state ownership is merely the creation of a new class structure, defining "classes" as groups between which movement is difficult, possessing different incomes and preserving the differential by the combined exercise of economic and political power.

"votes" can be spent again. But the theory of diminishing marginal utility, by which this process is explained, explains also, on the assumption of fairly active competition, how the inequalities can be kept within bounds and how the residual elements of rent, eminently suitable as objects for taxation, can be isolated. Moreover, with one piece of liberal interpretation concerning the reasonableness of inter-personal comparisons of utility which Marshall took in his stride as something too obvious to argue about, it provides the logical foundation for progressive income tax, by means of which further equalisation can be secured. Both from the point of view of the distribution of income and the allocation of resources, monopoly power, given its full utilization, can distort the harmony; so can differences between social and private products and costs. The remedy is the organisation of public opinion, nationalisation when administratively practicable and *ad hoc* legislation directed to such things as the abatement of the smoke nuisance. Involuntary unemployment may occur as the result of fluctuations in private investment: Keynes has shown how this may be corrected, and in so doing has indicated how, in some circumstances, the accumulation of capital involves no real cost.

Socialist legislation has fitted completely into this pattern of ideas in Britain, partly as the result of conscious adoption, partly through the logic of circumstances. In the 1930s long debates took place to whether the nationalisation of industries should be accompanied by full, or partial, compensation or by none. As the party was not prepared to face the administrative chaos which would follow upon the complete and simultaneous nationalisation of all industry without compensation, nor prepared to face the economic disorganisation which would follow upon the nationalisation of some industries with less than full compensation while expecting the others to carry on as usual until requisitioned, nor agreed upon the ethics of either proposal, full compensation was paid.

Thus all that remained for "redistribution" was the gains to be derived from the reduction of monopoly profits or the fruits of industrial co-ordination: both proved elusive in pursuit and negligible in quantity. Consequently, all that could be done by way of the re-distribution of income had to come from the progressive taxation of the rich: the party inherited a level of taxation imposed during war which was probably higher than would have been possible without grave damage to the growth of the national income and the accumulation of capital, had it not been for the existence of restrictions upon the export of capital, also inherited. These latter could hardly be permanent at their 1945 level of effectiveness if the very substantial section of the national income which before the war had arisen from the finance of international trade, and from insurance and the *entrepôt* trade, was to recover. The proceeds of this high level of taxation were progressively diverted; first to use as anti-inflationary "blotting-paper" as the terms of trade worsened; then also to the cost of the defence provisions which the deterioration in the international situation rendered necessary.

Inevitably, the arguments employed by the leaders of the party in explain-

ing to their critical followers why so slight an increase in working-class income had resulted from a period of socialist government depended upon such propositions as may be found in Pigou's *Socialism versus Capitalism* (especially pp. 77-8) or in Marshall (especially Book VI, ch. XIII). No definition of socialism is likely to arise in such a situation, in which the whole argument is concerned with the administrative feasibility of varying rates of speed in the reform of a modified free-enterprise economy. The critic within the labour movement is impatient at the degree of redistribution of income and property achieved, dissatisfied with the level of his real income, fairly clearly aware how much the latter is due to external circumstances and only vaguely conscious of the extent to which the former was implicit in the programme of the party.

3. The essentials of the position in Russia are simple in the extreme. Revolution in a backward country, carried out in circumstances which alienated the outside world and under the guidance of a dogma which expected and indeed demanded such alienation, left the Government with the task of carrying through those early stages of an industrial revolution in which the aggregate product is low, and the rate of accumulation of capital high as a proportion of the national income. Had the atmosphere been calm, and administration skilled, the real cost might have been negligible: concealed unemployment on the farms was widespread, and the feeding of the capital-providers off the farm should have cost little more than their share of the product which they consumed while under-occupied on the farm. In the exacerbated aftermath of revolution and civil war, with dogmatic and inexperienced administration, a gulf was opened between ruler and ruled which has poisoned life inside Russia and soured Russian relations with the outside world for the lifetime of a generation. The individual worker does not, in any recognisable form, get the full product of his labour, nor does he enjoy any economic freedom, nor is his standard of living improving though it is, adequate even by his own standards.¹ In the interests of future economic efficiency, of the defence of the regime, internally and externally, and of their own power and prestige, the agents of the state maintain a balance between available and non-available output far in excess of any possible popular desire to save, and control with every available weapon the resulting inflationary tendency which pervades the whole of life.

4. This article is not concerned with debating whether the technique of the social democratic parties or of the so-called conservative parties is the better one for increasing the volume or optimising the distribution of the

¹ The capacity for rapid improvement in the standard of living in Russia inherent in the remarkable expansion of their basic industries since the war must not be underestimated. Cf. J. Bergson (ed.) *Soviet Economic Growth*, 1953, for an exhaustive and objective analysis of the facts, and Edward Crankshaw, in *Russia by Daylight*, 1951, for an observer's record of the very low immediate post-war levels. Even without wholly agreeing with Mr. Balogh that comparison with working class standards on the rest of the Continent might easily become disadvantageous, the rate of progress by internal standards might easily become so great as to lessen or indeed abolish the conflict of interest if a substantial proportion of the resources now devoted to defence could be diverted.

ial dividend produced by an economic system of which free enterprise provides the principal motive force; nor is it concerned with whether capital is more painlessly accumulated in the form of profits or taxes. Nor does it seek to prove the advantages of a classless society, which are incapable of economic proof: *de gustibus non est disputandum*; only to point out that the one thing which all definitions of socialism include is a classless society, and the progress has been made towards this end in Britain, while in Russia, as we would expect during an industrial revolution, new classes are developing.¹ Indeed, in Britain the social democrats are as monarchist as they are in Scandinavia: it is no accident that the fantastic term "under privileged," with the implied claim that all should have more than equal rights, has been pressed into political currency.²

The central thesis which will hence-forward be maintained is that "classes" in the sense of groups possessing undue advantage either in wealth or power (as far as these can be separated) will tend to emerge in any society in which the marginal productivity of capital and, probably, of land, is much greater than zero.³ (It is indeed doubtful if they can be avoided if the marginal disutility of labour is positive.) Catastrophic revolutions in the contemporary world, expropriating the owners of property completely and creating conditions in which they can be forced to allow and even conduct the utilisation of their plant pending expropriation, are only likely to happen in poor and backward countries.

There is a fatal flaw in Marxist analysis, which ignores the rising labour productivity which the accumulation of capital permits and of which the consequently changing social balance demands full use should be made, and which thus softens class antagonisms in the more advanced countries. In such countries where thorough-going socialist-inspired revolutions are still possible, the need for capital accumulation is great, and the conflict between the state (in practice state servant) and worker is also potentially great. Privilege inevitably crystallises round the administrative and expert groups: the permissibly sensible criteria of Marx and Engels for a classless society are not met.⁴ They were right in their argument that classes are the product of economic conflict. "Conflict" is more than the ordinary disparity of immediate interest between producer and consumer; it exists, in the sense

¹ Crankshaw, *op. cit.*, seems to provide as clear a picture of the social structure of contemporary Russia as is available in English, infused with a liking for and knowledge of the Russians.

² Cf. *The Concise Oxford Dictionary*. "privilege. Right, advantage, immunity, belonging to person, class, or office."

³ Cf. F. P. Ramsey, "Mathematical Theory of Saving" (*Economic Journal*, December 1920) and his concept of "Bliss," which reappears, somewhat transformed, in the last chapter of Keynes' *General Theory of Employment Interest and Money*.

⁴ The field is too wide for reference to be adjoined: the core of the argument is that socialism is possible only when it is economically possible for a civilised life to be enjoyed by all, rather than by privileged classes; when, to quote Engels in *Anti-Dühring* "... the colossal productive forces developed within the capitalist system of production, which the latter can no longer master, are only waiting to be taken possession of by a society organized for co-operative working on a planned basis to ensure to all members of society the means of existence and of the full development of their capacities, and indeed in constantly and increasing measure." Unfortunately Engels thought that these circumstances had arrived in the 1880s.

in which these authors, rightly, considered it to possess a unique significance, when a high proportion of income consists of rents or quasi-rents, the only circumstance which they considered, because competition is so largely between rather than within groups of the similarly circumstanced. It also exists whenever capital is being accumulated faster than would result from the sum of private decisions to save with an approximately equal distribution of the social income (see under) or whenever, the marginal products of land and capital being significantly greater than zero, administrative decisions about the distribution of these factors have to be taken, with the inevitable results upon the products, social costs and incomes of the industrial groups involved. These circumstances they did not consider, except in their argument that under socialism the state would "wither away."

Their defective technique of economic analysis also led them to assume that the political victory of the working classes would come about when the "real" marginal return to the impersonal factors was zero, but the institutional apparatus of capitalism, and its servant the state, concealed the fact: the final "contradiction of capitalism." This could happen only if enormous monopoly power was used with a ruthlessness which the changing distribution of income and political power in an advanced society has in fact forbidden; a development of which they denied the possibility.

5. To the present writer a review of current Russian affairs fits this analysis perfectly. In contemporary Britain, when nothing more than a modification of the class basis of societies has been attempted, the same conclusions emerge: the Civil Servant transfers the interest on the once privately owned capital of the nationalised industries to their erstwhile owners or to their appointees, on subsequently acquired capital to the Treasury. Taxation is limited, at least in intention, to a level which will leave the private accumulation of capital and the exercise of private initiative unhampered.

But as the question most relevant to a modified free enterprise economy is "How fast is it developing, and in what direction?" what we need to assess here is whether such a system is likely to develop into socialism as defined. If the last chapter of Keynes' *General Theory* can be accepted without qualification, it seems as if it must do so, if we are to avoid endemic unemployment. To offset the high propensity to save of a rich society enjoying a high level of employment, capital must accumulate so fast that in relatively few years the marginal efficiency of capital, and hence the rate of interest, will tend to approach zero. The euthanasia of the *rentier*, which sounds much more friendly than "the expropriation of the expropriators," but in effect is the same thing, follows, and only earned incomes, largely equalised by taxation, remain. Now if this be taken as Keynes most probably meant it, as a description of a probable trend and an indication of attractive possibilities, all that can be said is that it seems over-optimistic.

First, to recapitulate well-known arguments for an unfamiliar use, the Keynes analysis is short-term: we may always be pretty sure of the shape of the consumption function (unless, as I suspect is often the case in the many countries haunted with the fear of inflation, it is upside down, linking

diminishing savings with rising incomes and marginal values), but its position is apt to change in the (short) long period, as changes in the level of employment alter income distribution. Thus we can only be sure that interest "rewards no genuine sacrifice any more than does the rent of land," during the short period in which an excess of involuntary unemployment is undergoing reduction. With "full employment" the real cost of saving returns, although it may take unfamiliar titles like "wage restraint." This latter appellation reveals surely that economic conflict as defined here has come again: the once-familiar term "overfull employment,"¹ which has curiously gone out of use with a further rise in employment but a change in government, points the same way. Even if we could assume that the secretion of capital was always painless, however, we are not entitled to believe that the extinction of unearned incomes would be universally welcome. I suspect that Keynes drew an unreal line of demarcation between entrepreneur and *rentier* in his tacit assumption that the euthanasia of the latter would be a matter of indifference to the former: I have yet to meet an entrepreneur who does not consider himself to be serving his apprenticeship to the state of *rentier*.

Second, both rents and quasi-rents could tend to be high and to show an upward trend in the circumstances outlined. As the rate of interest moved towards zero the value of real and fixed property would rise, although, for the obvious reasons, not to infinity. In theory these can be appropriated for the use of the community without danger; in practice they are difficult to isolate and, as the British experiment in nationalising improvements in land values shows, apt also to be hard to collect without friction. If capital could accumulate without conscious abstinence and if a high degree of substitutability between capital and land developed, this problem might prove to relate to only a phase of development, but both these assumptions are somewhat improbable of realisation.

Third, the link between the accumulation of capital and a decline in its marginal product is, of course, a static concept propelled into the future along the very fragile blowpipe of *ceteris paribus*. Marx, whose law of declining profits rested upon a less lucid analysis, was nevertheless perfectly sound when pointing out that its application depended upon the speed with which new inventions provided new avenues for investment, and with which the complementary labour force was increasing. It is, in this context, curious to observe how completely Keynes appeared to ignore the capital-hungry world outside the richer nations, its rising population and its terrifying growth potential. To link the capital-producing capacity of the West with the hunger of the East might, politics permitting, allow us to maintain a high level of employment while substituting capital exports for arms, but only at the expense of slowing down any tendency for western standards of living to rise and for the rate of return on capital to fall. Here again, economic conflict appears. Would anyone dare to fight an election on the slogan

¹ Cf. the annual speeches of the chairmen of all the "Big Five" banks in 1950/1.

of "New schools for India before new houses for Britain!"; despite justice and economic logic, does anyone doubt the result?

6. The way to socialism, then, is through economic conflict, which is with us anyway in the tangle of competition and co-operation of which economics life consists. Every society, however democratic its structure, which intends to become socialist will have to undergo a period in which economic conflict will endure, though its shape will change. The danger is that as conflict between groups which are organic in composition, changing their composition with victory and defeat and reflecting the pressures of the day, changes into conflict between the state and the *total* of the forces which the state is moulding (even if the state is the organ of one of the groups), the pattern may become frozen and lifeless, petrifying with it the group whose intents or ideals the state subserves.

It is with this aspect of the economics of socialism that the bulk of the modern literature of the subject is concerned. Apart from the critics, who argue that nothing will emerge from the morass and that socialist accounting is impossible, there are two main streams. The first, among which Lerner's *Economics of Control* and Lewis' *Principles of Economic Planning* should be given a foremost place, advocates stopping on the brink, modifying and maintaining the liberal economy and its temper. The second consists mainly of the burst of response to the criticism of Mises and Heyek: some twenty-five years ago I suspect that nearly every young economist had a pricing system for factors and products in a socialist state tucked away in his desk. Analytical fragments were torn bleeding from the carcase of the economic system they were contrived to explain, and sewn together with great skill: the results were neatly embalmed, with great care but without very much love, by Sir Robert Hall in *The Economic System in a Socialist State*.

The society therein described, however, is hardly likely to be free from economic conflict. If workers are paid the value of their marginal products, in the interests of maximising output, adjusted to allow for labour-supply curves which slope backwards, and augmented by the distribution of that portion of the aggregate imputed products of non-personal factors which exceed the needs of communal expedition, investment, and transfer payments to the unemployable, a fine administrative tangle is likely to result, of which the results may be little more generally palatable than the parallel efforts of the establishment division of a branch of the Civil Service.¹ But, in general, our authors see no end to this: for the reasons for

¹ A later author, T. J. B. Hoff, *Economic Calculation in the Socialist Society*, whose book, written in Norwegian in 1938, was translated in 1949, takes up the same problem at a somewhat more abstract level. Despite the enormous erudition which this work displays, this, too, misses the essential point. To quote from his conclusions, "Each factor of production must be so employed as to give the greatest return according to the ends. This, and only this, is the criterion for rational economic activity." This is only true of rational activity in general in a society where economic activity is a dominant factor. His whole argument goes to prove that a socialist economy is not likely to be very good at solving economic problems, and so far is sound. But he gives no more consideration than do the authors whose work he is reviewing to the possibility that a socialist society is one organised (or rather, orientated) to avoid or minimise economic problems.

which Keynes' application of the law of varying proportions to the accumulation of capital over time appeared so dubious, they expect capital to be always scarce relative to the demands for it. Rightly, also, they deny the easy assumption that a socialist society organised as they see it would have no problem of the allocation of resources: the higher the standard of living, the richer the texture of the common life, the more valuable will be the leisure of the common man and the greater must be the care with which human labour is husbanded. It is capitalist enterprise in its early stages, newly grafted upon feudalism, which can afford to waste the labour of those whose lives are already wasted by poverty and ignorance.

It is not probable that in such a society the ordinary man will be conscious of economic freedom, of the enjoyment of the "full product of his labour": that he will fulfil the socialist ideal. His material standard of living may be high, as in the American version of a free-enterprise economy to-day, or as it may well be in the Soviet Union in ten years time, or as it might equally well be in a monopoly-dominated economy with a high rate of technical progress and a strong and well-informed public opinion. To repeat: it is not here our object to discuss this point, nor to argue whether one might expect men to be happier in such societies than under "socialism," but to define the conditions of socialism. Probably the chance of a high and rising standard of living would be greater in any of these three sets of circumstances, or under a liberalised version of free enterprise, than during a state of transition to socialism. It is all the more necessary therefore to define the end by which such a stage of transition is justified.

7. A socialist society has been defined so many times that a critical analysis of what has been written is impossible here. What emerges by contrast from the previous paragraphs, however, is a picture of a classless society, free from economic conflict or, to come down to the point, free from conflict about economic matters; indeed, a society which, unlike the one in which we all live to-day, pays little attention to economic matters. The persons in control of the machinery of planning who wish to develop such a society must therefore, above all things, aim at reducing the marginal product of capital as near to zero as may be.

At first sight this may seem the most dangerous of all doctrine: a bureaucracy intent upon the accumulation of capital in the interests of "freedom some day" is not unlike certain machinery of state in the contemporary world. If the argument of paragraph five be recalled, however, it will become obvious that the mere accumulation of capital is not the answer. In the world of free enterprise the inventors will always outstrip the savers, if only because it is normally more profitable to start a new industry than to "compete" one's way into an established one. The only way in which a socialist society could be established and maintained, with any chance of stability, would be by the wholesale suppression of inventions, or rather by the division of new inventions into those which saved labour in the satisfaction of old and accepted needs, and those which at once created new tastes and the means of satisfying them. The

former would be adopted: the latter suppressed.¹ Sumptuary legislation of this kind need create slight conflict and little hardship: all the best things to eat and drink and all the more civilised ways of pleasing, adorning and amusing the mind and the body were discovered long ago.

Probably William Morris had a clearer idea of the basic economics of socialism than any of the economists who have written on the subject, because he started free from those preconceived and inappropriate concepts which it is the aim of teachers of the economics of a free-enterprise world to inculcate. His insistence that most of the things he saw in the shops were really of little use to anyone, that the obverse of the world of Alfred Marshall was the man in command of capital persuading people to buy rubbish and then organising its manufacture, was obviously out of proportion. If one is full of steak it is easy to see nothing but baseness and cupidity at work in the sausage shop. But where he was right, if the argument of this article is right, was in insisting that a socialist society (as distinct from a liberalised capitalism or a "planned economy") must be permeated by a deeply rooted conservatism.

Given willingness to accept the traditional components of a civilised life and to reject the new (a task in which good taste might well supersede the action of the state) there seems little reason why, with capital harnessed to the service of an accepted range of needs, it might not be possible for the sort of world which he envisaged in his "Lecture on Communism" to be realised. As the marginal product of labour rose, shopkeeping and accounting being difficult to mechanise, it might prove cheaper to allow some products to be wasted rather than utilise labour to save them. It might prove possible to reach a balance between the supply of labour and the demand for products such that the marginal supply of labour involved no disutility, and so production involved no real cost. But this would be possible only in a society which was extremely simple in its tastes, extremely conservative in its habits.

8. I do not see any such society emerging from our contemporary world, in Russia or in the West: it is almost inconceivable in the nature of things that the training and temperament of those who would command any nominally socialist-directed planning would enable them to steer in this direction. Whether he be the president of a company in Montreal, the secretary of a Soviet trust in Urkutzk or the director of a nationalised industry in London, the Marshallian type of man is in command of the economic life of our world; inventing things for us to want, persuading us to want them and organising their production. I am not convinced that his critics, whenever and in whatever guise he may appear, want a socialist society as an alternative. So they must decide upon the kind of limitations and conflicts which they prefer.

The quintessence of socialism is the absence of economic conflict. It is most doubtful if economic conflict can be avoided unless economic problems are minimal. For this to be the case it is almost certainly necessary

¹ I am, rightly, reminded by Professor Dickinson that the administrative problems involved in such a division would probably prove insuperable. Indeed, I was not unaware of this, but as I do not think that any administrator is ever going to try, I do not develop the point.

that: (a) tastes should be simple and conservative; (b) that the level of industrial skill and the degree of capitalisation of industry should both be high. Are (a) and (b) compatible? It is most doubtful: the hand that works the automatic lathe seeks the cigarette-case; the mind that goes with it, trained in the operation of large gadgets, is likely to seek its relaxation with smaller (but still complex and expensive) ones.

The task of the politicians, and it is here that the economist may aid him, is to decide in which direction the economic system of his country should be steered. There is an enormous difference for the common man between life in a centrally planned economy which has degenerated into the machinery of exploitation and in a smoothly-working free economy with its harshness mitigated by well-devised social legislation; a much lesser and indeed negligible difference as compared with a system unfettered by social restraint and dominated by monopoly and concentrated land-holding. As compared with the latter, the centrally-directed economy might indeed have many advantages, not the least of these being some ease of attainment within a country so circumstanced as compared with the "welfare state" of controlled free enterprise. The economic circumstances of each country, its history and its culture, as well as the theoretical economic advantages of each system, determine the advantages between which choice must be made. Socialism is not a direct alternative to any of these systems, and cannot be without a more profound revolution in ethical and æsthetic values than there is any sign of in our contemporary world. Nor does it seem apparent that any of them is more likely than another to bring it about.

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CONVERTIBILITY AND TRIANGULAR TRADE AS SAFEGUARDS AGAINST ECONOMIC DEPRESSION¹

MANY governments approach the question of an early resumption of convertibility and a lowering of trade barriers with considerable reluctance. They have established a high and stable level of employment as one of their main aims and responsibilities both individually and conjointly as signers of the United Nations Charter, and they are afraid that a return to convertibility and freer trade will expose their economies to the forces which led to the Great Depression in the early thirties.

This attitude towards convertibility² and foreign trade needs to be reconsidered because it is possible to demonstrate that the value of world-wide triangular trade³ has in the past *increased* substantially from the peak year of economic activity in the major industrial creditor countries to the following trough year. The contra-cyclical trade expansion usually took place in a series of countries in such a way that the world outside the United Kingdom was able to earn enough pounds sterling to meet its United Kingdom obligations and ultimately to expand its purchases and attract fresh capital from that major creditor country. This process led to world-wide economic revival in all recessions after the ban on the export of precious metals among the major countries was removed. The one and only exception to this general rule was the *decline* in triangular trade which took place in the depression period from 1930.

There are strong reasons to believe that a re-introduction of convertibility and the removal of the major trade obstacles would lead to the establishment of a system of world-wide triangular trade which would afford the same protection against economic depression and stagnation as triangular trade provided in the past. It appears that the Great Depression was an exceptional case and was the result of a structural conjuncture which is quite unlikely to repeat itself. The reasoning is as follows:

¹ The author is a member of the United Nations Secretariat, but the views expressed in this article are his personal opinions.

² Convertibility exists when anybody is entitled to exchange his claims in a certain currency into a foreign currency at the current rate of exchange—which need not necessarily be a fixed rate—without documented indication of the use he is going to make of the foreign exchange. Full convertibility exists when the rate of exchange is fixed (Paul Winding, "Konvertibilitetsspørgsmaalene," *Nationaløkonomisk Tidsskrift*, 1953, p. 112).

³ The value of the trade (imports plus exports) of each country may be divided into three groups. The first representing imports and exports offsetting each other in *bilateral trade* taken in the narrow sense (that is, considering merchandise alone).

The second representing the *balance of total merchandise trade* which is offset by the balance of gold and invisible items, such as services and capital transactions.

The third representing *triangular trade* (taken in the narrow sense) is the active or passive balance in merchandise trade with individual countries offsetting each other. In other words, the sum of the trade balances with individual countries, disregarding their sign, less the numerical value of the balance of total trade.

League of Nations, *Review of World Trade 1933*, Geneva, 1934, pp. 65-6.

1. A world-wide pattern of multilateral trade (bilateral balances of trade, disregarding their sign), which existed before 1931, was discovered empirically by the Economic Intelligence Service of the League of Nations. Mr. Folke Hilgerdt, who was responsible for the inquiry, explains the structure and origin of the pattern in the following way.¹

The countries participating in world trade could be listed in such a way that each country had an import balance from practically all countries that preceded it in the list and an export balance with practically all countries that succeeded it. When the countries were grouped into a limited number of categories to give a synoptical view, it was discovered that tropical countries had an export surplus to all countries except the United Kingdom and countries of recent settlement including the United States had an export surplus to Europe. Continental Europe had an export surplus to the United Kingdom and that country an export surplus to the tropics.

The trade which flowed through these multilateral channels depended on the same factors as all international trade, namely: (i) the comparative scarcity of the factors of production in the individual countries, (ii) each country's comparative ability to take advantage of large-scale production, and (iii) the costs of transport.

The comparative scarcity of the factors of production and the comparative advantages of large-scale production in the participating countries influenced multilateral trade in the following way.² Each group of countries possesses an ample relative supply of one factor of production (labour, land or capital) and at the same time a scarce relative supply of another. In the tropical countries the supply of labour is ample, land moderate and capital scarce; in the countries of recent settlement land is ample, capital moderate and labour scarce; in Europe, particularly in the United Kingdom, capital is ample, labour moderate and land scarce. Each country tends to export commodities embodying the ample factor and import those embodying the scarce factor. Owing to this basic driving force, balances of trade dovetail into a multilateral system and the countries fall into a natural grouping. Continental Europe, having a more ample supply of land than the United Kingdom, entered into the system before that country.

The advantage of large-scale production placed Germany ahead of the rest of Continental Europe and the United States ahead of the other countries of recent settlement.

The comparative scarcity of the factors of production and the comparative advantage of large-scale production in the individual countries are usually not subject to any major change even over long periods of time. This gave a certain stability to the multilateral pattern and maintained the individual countries in their traditional places.

Transport costs introduce a modification of the driving forces mentioned

¹ See *The Network of World Trade* (Geneva, 1942) and Folke Hilgerdt, "The Case for Multilateral Trade," *American Economic Review*, March 1943, pp. 393-407.

² See Karl-Erik Hansson, "A General Theory of the System of Multilateral Trade," *American Economic Review*, March 1952, pp. 60-8.

above. The secular decline in transport costs which resulted from technical progress was a most significant factor in the long-term growth of the system.

The system of payment which arose during the last few decades of the nineteenth century was from the beginning linked up with the transfer of the yield of British investments. As these investments increased and the yield began greatly to exceed new British capital exports, the amounts due by the debtor countries (mainly the tropics and the countries of recent settlement) began to be transferred, in part, through the United States and Continental Europe.¹

The frictionless movement of multilateral trade along the channels described above depended on the existence of convertibility of currencies and a world commodity market to which all countries were admitted on equal terms. Equally, continuing convertibility and the uniform valuation of commodities depended in turn on the contra-cyclical movement of triangular trade.

2. The contra-cyclical movement of triangular trade can be explained in the following way—

(a) A recession in the industrialised countries normally released shipping tonnage from the transport of coal and ores between such countries. As these commodities were responsible in 1913 for 40% of the tonnage of all

TABLE I
The United Kingdom—Change in Inward Freight Rates and Prices of Imported Commodities

Period of recession. ¹	Change in inward freight rates, %. ²	Change in prices of imported foodstuffs, %. ³	Change in prices of imported raw materials, %. ³
1873-79	-38	-14	-24
1883-86	-38	-19	-15
1890-94	-21	-10	-15
1900-04	-35	+ 2	- 1
1907-08	-12	+ 2	- 6
1920-21	-53	-28	-46
1937-38	-27	- 3	-12

¹ A. F. Burns and W. C. Mitchell, *Measuring Business Cycles* (New York, 1946), p. 79. William H. Beveridge, *Full Employment in a Free Society* (New York, 1945), pp. 281, 303 and 312. From 1889 to 1895 freight rates fell 40%, foodstuffs 16% and raw materials 19%.

² Colin Clark, "Die internationale Vervlechtung volkswirtschaftlicher Bewegungsvorgänge," *Weltwirtschaftliches Archiv*, Vol. 42, 1935 (II), pp. 411-12. Board of Trade, "The Course of Ocean Freights During the Past Twenty Years," *Memoranda, Statistical Tables and Charts bearing on British and Foreign Trade*, London, 1904 (Cd. 2337, Memorandum No. VIII). C. K. Hobson, *The Export of Capital* (London, 1914), p. 182. L. Isserlis, "Tramp Shipping, Cargoes and Freights," *Journal of the Royal Statistical Society*, 1938, pp. 107-15. *The Economist*, "Monthly Index of Ocean Freight Rates (Average of Inward Freight Rates from India, South America, the Mediterranean and the Bay of Biscay) 1937-1939."

³ Werner Schlote, *British Overseas Trade* (Oxford, 1952), pp. 176-7.

ocean shipments, the result was a decline in freight rates.² This decline invariably went much further than the price fall of imported foodstuffs and raw materials in the United Kingdom.

¹ *American Economic Review*, March 1943, p. 397.

² Statistisches Reichamt, *Vierteljahrsheft zur Statistik des Deutschen Reichs*, Vol. 37, 1928, Ergänzung-

Consequently, ships sought employment in trade with distant countries, and owners were less reluctant to send their ships to under-developed frontier areas, where the lack of port facilities would involve extra lay days for the vessels. The nature of this delay is well described in a recent O.E.E.C. report on timber, which offers the following explanation of high freight rates from West Africa:

"Unlike the larger shipping points, the smaller African points have no quays for loading, so that the steamer is obliged to be at anchor outside the port often 400-500 meters from the coast. In loading at sea the logs have sometimes to be transported one by one to the steamer. This of course takes a considerable time and involves extra lay days for the vessel. A slow rate of loading on the steamer may also cause extra lay days. The inefficiency and slowness of native labour leads to delay. In the case of loading at sea the slightest bad weather slows down or stops the work entirely and involves the vessel in further delay."¹

Producers of raw materials and crude foodstuffs have always been attracted to the world economic frontier by its ample supply of cheap land. Adam Smith was well aware of this when he said "plenty of land and liberty to manage their own affairs in their own way seem to be the two great causes of the prosperity of new countries."² The cost of transport of bulky frontier products has always constituted a substantial share of their London price. The relative share of freight cost in the total market price varies widely for different commodities, according to their value per ton or cubic foot. It varies also with distance. Even for the same general type of commodity, a wide variation is noticeable. According to the O.E.E.C. report freight costs to the United Kingdom in 1950 were the following percentages of the price of the country of origin: Scandinavian softwood 15%, Californian redwood 17%, American white oak 33%, West African okoumé 40%, British Columbia Douglas fir 43%, West African azobé 52%, Surinam tropical round logs 150%. Taking account of these wide variations, it is beyond doubt that for a large number of commodities entering or about to enter international trade, changes in freight costs have a considerable influence on price. It is therefore not surprising to find that the price fall which usually took place in a bulky commodity in London in years of economic recession was frequently paralleled by an increase in the local price of the same commodity in the frontier area.

In this connection it should be remembered that even in periods of violent fall in the general price level the London price of a substantial proportion of all commodities did not fall more than a few per cent, and sometimes did not fall at all. Among commodities in the first group are goods where a slight price reduction leads to additional sales, such as new products, goods serving new requirements or new classes of consumers. A few examples will illustrate the price movements in recession years of bulky frontier pro-

¹ Organisation for European Economic Co-operation, *Tropical Timber* (Paris, 1950), p. 45.

² Here quoted from Hancock, *A Survey of the British Empire*, Part II, Vol. 1, p. 41.

ducts which experienced a moderate price fall in the London or Liverpool market and benefited from a considerable decline in freight costs to the centres of consumption. In the recession from 1873 to 1879 wheat prices in the United Kingdom fell 19%, while they increased 9% in Illinois and 29% in Iowa.¹ From 1883 to 1886 the price of Chilean nitrate fell 13% in London and increased 22% in Chilean ports.² In the recession from 1890 to 1894 the price of soft-wood lumber fell 8% in London and increased 12% in Canada.³ From 1900 to 1904 wool prices in London fell 8%, while price in Argentina in terms of gold pesos increased 12%.⁴ From 1907 to 1908 the price of oats in London fell 9%, while the price in Australia increased 9% and in the United States 13%. As a result of such increases in local prices it has frequently happened that the general export price indices in frontier countries have increased in recessions. In Argentina the export-price index in terms of gold increased in the recessions from 1866 to 1868, from 1889 to 1893, from 1900 to 1904 and from 1907 to 1908.⁵

The explanation of the above price movements is that the savings in transport costs amounted to more than the decline in the London price. The effect of such movements was that rising prices at the frontier frequently led to a widening of the economic frontier itself. An example from the recession of 1866 to 1868 illustrates how rising prices at an existing frontier point of shipment led to a development of the transport system beyond the traditional shipping points. In 1866 when the railways had not yet reached beyond Hastings, Minnesota, the price of wheat in that city was 121.7 cent a bushel, while the price in St. Cloud beyond Hastings was 67.2 cent. When the railway to St. Cloud was opened, the local wheat price rose almost to the same level as the price in Hastings.⁶ In general, railway construction outside Europe and the United States always increased more in periods of recession (in the industrialised countries) than in the preceding boom period.

The widening of the frontier was followed by an inflow of capital from abroad.⁷ Moreover, since immigration always shows a close correlation with economic activity in the country of immigration,⁸ it is not surprising to find that immigration also increased in step with railway construction in

¹ State of Minnesota, *Fifth Biennial Report of the Bureau of Labour* (St. Paul, 1896), and Gustaf Sundberg, *Aperçus Statistiques Internationaux* (Stockholm, 1908).

² U.S. Tariff Commission, Report No. 114, Series II, *Chemical Nitrogen* (Washington, 1937) p. 116.

³ Canadian Board of Inquiry into Cost of Living, *Report*, Vol. II (Ottawa, 1915), pp. 20-5. This report gives a wealth of information about the year-to-year price movements of a large number of commodities not only in Canada but also in the United Kingdom and countries which are competing with Canada in the world market.

⁴ See data given by Dr. Loreto Dominquez in his article on Argentine export prices 1863-1944 *Estadística*, September 1945, pp. 368-80.

⁵ Loreto Dominquez, *op. cit.*, p. 375.

⁶ State of Minnesota, *op. cit.*

⁷ A. K. Cairncross, *Home and Foreign Investment, 1870-1913* (Cambridge, 1953), p. 204.

⁸ Harry Jerome, *Migration and Business Cycles* (National Bureau of Economic Research, New York, 1936).

TABLE II
Railway Mileage

Average Annual Increase in Thousands of Kilometres ¹

Boom years in the United Kingdom.	Depression years in the United Kingdom.	Europe and the United States.		Rest of World.	
		Boom years.	Depression years.	Boom years.	Depression years.
1869-73		16.5		1.8	
	1874-79		10.7		4.0
1880-83		18.6		5.5	
	1884-86		13.9		7.3
1887-90		17.8		7.6	
	1891-94		10.7		7.7
1895-1900		10.6		8.2	
	1901-4		12.9		9.2
1905-7		13.7		11.6	
	1908		9.7		17.2
1909-13		11.0		12.9	

¹ *Archiv für Eisenbahnwesen*, 1880-1915.

the frontier countries.¹ All this led to an increase in the production and exports of these countries. In every recession the value of imports into the United Kingdom and continental Europe from a large number of frontier countries, although not always the same group of countries, increased substantially.

(b) As a result of this expansion the European countries well suited for dairy production could get much larger supplies of imported fodder without any increase in the local purchase price, and frequently in spite of a fall in the purchase price. This led to an expansion in the production and exports of butter, cheese, eggs, and bacon and other meats. The expansion is reflected in the substantial increase in the United Kingdom's imports from Austria-Hungary, Denmark and the Netherlands in all recessions when imports from most other European countries regularly declined. For reasons given below, the 1883-86 recession alone is an exception to this general rule.

The expansion of exports from the dairy countries was made possible by convertibility accompanied by an expansion of triangular trade. The foreign-trade figures for Denmark demonstrate how triangular trade increased substantially in all depression periods, except in 1883-86, in spite of a decline or stagnation in Denmark's other foreign trade.

In all the depression periods this trade expansion was stimulated by additional cheap fodder supplies from overseas. It is only in the years of secular price fall before 1894 that a slight rise of about 5% in real labour income in the United Kingdom ² may have contributed to expand the

¹ National Bureau of Economic Research, *International Migration* (New York, 1931), Vol. II. See in particular data for Argentina, Brazil and New Zealand.

² A. R. Prest, "National Income of the United Kingdom, 1870-1946," *Economic Journal*, March 1948.

triangular trade of the dairy countries. Countries which had developed industries that made it possible to tie their foreign trade to the above-mentioned flow of triangular trade enjoyed a similar expansion in those industries during periods of industrial recession. Thus, Germany, which after 1894 developed its direct import of overseas raw materials and large-scale manufacturing industries, enjoyed a rising export surplus to the rest

TABLE III

*Denmark—The Cyclical Fluctuations of Triangular Trade*¹

In millions of kroner

Peak year.	Trough year.	Triangular trade. ²		Other trade. ³	
1874	1879	46	54	367	303
1883	1886	49	45	439	333
1890	1894	126	168	415	445
1900	1904	255	396	665	701
1907	1908	363	477	1031	852
1913		579		998	

¹ Danmarks Statistik, *Vareomsætning, Skibsfart og Handelsflaade, 1874–1882 og Danmarks Vare-Ind-og Udfoersel, 1883–1913.*

² The numerical sum of bilateral trade balances less the balance of total trade.

³ Bilateral trade (imports and exports balancing with each individual country) plus the numerical value of the balance of total trade.

of Europe, in particular to Denmark, the Netherlands and Austria-Hungary. Germany's triangular trade increased from 1,592 million marks in 1900 to 2,256 million in 1904, or from 15% of its total trade in 1900 to 19% in 1904. From 1907 to 1908 the triangular trade increased from 1,996 million marks to 2,524 million, while other trade declined from 13,599 million marks to 11,542 million. The Germans¹ therefore used to speak of these additional exports as the "Exportventil," the safety valve which provided new markets abroad in case of an industrial recession at home.

In years of recession the United States found widening markets in Europe and in frontier countries of recent settlement, and additional supplies from the tropics. As a result of this, its triangular trade was well maintained in the recessions which occurred in the 1880s and 1890s, and expanded in a most remarkable way in the other recessions, while other trade of the United States declined in all recessions.

(c) In the 1883–86 recession the protectionistic farm policy on the European Continent forced the London price of foodstuffs and fodder so far down that the local prices of these commodities fell even in the countries at the economic frontier. There was in consequence no expansion in the

¹ Rolf Wagenfuhr, "Die Bedeutung des Aussenmarktes für die deutsche Industriewirtschaft," *Sonderhefte des Institutes für Konjunkturforschung*, No. 41 (Berlin, 1936).

production of such goods at the frontier, nor any expansion in the triangular trade of the European dairy countries. On this occasion, however, the London prices of many raw materials which in all other recessions fell much more than fodder and food prices fell only slightly, and the local price of

TABLE IV

*United States—The Cyclical Fluctuations of Triangular Trade*¹

In millions of dollars

Peak year.	Trough year.	Triangular trade.		Other trade.	
1872/73		182		983	
	1878/79	265		891	
1882/83		409		1137	
	1885/86	405		910	
1889/90		511		1136	
	1894/95	502		1038	
1899/1900		333		1911	
	1904/5	523		1712	
1907 ²		564		2691	
	1908/9	632		2343	
1912/13		774		3505	

¹ United States, *Statistical Abstract*, 1906, 1915 and 1920.

² Average of 1906/7 and 1907/8.

many non-ferrous metals, fertilisers and cocoa in the frontier countries increased. With the expansion of the raw material supply from these countries, the European countries, such as France and Belgium, which used to be the major exporters of manufactured goods to the United Kingdom expanded their triangular trade of imports from the frontier countries and exports to the United Kingdom substantially, in spite of a drop in their other foreign trade. In the United Kingdom imports of manufactured goods increased from 1883 to 1886, both by value and by volume (9%) in spite of an all-round decline in imports of livestock, foodstuffs and raw materials.¹ The triangular trade of France increased from 878 million francs in 1883 to 1,186 million in 1886, in spite of the fact that all other foreign trade of France fell from 7,378 million francs to 6,271 million during the same period. In Belgium the triangular trade had the same value (580 million francs) in 1886 as in 1883, and had increased to 23% of total trade in 1886 from 18% in 1883.

In view of the way in which the expansion of French and Belgian triangular trade came about in 1883–86, it is not surprising that it frequently failed to expand in recessions when raw-material prices fell far more than food prices.

(d) The expansion of the triangular trade of the processing countries was the most dependable and effective single factor in expanding purchasing power in the United Kingdom.

Most of the additional imports which in years of recession reached the

¹ W. Schlote, *op. cit.*, pp. 122 and 132.

United Kingdom direct from the world economic frontier, *e.g.*, wheat, of course found a market, but additional purchasing power was brought into use only to a limited extent. As a matter of fact, room for additional imports of such goods into the United Kingdom was provided much less by additional consumption than by a reduction of production and acreage in the United Kingdom itself, in other words, by reduced agricultural activity in that country. The effect of the expansion of triangular trade in the processing countries, on the other hand, which brought such goods as butter, bacon and eggs to the industrialised countries, was to transform the crude products of the frontier into commodities which combine a high price elasticity of demand with other characteristics which favour an expanding market, such as serving new requirements or new classes of consumers.¹ Such commodities, therefore, offered good possibilities for a successful expansion of production. To arrive at a new economic equilibrium it was appropriate to expand purchasing power both in the frontier countries and in the food-processing countries without, however, entailing a contraction of purchasing power in the United Kingdom.

Triangular trade and currency convertibility are two aspects of the same thing, each being the necessary condition for the other.² If it had not been for the expansion which took place in each recession of the triangular trade of countries producing processed foods or manufactures from the increasing flow of primary commodities originating at the world economic frontier, it is inconceivable that British imports could have risen enough to provide sterling for the outside world to keep the international gold standard in operation. Fortunately every country in the world continued to accept any other currency in payment for its imports, a necessary condition for the continued flow of triangular trade.

The rise in purchasing power abroad, which was also directed towards British exports, initiated the economic revival in the United Kingdom. A "persistent feature of cyclical fluctuations is the leadership both in and out of depression of industries in Britain which are dependent largely upon exports."³

"All booms, other than that of 1900, from 1870 onwards, seem to have been communicated through the export trades from America and other countries of investment. . . . Fluctuations in exports of pig iron, machinery and iron and steel manufactures" occurred, as a rule, "preceding fluctuations in home investment and employment."⁴ The result of this, in the upward phase of export expansion, was an expansion of purchasing power in the United Kingdom.

In the seventies and eighties all countries had an export surplus directed towards the United Kingdom. That country was the terminus of all the

¹ Carl Major Wright, *Economic Adaptation to a Changing World Market* (Copenhagen, 1939), Chapter II.

² United Nations, *Economic Survey of Europe* (Geneva, 1953).

³ William H. Beveridge, *Full Employment in a Free Society* (New York, 1945), p. 294. See also W. W. Rostow, *British Economy of the 19th Century* (Oxford, 1948), p. 53.

⁴ A. K. Cairncross, *op. cit.*, p. 196.

triangular-trade transactions. The fact that these trade channels remained undisturbed or even expanded in years of recession made it possible for the British owners of foreign investments to transfer their interest and dividends and even withdraw capital at will.

The current return on any investment has a dominating influence on its capital value. As profits were rising in some, if not all, of the countries at the world economic frontier, and dividends were usually transferred without difficulty, "an increase in activity abroad, generally associated with an increase in foreign investment by Britain, pulled the country out of pre-1914 slumps by improving the prospects of the export industries."¹

From the nineties onwards, Britain developed an export surplus to the tropics, and the circle of the world-wide multilateral transfer system was closed. Subsequently, Britain's triangular trade expanded in periods of recession while bilateral trade was subject to stagnation or decline. The periods of recession in Britain and throughout the world became shorter.

TABLE V
*United Kingdom—The Cyclical Fluctuations of Triangular Trade*¹
In millions of pounds sterling

Peak year.	Trough year.	Triangular trade.		Trade balance.		Bilateral trade.	
1890		191	168	157	192	333	264
1900	1894	215	242	232	250	367	359
1907	1904	276	311	220	216	576	445
	1908						

¹ William Page, *Commerce and Industry*, Vol. II (London, 1919).

3. The contraction of triangular trade beginning in 1930 and the breakdown of the gold standard in 1931 should be viewed in the light of the fact that for the first and only time in an economic recession, the inward freight rates from all non-European continents to the United Kingdom *increased*. This increase began in May 1930 and continued to the summer of 1931. The freight rate from the South Pacific increased 15%, Australia 17%, Canada 18%, India 34%, Burma 36%, Argentina 65% and South America in general 75%.² This extraordinary development can be traced back to a structural change which occurred in British foreign trade in the summer of 1930. All transport services are produced under conditions of joint supply, 1930. All transport services are produced under conditions of joint supply, 1930. All transport services are produced under conditions of joint supply, 1930. As a result of the difficulty of finding a paying return cargo in the ports where less goods are cleared than are brought in, the marginal ship must accept a very low (ballast) freight; otherwise, it is faced with the alternative of either proceeding to some other port where there is a surplus of goods to be shipped

¹ A. K. Cairncross, *op. cit.*, p. 197.

² International Institute of Agriculture, *International Yearbook of Agricultural Statistics, 1932-33* (Rome, 1933), and *The Economist*, 1930-31.

or of returning empty to its home port.¹ The freight rate accepted by the marginal ship will, of course, determine the freight rate accepted by all other ships leaving the same port for the same destination. Before 1930 the dry cargo moving from the United Kingdom paid the larger share of the costs of the overseas round trip from that country. From then on it was the cargo moving towards the United Kingdom which paid the larger share of costs of the round trip. This shift reflects a simultaneous shift from an export surplus by weight to an import surplus in the United Kingdom's merchandise trade, with the exception of tanker cargo and coal shipped to nearby ports, which on account of the high cleaning costs of the colliers do not provide return cargo space.

TABLE VI
The Movement of Dry Cargo Through United Kingdom Ports
Net outward (+) or net inward (−) movement
In millions of tons

Year.	All dry cargo. ¹	Coal shipped to neighbouring countries. ²	Column 1 minus Column 2.
	(1)	(2)	(3)
1923	+51.0	+33.6	+17.4
1924	+26.9	+23.6	+ 3.9
1925	+19.2	+16.5	+ 2.7
1926	−11.3	+ 6.3	−17.6 ³
1927	+14.8	+16.2	− 1.4 ³
1928	+20.0	+16.2	+ 3.8
1929	+28.2	+22.7	+ 5.5
1930	+21.7	+21.8	− 0.1
1931	+ 8.6	+17.3	− 8.7
1932	+ 7.4	+14.2	− 6.8
1933	+ 4.9	+13.0	− 8.1
1934	+ 0.7	+11.3	−10.6
1935	+ 0.2	+11.3	−11.1
1936	−12.9	+11.4	−24.3

¹ *Annual Report of the Liverpool Steamship Owners Association.* In the 1921 recession coal exports also fell to such an extent that more goods moved into Britain than out of that country. This occurred, however, at a time when the extreme shortage of tonnage resulting from the war came to an end. Although inward freights were obliged to pay a larger share of the costs of each round trip, the freight cost of goods moving to Britain fell 53%, that is, far more than import prices.

² Belgium, France, Ireland and the Netherlands. *Annual Statement of the Trade of the United Kingdom*, Vol. III.

³ The figures are affected by the British coal strike (May–October 1926). The period from June 1926 to March 1927 was a boom period in the United Kingdom.

This change can in turn easily be traced back to a structural change in coal exports. From 1929 to 1931 the weight of dry-cargo imports fell only 8%, while exports (of which 79% were coal) declined 31%. British coal-mines had gradually become so depleted that the industry was no longer able to withstand world-wide competition from other fuels, in particular, in the extra-European markets on account of the fact that the average depth of the British coal-mines had been pushed farther and farther down and operational costs increased. Demand for British coal was also subject

¹ W. Stanley Jevons, *The Coal Question*, 2nd. edition (London, 1866), pp. 253–4.

to a structural decline. In 1913 coal supplied 88% of the world's total power requirement; in 1929, 76%; in 1937, 70%; and in 1952, 55% only.¹ The intimate causal relationship between the decline in the coal exports and the increase in the inward freight rates to the United Kingdom is reflected in the much greater rise in the inward freights from ports in South America and on Empire routes, where coal imports had fallen most, than from other overseas countries.

TABLE VII
*United Kingdom—Ocean Freight Rates*¹

Ports of destination or origin.	Outward freight rates May 1931, as % of May 1930 rates.	Inward freight rates May 1931, as % of May 1930 rates.
South America	62	175
India	80	134
Mediterranean	99	87

¹ *The Economist*, June 1930 and June 1931.

In the early phases of the depression, to the summer of 1930, the price of bulky goods at the world economic frontier had been well maintained in spite of falling prices in the British markets. From then onwards the price of bulky goods in the frontier countries took the lead in a drastic price fall. As examples, it may be mentioned that from May 1930 to May 1931 the gold-franc price of wheat in Buenos Aires fell 53%, in Liverpool only 44%; the price of rice in Rangoon fell 52%, in London only 42%; the price of ground nuts in Madras fell 37%, in London only 29%.² In these circumstances there was no reason whatsoever why the countries at the frontier should expand production and exports. Instead of the traditional widening of the frontier, a contraction could be observed everywhere. The triangular trade of all major trading countries declined.³ The depressed industries in Western Europe and the Eastern United States received no stimulus from an increased demand from the frontier countries and the European dairy countries. Thus, the Great Depression was the result of an explainable structural change which blocked the way for the exports moving through the channels of triangular trade that had usually led the way out of a recession. It is further established that this structural change was of such a nature (a one-time drastic decline in the British coal exports) that it is extremely unlikely that it will repeat itself.

¹ Computed for the United Nations Statistical Office by Nathaniel Guyol.

² *International Institute of Agriculture*, *op. cit.*, pp. 526–8.

³ Estimates of the triangular trade in 1929 and 1931 have been computed by the League of Nations for 22 major trading countries (*Review of World Trade 1933* (Geneva, 1934), p. 67). According to these estimates, the triangular trade of Belgium, Italy and the Netherlands showed an increase. The Belgian and Italian trade statistics did not reveal the destination of 19 and 27% respectively of the exports in 1929. This leaves a much too large margin of error. The triangular trade of the Netherlands fell according to a recomputation, based on more detailed data, from 610 million gulden in 1929 to 484 million in 1931.

4. It appears from this multi-market trade analysis that those who think they are playing for safety in face of the risks of unemployment, deflation and austerity really take the greater risk when they fail to return to convertibility and greater freedom of trade.¹ As a result of their hesitation they leave no opening for additional exports through the channels of triangular trade, the best protection against a major economic depression and the safest way to long-term economic expansion.

The comparative scarcity of the factors of production in the individual countries and the comparative advantage of large-scale production in the individual countries differ almost as much to-day as they did in the past. There is therefore a continuing reason for the production of many bulky goods at the economic frontier. As many of the products from these countries to-day have to pay a major share of the round-trip costs of transport to the industrial centres in Western Europe (or the Eastern United States), transport costs to-day represent a larger share of their prices in London (or New York) than they did before the Great Depression. In years of recession when ocean freights are falling, many prices can therefore be expected to increase in the frontier regions. The fall in ocean freights is bound to take place in a recession because bulky raw materials for the investment industries, produced in the industrialised countries, are still responsible for a large share of all ocean transport of dry cargo.

It is sometimes argued that an expansion in frontier countries is no longer going to lead to an expansion in the processing countries, with additional consequential exports to the major creditor countries, because the chain of multilateral trade appears to have been short-circuited and the traditional export surplus from the tropics to the United States has disappeared. This short-circuiting can, however, be traced back to the lack of convertibility of certain national currencies which prevents soft-currency countries from competing with hard-currency countries in the formers' natural foreign markets.² World-wide multilateral trade can therefore be expected to be restored when convertibility is re-introduced and trade barriers are lowered.

The pattern of multilateral trade may be somewhat different in the future. The United States is now the world's major creditor country. A frictionless transfer of dividends and interest to the United States from the countries of recent settlement and from Europe would depend on a successful restoration of the export surplus from these countries to the tropics and the export surplus from the tropics to the United States.

The United Kingdom (together with other West European creditor countries) has, however, regained its position as a principal source of new private capital for foreign investment. This appears clearly when the re-investment of profits is taken into account. The outside world will now benefit from the existence of several alternative sources of capital supply.

Processed agricultural products which used to be responsible for a large

part of the expanding triangular trade may be of less importance in the future. The United States imports little of these goods, and in other countries the demand for butter and meats is less elastic than it used to be. However, this need not jeopardise the operation of the payments mechanism in years of recession, because other commodities may take their place as new inventions and higher incomes develop.

It is, however, an essential condition for the future contra-cyclical movement of triangular trade that trade barriers should be lowered. For that reason it is of the greatest importance that we should no longer "lack an intellectual reconciliation between multilateral international trade based on a high degree of specialization and the concepts of . . . stable national economies."¹

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¹ William Diebold, Jr., "The End of the I.T.O.," *Essays in International Finance*, No. 16, October 1952.

¹ R. F. Harrod, "Convertibility Problems," *The Financial Times*, September 27, 1954.

² Carl Major Wright, "Effective Promotion of European Exports," *Skandinaviska Banker Quarterly Review*, January 1954, p. 9.

THE CONCEPT AND MEASUREMENT OF FOREIGN EXCHANGE RESERVES¹

I

A COUNTRY'S holdings of gold and of foreign currencies together constitute its foreign-exchange reserves, according to current usage. As will be noted, it is customary to make some exclusions or adjustments (e.g., according to the identity of the holder, or according to the liquidity or the convertibility of the assets), but a country's gold and foreign currency holdings, somehow defined, are generally taken to constitute the financial resources relevant to its international economic relations.

It will be argued in this article that a definition of reserves along the lines of current usage indicated above is not a fully general one; in particular, that it is not very accurate when applied to a country with convertible currency; and, indeed, that the concept of reserves becomes tenuous except under inconvertible conditions.

II

Classical and neo-classical theories of international trade have not accorded an important place to reserves other than those in monetary gold itself. Although that body of theory certainly addresses itself to the process of adjustment from one position of equilibrium to another, under the assumptions therein employed a disequilibrium in the balance of payments would exert itself directly on the exchange rate; the pressure would soon drive the rate outside the range of the gold points; and from that point on until the disequilibrium were corrected the excess of foreign payments over receipts would be a matter of gold movements.

The concept of "foreign-exchange reserves," as well as the habit of maintaining them, is recent and belongs to the realm of disequilibria. If the hypothetical world consists of Country A, and Country B which trade with each other, whose internal economies are static and whose international payments are balanced, foreign-exchange "reserves" would exist only to the extent to which we are willing to conceive of frictions in the model.

In the real world the flow of payments between countries is not perfectly constant. Even when the flow of payments from Country A to Country B over the period of a year (so convenient to the balance-of-payments statisticians in each country!) is equal to the payments from B to A, differences in timing of the various transactions require that working balances of the respective currencies be held. The economist does not look upon these working balances as reserves, but the statistician finds it impossible in prac-

¹ The author is the United States Treasury Representative in Germany. The views expressed are entirely those of the author and do not necessarily reflect those of the United States Treasury.

ice to separate them from those balances which we are about to examine. In the language of business-cycle analysis of an earlier day, working balances of foreign currencies are held to meet seasonal variations and minor frictional disturbances in the flow of payments. Foreign-exchange reserves proper, then, are those resources (over and above normal necessary working balances) which are acceptable in making foreign payments and which are available to meet requirements arising from cyclical disturbances or from a sustained secular dislocation in the external balance. The very word "reserves" connotes this element of contingency.

If reserves are defined functionally, as in the end of the preceding paragraph, as assets available to meet foreign-payments requirements, the specifications appear at first glance to be met if we identify reserves with gold holdings and holdings of foreign currencies on a gross basis. The measurement of gross holdings does indeed have much meaning and usefulness. For a country contemplating how far its outpayments in some future period could exceed its receipts for that period, the amount of its gross holdings of others' currencies and of gold may need to be adjusted by the amount of its own short-term liabilities to foreigners in the form of bank deposits, etc.¹ Thus the definition adopted by the International Monetary Fund states: "A member's monetary reserves mean its *net official* holdings of gold, of convertible currencies of other members, and of the currencies of such non-members as the Fund may specify."² (*Italics added.*)

In the definition employed by the Fund the gross holdings of reserves are adjusted and qualified in three respects: by the words "net," "official" and "convertible." Insertion of the word "net" is explained in large part by the need to provide a measurement which can be used in determining when the Fund's own repayment requirements have to be met. As to the effect of a country's "currency liabilities" to official institutions of other countries upon its ability to utilise the full amount of its gross holdings in a period of current-account deficit, no general answer can be given, the result depending largely upon what arrangements already exist or can be effected regarding these liabilities—in short, upon the prevailing convertibility conditions. The term "official" holdings, although at the outset of the I.M.F. definition (paragraphs (a) and (b)) applied to the holdings of official agencies or institutions, is extended under appropriate conditions to include those holdings of other banks "substantially in excess of working balances." The key idea in this connection seems to be given by the term "central" holdings³;

¹ The word "may" is used intentionally, for two reasons. It is not certain that, in any temporary period of external accounts deficit, the country's foreign creditors will call for the repatriation of their holdings in the deficit country. In fact, if Country A is incurring deficits, Country B or some other is necessarily incurring surpluses, which could result in Country B actually increasing its holdings of A's currency. Secondly, whether holders in Country B will be able to call their holdings in A during a period of current-account deficit in A will depend upon the conditions of convertibility generally and immediately prevailing in A.

² *Articles of Agreement, International Monetary Fund* (United States Treasury, Washington, 1944), art. XIX, para (a).

³ *Ibid.*, paragraph (b).

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hat is, those gold and foreign-exchange assets which are available to, and mobilisable by, the financial authorities.

Under conditions of extreme balance-of-payments stringency and severe foreign-exchange control, it is to be expected that whatever foreign exchange accrues to the credit of the country will be required to be transferred to the control authorities. Even in countries where the external accounts are more nearly in equilibrium and the reserves more than minimal, if the currency is inconvertible a large proportion of the foreign-exchange holdings is likely to be in public hands, and the entire amount to be mobilisable.

In a country with perfect convertibility and freedom from controls, however, the private banks are permitted to hold whatsoever balances of foreign exchange they choose.¹ Whether the assets which go to make up the foreign-exchange assets of the commercial banks (currency, bank balances, acceptances, foreign government securities) can be considered available, along with currently-earned foreign-exchange receipts, to meet currently-generated exchange liabilities is uncertain. So long as the assumed basic condition of exchange freedom prevails, any "mobilisation" of the foreign holdings of the commercial banks will, by definition, come about (if at all) not by control but by the operation of market forces. If conditions of perfect flexibility prevail in the exchange rates and in the respective interest rates and if there is perfect response (*i.e.*, free from psychological or institutional influences) to these price changes, then the holdings which the banks or individuals own abroad will be offered in response to changes brought about by market forces. In a world made up of only a few freely-convertible currencies and many more-or-less inconvertible ones, a world in which complete mobility of resources and price flexibility are not realised, these adjustments may be incomplete and slow. Thus, for a convertible-currency country, the term "net official central" reserves is not precise.

III

We come now to perhaps the most crucial feature in the concept of reserves—namely, which currencies shall be included in the measurement of a country's reserves. A country in a relatively weak and uncertain balance-of-payments position must reckon on the possibility that, in any given prospective period, it may be called upon to make total payments to foreigners in excess of its total current receipts. In setting its course of internal and external monetary policy, a state which is in this situation in modern times computes and watches the amount of its available holdings of liquid assets mobilisable in making payments on foreign account. As we observed at the outset, these assets are generally acknowledged to consist of gold and foreign-exchange holdings, or—in the words of the Fund—gold and the "convertible" currencies of other countries. Not knowing from whence the potential wind may blow, the authorities are often accustomed to limit their reckon-

¹ It should be noted that this has nothing directly to do with whether or not the domestic monetary system maintains the complete characteristics of a gold standard.

ing of reserves to balances in convertible currencies, although it would be freely admitted that holdings of inconvertible currencies may prove, *ex post*, to have fully served the reserve function in given instances.

If we turn now to Mightyland, a country with a strong, convertible currency, the application of the reserve concept encounters difficulties. Apart from its holdings of monetary gold, the country's reserves consist, according to prevailing usage, only of its holdings of short-term assets held in other countries. In some of these other countries exchange restrictions limit the transferability of the currency—especially transfers to or on behalf of Mightyland or other hard-currency countries. It is not uncommon for these inconvertible-currency countries to stipulate, in their trade and payment-control regulations, that they will license exports only against payment in foreign currencies, and such rules are habitually enforced *a fortiori* with respect to hard-currency countries. Therefore, Mightyland would find itself circumscribed in trying to utilise its assets in such a currency in the event of a temporary deficit. In view of these and other reasons, financial institutions in Mightyland are not likely to acquire holdings in such inconvertible foreign currencies, except partly inadvertently. In any case, current practice often dictates, as stated previously, that reserves are considered principally to consist of holdings in hard currencies.

In the extreme case in which Mightyland is the only country in the world with a convertible currency, then it would conform with current practice to define its reserves as composed only of whatever gold it happened to hold.¹ If its gold stock were not large and were to be sold for industrial purposes, coined into internally-circulating means of payment or sold to foreign purchasers, Mightyland would have no reserves at all. A world situation in which there is only one convertible currency is indeed the "extreme" case in a conceptual sense, but it has been substantially the prevailing situation for most of the past ten years.

Let us examine a hypothetical example. The numbers below indicate the holdings of three countries: A, B and Mightyland. The first two have inconvertible currencies.

	Mightyland.	A.	B.
Date 1	100 gold 100 Currency A	50 gold 50 Currency B	50 gold 50 Mightys
Total reserves	100	50	100
Date 2	90 gold 130 Currency A	50 gold 50 Currency B	30 gold 70 Mightys
Total reserves	90	50	100

Between Dates 1 and 2, Country B has sold 20 units of gold and acquired 20 units of Mightys, a shift producing no change in calculated total reserves.

¹ *E.g.*, see the article in *International Financial Statistics*, May 1954, pp. ii-v, wherein—not for purposes of calculations required by the procedures of the Fund as an organisation but for analytical purposes—the holding of gold by the United States is tabulated along with figures for gold and dollars held by other countries.

Mightyland has acquired additional amounts of Currency A, but since some gold was sold abroad, its total reserves, as defined, decreased. Suppose that between Date 2 and Date 3 the banks in Mightyland sold 10 units of gold to industrial consumers, receiving payment, of course, in Mightys. In that case, also, Mightyland's declared reserves would be held to have fallen—even though the banks acquired in payment exactly the same convertible Mightys which banks in other countries accept and are willing to hold indefinitely, the same Mightys whose acquisition by banks in Country B had produced an increase in Country B's reserves. To summarise: One counts gold as reserves in any country's hands; inconvertible currencies in no country's hands; and convertible currencies in every country's hands except those of the issuing country. Such a result is surely incompatible with the concept of reserves in the functional sense of assets available and acceptable for making foreign payments.

IV

Although the ordinary definition of reserves in common usage patently does not prove meaningful when applied to a convertible-currency country, this should not be taken to mean that any simple suggestion can be offered for adjusting the definition. Mightyland's own currency is one of the most acceptable means of payment it can tender internationally. In some sense and to some degree, it can consider its holdings of gold and foreign currencies supplementable by payments in Mightys. Yet—in what amount? It would be equally absurd to consider the entire domestic volume of money as part of the reserves available for foreign payments. In fact, a temporary balance-of-payments deficit might be met neither by reducing foreign-currency holdings nor paying out any presently-identifiable stock of Mightys but by newly-created credit. The "harder" it is, the more acceptable is a country's currency abroad and the more flexible and varied the means by which it can, acceptably, be used to effect foreign payments.

The foregoing does not mean, moreover, that the term reserves has no usefulness. It merely means that the concept and measurement of reserves are principally germane to the situation and problems of inconvertible-currency countries; and that considerable ambiguity is encountered when they are applied to convertible-currency countries or to inter-country comparisons involving both types.

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"PRODUCT-ELASTICITIES OF SUBSTITUTION" IN INTERNATIONAL TRADE

IN an article in the *ECONOMIC JOURNAL*¹ Sir Donald MacDougall suggests a novel way of estimating the elasticity of substitution in the world market between exports of manufactured goods from America and from the United Kingdom.² His method differs from the conventional one in that it avoids the use of time-series and, therefore, the methodological difficulties associated with them. It provides estimates of the elasticity somewhat higher than those usually obtained³ and, for this reason, may commend itself to many economists who have been concerned by the low values of some of the fundamental elasticities suggested by the standard estimates. The purpose of this note is to discuss whether MacDougall's method can be regarded, in its own right, as providing a satisfactory estimate of the elasticity of substitution.

A necessary property of any econometric parameter, if it is to be of practical use, is that it should possess a clear and obvious meaning. It is a convenient starting point, therefore, to recall that, formally, the elasticity of substitution between two goods is defined by $d\left\{\log \frac{x_1}{x_2}\right\} / d\left\{\log \frac{p_1}{p_2}\right\}$, where x_1 and x_2 are the amounts of the two goods purchased and p_1 and p_2 their respective prices. This expression, originally formulated by reference to the indifference surface of the individual consumer,⁴ is intended to describe the responsiveness of demand to slight changes in prices. The parameter thus possesses the clear property that it is a special function of demand. If, for the individual, relative quantities demanded and relative prices are connected by a relationship of the form $\frac{x_1}{x_2} = A\left(\frac{p_1}{p_2}\right)^\beta$, the elasticity of substitution is given by β , which, in the normal case, would be expected to be negative. Taking logarithms of both sides, a linear relationship is obtained:

$$\log \frac{x_1}{x_2} = \log A + \beta \log \frac{p_1}{p_2} \quad . \quad . \quad . \quad (1)$$

and it is common statistical practice to estimate the elasticity of substitution

¹ G. D. A. MacDougall, "British and American Exports: A Study Suggested by the Theory of Comparative Costs," Part I, *ECONOMIC JOURNAL*, December 1951; Part II, *ECONOMIC JOURNAL*, September 1952.

² *Ibid.*, especially Part II, pp. 487 *et seq.*

³ *E.g.*, T. C. Chang's estimate of the pre-war elasticity of substitution was only -0.3 (T. C. Chang, "A Statistical Note on World Demand for Exports," *Review of Economics and Statistics*, Vol. XXX, pp. 113-14). MacDougall's estimates are of an order approaching -3.

⁴ J. R. Hicks and R. G. D. Allen, "A Reconsideration of the Theory of Value," *Economica*, 1934, p. 59 and pp. 198, 199.

by calculating the linear regression of logarithms of relative quantities of logarithms of relative prices.

MacDougall approaches the problem of measurement somewhat obliquely from the standpoint of the theory of comparative costs which when based on a labour theory of value and assuming two countries, states that "each will export those goods for which the ratio of its output per worker to that of the other exceeds the ratio of its money wage-rate to that of the other."¹ To illustrate the working of this principle in practice, logarithms of relative quantities of each good exported from America and the United Kingdom in 1937 were plotted against logarithms of the relative output of each good per worker in America and the United Kingdom in the same year. The scatter of points fell round a straight line with positive gradient. MacDougall's conclusion from this association is important. He writes: "There is . . . a tendency for each country to get a larger and larger share of the market the greater its comparative advantage, especially when allowance is made for varying relative wages. *This is what we should expect* when there are imperfect markets, non-homogeneous products and transport costs, and the data thus tend to confirm the labour theory of comparative costs when these more realistic conditions are introduced."² In order to include goods other than those for which productivity measurements have been calculated, MacDougall argues that, if prices in each country were proportional to direct factory labour used per unit of output, the plotting of relative export quantities against relative export prices would also show a linear relationship but with a negative slope. The empirical results obtained by calculating for each year 1922-38 the regression of logarithms of relative quantities exported on logarithms of relative prices are consistent with this view. For each year the linear regression coefficient has a negative value and thereby supports "what we should expect" from the theory of comparative costs operating in an imperfect world.

MacDougall is therefore led to estimate the parameters in an equation of the same form as (1) above, not in the usual way using observations of relative quantities of some good exported from two countries at different points in time, together with the associated relative prices, but by using observations of relative quantities and relative prices of many different goods all referring to the same year. Presumably because of the similarity of the two basic equations, MacDougall suggests that the regression coefficient obtained by his method may be regarded as an estimate of the elasticity of substitution between exports of manufactured goods from America and the United Kingdom. He calls the parameter the "product-elasticity of substitution."

The interpretation of this coefficient, however, raises important difficulties as soon as we try to relate it to the elasticity of substitution as defined above. It certainly does not measure the elasticity of substitution between the exports from America and the United Kingdom of any particular good

¹ *Op. cit.*, Part I, p. 697.

² *Op. cit.*, Part I, p. 708 (my italics).

because the regression relates to a mixed bag of 109 different goods. Nor can we regard the parameter as measuring the elasticity of substitution between two "composite" goods, one representing the typical basket of manufactured goods exported from the United Kingdom and the other representing the typical basket of manufactured goods exported from America because in the regression calculation all the relative quantity-relative price observations are treated as of equal importance, whereas in the actual pattern of trade in each country the relative importance of the goods may differ considerably. The meaning of the coefficient considered in terms of the elasticity of substitution is, then, somewhat obscure, since it is not easy to see precisely what it measures.

What at first sight appears to be a connection between the product-elasticity of substitution and the elasticity of substitution in the conventional form can be derived from the "demand substitution" and "supply substitution" curves which MacDougall introduces in order to discuss the possible bias inherent in his parameter.¹ For any good, the former relates logarithms of relative quantities demanded from each source at given relative prices to logarithms of those relative prices, and the latter relates logarithms of the relative quantities of the good supplied from the two sources to logarithms of different relative prices. For simplicity each curve is assumed to be linear. The demand substitution curve for a given good may, therefore, be regarded as a diagrammatic representation of the relationship given in equation (1) above, which, since it is connected with a measure derived from an indifference surface, must be regarded formally as a sort of demand function. Then, following the procedure described earlier in this note, the slope of the demand substitution curve (given by β in the equation) can be regarded as measuring the elasticity of substitution in the conventional sense between exports of the given good from the two sources. In general, the curve will therefore be of negative gradient, *i.e.*, downward sloping. The supply substitution curve is assumed to slope upwards.² A diagram of the two resembles one of ordinary Marshallian demand and supply curves, and MacDougall seems to use them as such to determine equilibrium positions—"the observed points will lie at the intersection of the demand substitution and supply substitution curves for each product."³ It is shown that a regression line fitted to such points will tend to underestimate the average slope of the set of demand substitution curves. The fact that the calculated regression line has a negative slope seems to be taken as evidence that it is primarily some function of demand conditions,⁴ so that the "product elasticity of substitution" emerges as some sort of average of the "true" elasticities of the products included in the analysis. Professor A. J. Brown

¹ *Op. cit.*, Part II, p. 490.

² The effect of downward-sloping supply substitution curves is, however, considered later in this article, *op. cit.*, p. 492.

³ *Op. cit.*, Part II, p. 491.

⁴ *Op. cit.*, Part II, p. 491: "The fact that negative rather than positive slopes are obtained for the regression lines means, presumably, that the position of the demand substitution curves varies less from product to product than the position of the supply substitution curves."

describes an earlier version of this measurement rather vaguely as "a kind of mean 'static' elasticity of substitution."¹

This attempt to relate the product-elasticity of substitution to the elasticity as conventionally understood is reasonable only if we may legitimately regard observed quantity-price transactions as being determined by unique demand substitution and supply substitution curves. But the assumption that such unique functional relationships exist is surely open to considerable doubt. Taking first the supply side; producers do not plan in terms of relative amounts supplied or of relative prices. A rival's price and the amount he supplies are not, in general, relevant considerations when *ex-ante* supply schedules are considered. As MacDougall readily admits,² the supply substitution curve "is, of course, a simplification, since there may be an infinite number of pairs of prices that will give the same price ratio, and these different pairs of prices will normally lead to different ratios of quantities supplied unless the two national supply curves are related in some special way." The same formal criticism can be made of the demand substitution curves. Given the national income, different pairs of prices each giving rise to the same price ratio may lead to different ratios of quantities demanded unless the two national demand curves are related in some special way or are of some prescribed form.³ The relationship of equation (1) derived from the individual's indifference surface, and hence regarded as a quasi demand function, can only be applied in general to aggregate demand in very special and, possibly, artificial conditions.⁴ The "equilibrium" positions which the demand substitution and supply substitution curves "determine" are not unique, but could correspond to an infinite number of combinations of actual quantities and actual prices. We may not reasonably deduce from such schedules that the regression coefficient calculated from the observed data measures an average of the elasticities of substitution of the 109 goods included in the calculation. For the present purpose, the weakness of this approach is that since uniquely defined demand substitution and supply substitution curves do not necessarily exist as *ex-ante* determining schedules, there is no way of formally linking the product-elasticity of substitution to the elasticity of substitution as customarily interpreted.

It is, then, necessary that we examine the product-elasticity of substitution from a different viewpoint to see if, at least, it possesses properties which, for practical purposes, would justify its use as a substitute for the elasticity of substitution. To this end we must inquire whether it is a valid measure of the responsiveness of demand to changes in price. The clue lies in MacDougall's conclusion (noted above) that a relationship of the observed form between relative quantities and relative prices of different exports from two countries is "what we should expect" from the theory of comparative costs

¹ A. J. Brown, *Oxford Studies in the Price Mechanism* (Ed. T. Wilson and P. W. S. Andrews), pp. 97-8.

² *Op. cit.*, Part II, p. 490 (footnote).

³ This criticism also applies directly to the standard "time-series" technique.

⁴ Cf. D. J. Morgan and W. J. Corlett, "The Influence of Price in International Trade: A Study in Method," *Journal of the Royal Statistical Society*, 1951, p. 308.

operating in an imperfect world. We would agree with this, but it is a noteworthy feature that the theory of comparative costs is always formally expounded—at any rate in the first instance—from the *supply* side; countries export those goods for which they have a comparative advantage in production. MacDougall likewise tackles his problem from the supply side, as we have seen by relating relative quantities of exports to relative labour productivities and thence to relative prices. It is not, of course, suggested that the theory of international trade in an imperfect world can be argued in terms of supply conditions only, nor that MacDougall's parameter is unaffected by demand conditions. The product-elasticity of substitution must, then, be regarded as measuring a complicated set of influences from both the supply and demand sides,¹ though, having regard to the way in which it was obtained, it seems more obviously meaningful when interpreted from the supply side. It is not merely a bold step,² but, surely, an illegitimate one to regard a relationship which demonstrates the effects of differing comparative advantages in production as measuring also the elasticity of substitution, which is, conceptually, peculiarly a function of demand.

As an experiment, the regression of logarithms of relative quantities on logarithms of relative prices was calculated for certain exports from America and the United Kingdom in the "Food and Drink" categories.³ An examination of the results of the calculations tended to confirm the criticisms expressed above. The regression coefficients, together with those obtained by MacDougall for exports of manufactures in the same years, are given in the following table:

Year.	Manufactures (MacDougall).			Food and Drink.		
	No. of items.	Correlation coefficient.	Regression coefficient.	No. of items.	Correlation coefficient.	Regression coefficient.
1936	109	-0.67	-2.9	35	-0.57	-2.5
1937	109	-0.65	-3.1	40	-0.62	-4.0
1948	118	-0.34	-1.6	35	-0.22	-0.7

The collection of goods used for calculating the "Food and Drink" regression coefficients was extremely heterogeneous; it included various types of grain and grain products, meat, vegetables, vegetable oils and dairy products. Furthermore, some goods were included for which the headings in the export statistics of America and the United Kingdom were only roughly comparable. For these reasons the regression coefficients for the

¹ In a slightly different context the writer feels that the possibility of mixing supply and demand influences is present also in the standard time-series methods, though the influence of supply is seldom even discussed in the criticism of the empirical estimates. It is by no means clear why the regression of observed relative quantities on, observed relative prices should necessarily be identifiable as a demand function.

² *Op. cit.*, Part II, p. 487.

³ *I.e.*, Goods included in Class I, Food, Drink and Tobacco in the *Annual Statement of Trade of the United Kingdom*. The data actually used related principally to foodstuffs.

two pre-war years (which clearly cannot be regarded as referring to a "typical" food export, or even to a homogeneous family of food exports) are, when considered as estimates of the elasticity of substitution, surprisingly high. As can be seen, in 1936 the regression coefficient for Food and Drink products was only slightly lower than that for Manufactures, whilst in 1937 it was substantially greater. But it would be unreasonable to conclude on the basis of such data that the elasticity of substitution between the exports of food products from America and the United Kingdom was as great or greater than that between exports of manufactured goods. It is doubtful whether, in general, exports of food products from America and the United Kingdom were directly competing goods in particular markets and, therefore, whether the elasticity of substitution in this context has any real meaning.

Nevertheless, the results are meaningful in the context of the comparative-costs doctrine as it relates to the world market generally. For instance, an inspection of the graph of the data for 1937 suggests that the slope of the regression line is explicable in large part by the fact that in some cases (*e.g.*, wheat and wheat products) America, because of her peculiar natural advantages, was able to supply many times the amount of the United Kingdom at ruling prices, while in others (*e.g.*, some meat, dairy and cocoa products) she did not possess such comparative advantages. But these are supply considerations relevant to different goods, and the resulting regression line tells us nothing directly about the demand elasticity of substitution for particular goods.

We conclude that the product-elasticity of substitution is not formally analogous to the elasticity of substitution as customarily understood, nor can it be used as a satisfactory measure of the responsiveness of demand to changes in prices. MacDougall emphasises that the numerical results obtained by his method "cannot be used to make precise forecasts,"¹ *i.e.*, of the effects of price changes on demand. But we may go further and suggest that they should not be used in connection with such forecasts at all because, fundamentally, the measure is not relevant to a discussion of market demand.

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¹ *Op. cit.*, Part II, p. 499.

"PRODUCT-ELASTICITIES OF SUBSTITUTION" IN INTERNATIONAL TRADE: A REJOINDER

MR. NICHOLSON criticises that part of my article which attempted to measure elasticity of substitution between British and American exports of manufactures, and I am grateful to him for exploring further the logic of the method I suggested. I should like to comment on what I regard as the four main points he has raised.

1. What am I trying to measure? The answer is, quite simply, the elasticity of substitution between British and American exports of a typical manufacture, or, more precisely, the unweighted average of the elasticities of the various products. The fact that the average is unweighted need not, I think, in itself worry us too much.¹ If it is at all near the mark, it should be possible, taking account of the different patterns of the two countries' trade (for example, by using my suggested "index of similarity"), to discover the order of magnitude of the elasticity of substitution between British and American exports of manufactures as a whole; and a rough order of magnitude is all that is required, or possible.

2. My method assumes unique demand substitution curves, whereas relative quantities are affected not only by relative, but also by absolute, prices. I admit this freely. I said (p. 490) "We must assume that, for each product, there is a relationship between relative price and relative quantity demanded." But this assumption seems no less reasonable an approximation than many that are habitually used in this type of analysis, such as the assumption that elasticities are constant throughout the length of a curve; and Mr. Nicholson admits that his criticism "also applies directly to the standard 'time-series' technique."

3. He argues that the theory of comparative costs is always formally expounded from the *supply* side and that the figures I used to demonstrate the effects of differing comparative advantages in production cannot also be used to measure elasticity of substitution, since this is a function of demand. But the theory of comparative costs must make assumptions about demand. The usual theory assumes perfect markets, homogeneous products and no transport costs. One country then gets the whole market when it has a comparative advantage, none of the

¹ It may be worth mentioning that, if the 109 products used in my calculation for the period 1934-38 as a whole (p. 717) are weighted by the value of British plus American exports of each, the correlation coefficient is raised slightly and the regression coefficient goes up from rather more than $-3\frac{1}{2}$ to about -5 . The meaning of this calculation is, however, not entirely clear, and I am reluctant to lay much store by it as I do not wish to overstate the argument that long-run elasticities of substitution may be substantially higher than is suggested by some time-series calculations.

market when it has a comparative disadvantage, and the two countries share the market when neither has a comparative advantage. This, however, implies infinite elasticities of substitution and so assumes away my problem, that of measuring elasticity of substitution in an imperfect world where it is not infinite.

My figures show not only how relative productivities affect relative prices but also an apparent relationship between relative prices and relative quantities sold which cannot, I think, be explained by supply considerations, and looks very much as if it had something to do with demand. But I did not ignore supply. I attempted to take account of various possible supply conditions by considering the bias that they might introduce into the estimates of elasticity of substitution. Mr. Nicholson argues that my "product-elasticity of substitution must . . . be regarded as measuring a complicated set of influences from both the supply and demand sides." Granted. But is he not here ignoring that part of my analysis which attempted to show that, except in the rather unlikely event that supply substitution curves sloped appreciably downwards, my figures would not overstate the elasticity of substitution, but rather tend to understate it?¹ While, therefore, we are unable to get a precise figure for elasticity of substitution, it may be possible to find a lower limit; and this is of some importance if the lower limit is much higher than previous estimates.

4. Mr. Nicholson, using my method, has found an apparently high elasticity of substitution in the field of foodstuffs and suggests that this discredits the method because the result cannot be true. But I should not be at all surprised to find a high elasticity of substitution for, say, the wheat and wheat products he mentions, or for many other foodstuffs, since the market is often fairly perfect and the products fairly homogeneous. Mr. Nicholson emphasises the heterogeneous nature of the *collection* of foodstuffs used in his calculation. But this is beside the point, since we are considering *product*-elasticity of substitution. He seems to be confusing this with the *total* elasticity of substitution between United States and United Kingdom exports of food as a whole. The latter will certainly be small if the patterns of the two countries' export trade in food are very different, but this would be looked after by my "index of similarity."

The method I suggested for measuring elasticity of substitution, like all others so far tried, has many short-comings, but Mr. Nicholson has not, I think, added to the doubts I already had and which I expressed in the article itself. I still feel that the fundamental difficulty is the one I emphasised on p. 487. We observed that, in a given period, where the relative price of product A was 1% lower than that of product B, the relative quantity of product A sold tended to be $x\%$ greater than that of product B. It is a bold step (a "plunge" as I described it on p. 490) to conclude that a

¹ When account is taken of the bias due to errors of observation (see pp. 718-24).

1% *fall* in a typical product's relative price will tend to lead to an $x\%$ *rise* in its relative quantity.

I hope that this exchange of views between us may help to clarify some of the problems involved and stimulate further study of the logic of the method suggested, as well as further search for other methods of estimation. It may well be that no completely satisfactory method will ever be devised. But it seems desirable to approach the problem from as many angles as possible so as to provide background information for those who, making full use of non-quantitative information as well, have to assess the probable results of changes in relative prices in particular circumstances.

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TRADE IMBALANCE, GAINS FROM TRADE AND NATIONAL INCOME CHANGE

THIS paper examines the implications of foreign trade imbalance for: (i) measurement of the gains from trade; (ii) comparisons of real national income at different periods; and (iii) the multiplier analysis.

I. TRADE IMBALANCE AND THE GAINS FROM TRADE

The Classical economists were interested in obtaining a measure of variations in the gains from foreign trade. While the theory of comparative costs was used to explain the reason for trade, the terms of trade were regarded, with qualifications, as a measure of the gains from trade. This was the purpose for which J. S. Mill and Ricardo used the terms-of-trade concept.¹ Marshall applied the concept of consumers' surpluses to the gains from trade. Consumers' surpluses could not, however, be measured, and Taussig and Haberler discussed the use of terms-of-trade-indices as indicating changes in the gains from trade. In later discussion, however, specific consideration has not been given to the use of the terms of trade as a measure of the gains from trade. The recent analysis has been in terms of opportunity costs and demand indifference curves.² While such analysis reveals the possibility of improvement through the use of tariffs in the absence of retaliation, it provides no measure of an improvement or deterioration in the conditions of interchange. In applied economic analysis the assumption continues to be made that the changes in the terms of trade are of relevance from the gains from trade stand-point. It is necessary to re-examine the basis for the assumption.

The terms of trade are considered to be significant from the welfare stand-point because they measure changes in the amount of imports a unit of exports can buy. Other things being equal, an improvement in the terms of trade would be assumed to imply an increase in welfare because more imports can be had than before without any change in exports. It is recognised that variations in the composition of trade create ambiguities. There is, however, another important type of ambiguity created by the existence of trade imbalance.

This is seen if the method of construction of terms-of-trade indices is examined. The indices are usually of the price or barter type. The price terms of trade are derived by calculating the relative changes in export and import prices, and the barter terms of trade by calculating the relative changes in quantities of imports and exports. In both cases, only commodity trade or, at any rate, flows of goods and services are taken into

account. The composition of trade assumed may vary, but generally either the base-year weighting (Laspeyres-type index) or the current-year weighting (Paasche-type index) is taken for all indices. It is useful, in the first instance, to write down the terms-of-trade indices of both Laspeyres and Paasche types.

Let us write:

p_0 , price of imports in base year;
 q_0 , quantity of imports in base year;
 p_1 , price of imports in later year;
 q_1 , quantity of imports in later year;
 p'_0 , price of exports in base year;
 q'_0 , quantity of exports in base year;
 p'_1 , price of exports in later year;
 q'_1 , quantity of exports in later year.

Then the Laspeyres and Paasche price and barter terms-of-trade indices may be written as follows, on the convention that a rise denotes an improvement:

Laspeyres price terms-of-trade index—

$$\frac{\Sigma p'_1 q'_0}{\Sigma p'_0 q'_0} \div \frac{\Sigma p_1 q_0}{\Sigma p_0 q_0} = \frac{\Sigma p'_1 q'_0}{\Sigma p_1 q_0} \times \frac{\Sigma p_0 q_0}{\Sigma p'_0 q'_0} \quad . \quad . \quad . \quad (1)$$

Paasche price terms-of-trade index—

$$\frac{\Sigma p'_1 q'_1}{\Sigma p'_0 q'_1} \div \frac{\Sigma p_1 q_1}{\Sigma p_0 q_1} = \frac{\Sigma p_0 q_1}{\Sigma p'_0 q'_1} \times \frac{\Sigma p'_1 q'_1}{\Sigma p_1 q_1} \quad . \quad . \quad . \quad (2)$$

Laspeyres barter terms-of-trade index—

$$\frac{\Sigma p_0 q_1}{\Sigma p_0 q_0} \div \frac{\Sigma p'_0 q'_1}{\Sigma p'_0 q'_0} = \frac{\Sigma p_0 q_1}{\Sigma p'_0 q'_1} \times \frac{\Sigma p'_0 q'_0}{\Sigma p_0 q_0} \quad . \quad . \quad . \quad (3)$$

Paasche barter terms-of-trade index—

$$\frac{\Sigma p_1 q_1}{\Sigma p_1 q_0} \div \frac{\Sigma p'_1 q'_1}{\Sigma p'_1 q'_0} = \frac{\Sigma p'_1 q'_0}{\Sigma p_1 q_0} \times \frac{\Sigma p_1 q_1}{\Sigma p'_1 q'_1} \quad . \quad . \quad . \quad (4)$$

We will, for the present, ignore the composition factor. If there is trade balance in both the years or the degree of trade imbalance is identical, the price and barter terms of trade have the same value. If, however, the degree of trade imbalance changes between the two years, the price and barter terms of trade give different results. The ratio of the price terms of trade index to the barter terms of trade index in the current year will be equal to the ratio of the value of imports to the value of exports in the base year divided by the ratio of the value of imports to the value of exports in the current year. It becomes necessary to inquire into the significance of each of these indices.

Taussig³ considered this problem in relation to reparation payments.

³ Quoted in G. Haberler, *Theory of International Trade*, English translation (W. Hodge & Co.), p. 162.

¹ J. Viner, *Studies in the Theory of International Trade*, pp. 555-6.

² E.g., T. Scitovsky, "A Reconsideration of the Theory of Tariffs," *Review of Economic Studies*, 1942.

He suggested that when an export surplus was necessary in the current year in order to finance reparation payments, the barter terms-of-trade index was a more suitable measure than the price terms-of-trade index. His argument was that exports used to pay reparations were a loss to the economy and that the price terms-of-trade index assumed that such exports were also available to buy imports. Haberler¹ has criticised this argument by pointing out that its application is too narrow. He suggested that in each case of imbalance, it was necessary to consider the reasons for the imbalance. It cannot be assumed that all exports which do not buy imports in a given year are a loss to the economy. Haberler did not, however, go on to consider the manner in which the terms of trade could be generally applied to measure the gains from trade.

The fact of the matter is that the price terms of trade and the barter terms of trade are each constructed on an extreme assumption. The price terms-of-trade index assumes that full advantage is taken of the rates of interchange possible due to introduction of money as a commodity, but that money is not actually used in settlement. Exports are assumed to be converted into money and the entire proceeds used to buy imports. The barter terms-of-trade index is calculated on the assumption that exchange is only between goods; while prices affect the weights, a balance of trade after exploiting the possibility of interchange through money is not assumed. Exports in a period are assumed to exchange completely for imports in the period. Neither of the indices represents the terms of interchange on the basis of full settlement when there is trade imbalance. Thus, suppose that in the base year there is balance of trade and in the current year an export surplus. The price terms of trade will be higher than the barter terms of trade in the current year. This situation is, however, possible because in the current year gold is being imported or credits are being given. If it were necessary to ensure a balance in the current year, the initial reaction would be a deterioration in the price terms of trade and an improvement in the barter terms of trade. Whatever the final result, it is unlikely that the price and barter terms of trade will be at the same level with a balance as with trade imbalance. The fact of money import or export permits of a variation in the rate of interchange.

A measure based on partial exchange cannot have significance as measuring the gains from trade. If the terms of trade are to provide a measure of the gains from trade, it is necessary to adjust the method of calculation so as to provide for complete interchange. This can be done only by including money flows specifically in the compilation of the terms-of-trade indices. Once this is done, the terms of trade could be used as a measure of the gains from trade on the basis of the Hicks-Scitovsky criteria for an improvement.²

The introduction of money flows into the construction of terms-of-trade indices in this manner brings us back to the composition problem. This

¹ *Op. cit.*, pp. 162-5.

² J. R. Hicks, "The Valuation of the Social Income," *Economica*, 1940.

T. Scitovsky, "A reconsideration of the theory of tariffs," *Review of Economic Studies*, 1942.

can be solved in the usual way by saying that the indices with each composition set limits to the "true" value. The new commodity problem of comparing a year of balance and a year of imbalance is not serious. This can be got over by expressing money in an extremely small quantitative unit. Then, for practical purposes, the value of money taken in the year of balance will be negligible. The increased amount in the other year would, of course, be expressed as an increased quantity, the price remaining the same.

II. TRADE IMBALANCE AND COMPARISONS OF REAL NATIONAL INCOME

The existence of foreign trade, and in particular the possibility of trade imbalance, has relevance to the discussion regarding comparison of real national income at different periods. The distinction has been drawn in the national-income discussion between measures of consumer welfare and measures of productivity or production potential.¹ It is necessary to examine how foreign trade can be fitted into these measures.

Regarding the measure of consumer welfare, the possibility of trade imbalance suggests that private savings should be treated as postponement of purchase of consumption goods rather than as purchase of investment goods. This corresponds to Prof. Hicks' view in his original article and to Mr. Little's view. The alternative course suggested by Prof. Kuznets has the disadvantage that a part of savings may finance an export surplus or that a part of investment may be financed by an import surplus. If investment goods rather than savings are to be counted, specific account would also have to be taken of gold inflows and outflows. In regard to the foreign imbalance part, at any rate, the assumption would have to be made that the motive for saving or dissaving is the desire to postpone or accelerate consumption. It would be more consistent to treat all savings as equivalent to postponement of purchase of consumption goods.

In regard to the measure of production potential, the introduction of foreign trade creates serious difficulties. The relationship between production goods and consumption goods would be affected by variations in the terms of trade. This is so even if only consumption goods enter into foreign trade. Exported consumption goods would have to be regarded as producer goods which secure the imported consumption goods. The assumption would have to be made that the relation between marginal costs and prices is uniform not only within the economy but also in other economies in relation to goods entering into foreign trade. This is clearly a more difficult assumption to make.

When there is trade imbalance, the production potential measure needs to take account of the flows of money. International currency is in this

¹ 1. J. R. Hicks, "The Valuation of the Social Income," *Economica*, 1940. 2. S. Kuznets, "On the Valuation of Social Income—Reflections on Prof. Hicks' articles," *Economica*, 1948. 3. J. R. Hicks, "The Valuation of the Social Income—A comment on Prof. Kuznets' reflections," *Economica*, 1948. 4. I. M. D. Little, "The Valuation of the Social Income," *Economica*, 1949.

context a producer good enabling acquisition of consumer goods in the future on more favourable terms as a result of postponement of consumption.

The production potential measure, thus enlarged, becomes a production-cum-exchange potential measure. The extension is clearly necessary. The possibility of welfare afforded by given resources and techniques depends also on the scope for improvement through exchange with other economies.

III. TRADE IMBALANCE AND THE MULTIPLIER ANALYSIS

While in regard to the analysis of the gains from trade and comparisons of real national income, money flows in foreign trade have been excluded, disproportionate importance has been attached to them in employment theory. The effect of foreign trade on national income and employment has usually been discussed in terms of the multiplier analysis. This analysis assumes that foreign trade is neutral in relation to incomes when there is money balance and that a money export is deflationary while a money import is inflationary. The various foreign-trade multipliers take account of the relationship between exports, imports and income in money terms.¹

The theory of the multiplier as originally stated by Prof. Kahn² was in real terms. It measured the relationship between the number of workers employed on investment and the final increase in employment. The corresponding money-income multiplier would have been obtained by weighting each unit of labour by the wage at which it was employed. Keynes' multiplier in *The General Theory of Employment Interest and Money* was also ostensibly a real multiplier because it was in terms of wage-units. This is, however, a money multiplier, because no adjustment is made for the effect of changes in the wage-unit over the period on the relation between money investment or income and real investment or income. The method of conversion from money terms to real terms would be to apply the change in the wage-unit as deflator. The same deflator would be applied to both income and investment, and the result would be identical with that obtained with adoption of money values only. It is necessary for adequate deflation that the period taken be broken up into sub-periods in each of which the wage-unit is constant and the amounts of income and investment in money terms be converted into wage-units for every one of the sub-periods. The ratio of the total of income in wage-units so calculated to the total of investment in wage-units would give a real multiplier. Many of the later multipliers suggested do not approximate even to the extent of the *General Theory* multiplier to real terms.

In relation to a closed economy, the limitations due to inadequate deflation are not as serious as when foreign trade enters the picture. In the case of a closed economy, there is at least no doubt as to whether investment or dis-investment has taken place over a period. In the case of foreign

¹ E.g., R. F. Harrod, *International Economics*, p. 121, F. Machlup, *International Trade and the National Income Multiplier*, J. Robinson, *Essays in the Theory of Employment*, p. 156.

² R. F. Kahn, "The Relation of Home Investment to Unemployment," *ECONOMIC JOURNAL*, 1931.

trade, even the direction of the effect on income may be affected by the absence of deflation or by unsuitable deflation. Imports provide an off-set to exports, and it is the balance that is significant. Should the real balance have a different sign from the money balance, the effect on money income and on real income of foreign trade may be in opposite directions.

This point may be illustrated by a numerical example. Assume that during the year under consideration the price of the wage-unit, used as deflator, increased at the end of the first six months. If imports are concentrated in the first half of the year and exports in the latter half of the year, it is possible that a money export surplus will be accompanied by an import surplus in real terms.

Period.	Money exports.	Money imports.	Money balance.	Wage-unit price.	Real exports.	Real imports.	Real balance.
1st half	40	50	-10	1	40	50	-10
2nd half	60	36	+24	3	20	12	+8
Total	100	86	+14		60	62	-2

The deflator problem is clearly of significance. Keynes adopted the wage-unit in the *General Theory*. In view of the "money illusion," this is likely to be "stickier" than most price indices. This is particularly so in relation to foreign trade. In the domestic field an increase in money investment and incomes which raises prices is likely to lead to at least some increase in money wage-rates and the real income multiplier with wage-unit deflator is likely to be smaller than the money income multiplier, even if larger than the real-income multiplier with wholesale-prices deflator. The wage-unit may, however, not vary at all in response to changes in export and import prices. Thus, a fall in import prices may be absorbed as an increase in real wages with no change in money wage-rates, and the wage-unit may not change. On the other hand, there may be "autonomous" changes in the wage-unit level due to collective bargaining, etc. It would probably be more appropriate to adopt as deflator a wholesale-prices index or a wage-goods prices index. From the foreign-trade point of view, the wholesale-prices index would be most suitable. It would reflect changes in both export and import prices. The appropriate weights would probably be share in consumption and not turn-over; the latter basis would give undue weight to commodities which go through a relatively large number of distributive stages.

The consideration of imbalance in real terms is of significance in relation to the terms-of-trade concept. It would be useful to construct price terms-of-trade indices, taking account of goods and services only, on the basis of a "real" balance rather than a money balance. The assumption would be that exports are converted into the deflator commodity and the stock used to buy imports, rather than that exports are converted into money and the

amount of money obtained is spent on imports. The variation in assumption affects the amount of imports assumed to balance the given level of exports. To obtain the price terms of trade on this basis, deflation will be necessary of the usual price terms-of-trade series by the ratio of the weighted-average deflator prices in regard to exports and imports in the base year or the later year, depending on whether base or later-year quantity weights are used. The Laspeyres and Paasche price terms-of-trade index would be written, respectively, as

$$\frac{\sum p_1' q_0'}{\sum p_1 q_0} \times \frac{\sum p_0 q_0}{\sum p_0' q_0'} \times \frac{P_0'}{P_0}$$

and

$$\frac{\sum p_0 q_1'}{\sum p_0' q_1} \times \frac{\sum p_1' q_1'}{\sum p_1 q_1} \times \frac{P_1}{P_1'}$$

where P_0 , P_0' , P_1 and P_1' represent the average prices of the deflator commodity in the base year (suffix 0) and in the later year (suffix 1) weighted by the distribution of the flow of exports (indicated by apostrophe) or imports during the period in question.

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TECHNOLOGICAL CHANGE, THE TERMS OF TRADE AND WELFARE¹

It is our purpose in this paper to explore, in the context of an under-employed world economy with flexible rates of exchange, the relationship between technological change and the terms of international exchange. In the body of the paper we imagine that technological advances are confined to a single country α ; the technology of all other countries, lumped together as β , is assumed static. Further, we consider only the equilibria prevailing before and after the advances: the path from the old to the new equilibrium does not concern us. For the most part, then, our analysis is of a rather limited comparative static kind. In an appendix, however, the problem is generalised to embrace simultaneous technological advances in both α and β .

In Section I are set out our assumptions. Sections II–IV contain the analysis and main theoretical conclusions of the paper. In Section II we consider the possibility of a uniform technological advance in the “domestic” industries of α , the technology of all other industries being assumed static. In Section III we draw out the implications of a uniform technological advance in α ’s export industries, technology in all other industries being assumed unchanged. In Section IV the results of the two preceding sections are combined as we consider the possibility of a simultaneous and uniform technological advance in all industries. In Section V we venture some remarks concerning the relation between changes in the terms of trade and changes in the “welfare” of the innovating country α and in that of the rest of the world β . Finally, in Section VI our results are related to those of a number of earlier writers.

Throughout the paper our analysis will be referred to a general neo-Keynesian model of the international economy, set out in equation form in the Appendix. We shall make two assumptions, customary in this type of model, which enable us to simplify considerably our exposition: constant returns to scale and constant factor prices. The second of these assumptions does not appear to stand in need of an elaborate defence; indeed it might well be argued that constancy of factor prices is a necessary condition of under-employment equilibrium. The first assumption has little but analytical convenience and the weight of tradition to justify it. The assumptions have two important implications. First, when expressed in terms of home currency, costs of production and prices of home-produced goods are constant: all supply elasticities are infinite. Second, changes in the value of the national product are accompanied by roughly equal pro-

¹ I have benefited from the comments on an earlier draft by Dr. Carl Christ.

portional changes in employment.¹ Paradoxically, these features of our model are reminiscent of the Ricardian "fixed coefficients" model of the fully-employed international economy.

Competition in the export industries of both α and β , and in the domestic industries of α , is assumed to be perfect. Abstraction is made from tariffs, trade and exchange restrictions, capital movements and debt service.

We shall speak of "exports" and "imports" as though they were homogeneous quantities. Such a practice is justifiable only if all components of the export (import) bundle increase or decrease in the same proportion. Now one implication of our assumptions is that the relative prices of all exports (imports) of a single country are constant. Hence it would seem reasonable to assume that, at least in the neighbourhood of an initial position, the components of the export (import) bundle do increase or decrease in the same proportion. But any reader who remains suspicious of the practice may imagine that there is a single exported commodity and a single imported commodity.

Throughout the paper we shall neglect any effect which improved efficiency in the α -industries, *operating via the distribution of income*, might have on total spending and on the distribution, between imported and home-produced commodities, of total spending. We shall assume, further, that total spending out of a given disposable income is invariant under changes in absolute and relative prices. It follows from these two assumptions that the money national incomes of α and β will be unaffected by changes in export, import and domestic prices. The analytical simplifications made possible by this circumstance will be apparent almost immediately.

Without any loss of generality we may choose our currency and commodity units so that, initially, all prices, including the price of foreign exchange, are unity.

II

The Appendix contains a rigorous and direct mathematical derivation of the relation between the terms of trade and the various categories of technological change. In the present and following sections we shall confine ourselves to a diagrammatic and verbal analysis of the problem.

Let us define the terms of trade as the ratio of the price of α -exports to the price of α -imports. The concept thus corresponds to Taussig's "net barter terms of trade." The rate of exchange r is defined as the number of units of α -currency which exchange against a unit of β -currency. Then, recalling our convention that initially all prices are unity, it is clear that changes in r are indicative of opposite changes in the α -terms of trade.

The analysis, both in the present and in later sections, will be facilitated by reference to figures similar to Chart 1. Along the vertical axis is measured the rate of exchange; along the horizontal axis are measured the amounts

¹ The equality is only approximate, for changes in the value of the national product may be accompanied by changes in the relative importance of industries in which labour is not of uniform importance as a factor of production.

of foreign (β) currency demanded and supplied per unit of time.¹ Under the assumption of infinite supply elasticities, and abstracting from capital transactions, the demand for foreign exchange is a direct translation of the demand by α -residents for β -products. Normally, therefore, the curve of demand for foreign exchange will be negatively inclined. Under the same assumptions the supply of foreign exchange is derived from the demand by

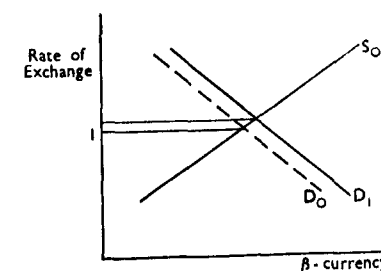


CHART 1

β -residents for α -exports. The relation between the latter pair of curves, however, is somewhat complicated. Let us denote by η_β the elasticity of demand by β -residents for α -products, $-\frac{r}{M} \cdot \frac{\partial M}{\partial r}$, and by ϵ the elasticity of

the supply of foreign exchange, $\frac{r}{S} \cdot \frac{\partial S}{\partial r}$. Then it can be shown² that

$$(1) \quad \epsilon = -(1 + \eta_\beta)$$

Thus the curve of the supply of foreign exchange is positively, negatively or vertically inclined according as the β -demand for α -exports is of greater than, less than or precisely unit elasticity. The supply curve of Chart 1 is drawn on the assumption of an elastic demand for α -exports (*i.e.*, $\eta_\beta < -1$).

The demand and supply curves of Chart 1 are drawn on the "*ceteris paribus*" assumption that the money national incomes of α and β are constant. That this is a reasonable assumption has been argued in Section I.

¹ The apparatus of curves of demand for and supply of foreign exchange has been employed by Bresciani-Turroni ("The Purchasing Power Parity Doctrine," *L'Égypte Contemporaine*, 1934, pp. 433-64) and G. Haberler (*The Theory of International Trade* (London, 1936), p. 20), and systematically exploited by F. Machlup ("The Theory of Foreign Exchanges," Chapter 5 of *Readings in the Theory of International Trade*, ed. Howard S. Ellis and Lloyd A. Metzler (Philadelphia, 1949), reprinted from *Economica*, Vol. VI (New Series).

² Denote by S the supply of foreign exchange, by M the demand for α -exports, and by r the rate of exchange. Then, remembering that the price level of α -exports is 1,

$$S = \frac{M}{r}$$

Differentiating partially with respect to r , we have

$$\frac{\partial S}{\partial r} = \frac{1}{r} \cdot \frac{\partial M}{\partial r} - M \cdot \frac{1}{r^2}$$

Dividing through by $S = \frac{M}{r}$ and writing $r = 1$, we have

$$\frac{1}{S} \cdot \frac{\partial S}{\partial r} = \frac{1}{M} \cdot \frac{\partial M}{\partial r} - 1$$

$$\text{i.e., } \epsilon = -(\eta_\beta + 1).$$

The demand and supply curves prevailing in the initial situation are labelled, respectively, D_0 and S_0 . Now we suppose that there occurs a significant improvement in the efficiency of α -domestic industries. Since factor prices are constant and the domestic industries are competitive, there must ensue a reduction of the prices of domestic commodities. What are the implications of this price-cut for the curves of demand for and supply of foreign exchange? It is clear that it can have no effect on the supply curve. The effect on the demand curve depends on the value of the cross-elasticity of demand for α -imports with respect to domestic prices. Let us denote this elasticity by η_{α}' . The sign of η_{α}' cannot be determined *a priori*, since the substitution- and income-effects of the price-cut pull in opposite directions. However, one would expect that normally the substitution-effect would dominate the income-effect and that η_{α}' would be positive. In that case

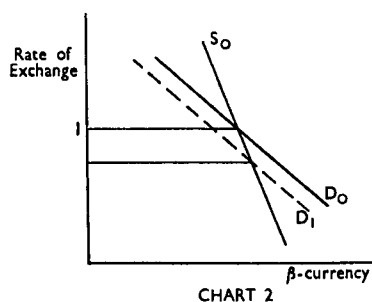


CHART 2

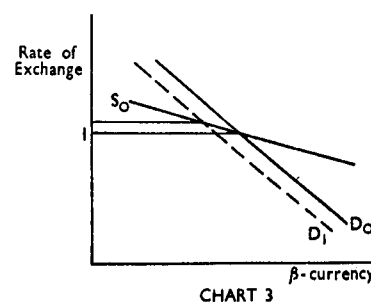


CHART 3

the effect of the price-cut is a uniform contraction of the curve of demand for foreign exchange, a fall in the rate of exchange and an improvement of the α -terms of trade.

However, outcomes other than that illustrated by Chart 1 are possible. Additional possibilities are illustrated by Charts 2 and 3. Both charts depict a negatively inclined supply curve. If, at their point of intersection, the algebraic slope (referred to the vertical or price axis) of the supply curve is greater than that of the demand curve (Chart 2), the outcome is again a fall in the rate of exchange, an improvement of α 's terms of trade. If, however, the relation of the slopes is reversed (Chart 3), the outcome is also reversed. But Chart 3 depicts an unstable equilibrium in the market for foreign exchange. Hence, if we make an exception of this case, and neglect the possibility of $\eta_{\alpha}' \leq 0$, there remains only one possible outcome: a decline in the rate of exchange and an improvement of the terms of trade.

These results may be formalised. Referring to equation (1), it is clear that Charts 1 and 2 illustrate the case

$$(2) \quad -(1 + \eta_{\beta}) > \eta_{\alpha}, \text{ i.e., } 1 + \eta_{\alpha} + \eta_{\beta} < 0$$

where η_{α} is the elasticity of demand for α -imports. Similarly, Chart 3 illustrates the case

$$(3) \quad -(1 + \eta_{\beta}) < \eta_{\alpha}, \text{ i.e., } 1 + \eta_{\alpha} + \eta_{\beta} > 0$$

It can be shown that, for the model employed in this paper, (2) is a

necessary and sufficient condition of exchange stability. It is shown in the Appendix that

$$(4) \quad \frac{d\mu}{d\rho} = \frac{\eta_{\alpha}'}{1 + \eta_{\alpha} + \eta_{\beta}}$$

where μ represents the α -terms of trade and ρ represents the price of α -domestic commodities. Thus if $\eta_{\alpha}' > 0$ and $(1 + \eta_{\alpha} + \eta_{\beta}) < 0$, then $\frac{d\mu}{d\rho} < 0$ and, the case of technological advance, $\left(-\frac{d\mu}{d\rho}\right) > 0$.

Finally, we may note a result derived in the Appendix. If efficiency improves simultaneously in the domestic industries of both α and β , then

$$(5) \quad \frac{d\mu}{d\rho} = \frac{\eta_{\alpha}' - k\eta_{\beta}'}{1 + \eta_{\alpha} + \eta_{\beta}}$$

where k is the ratio of the rate of advance in β to the rate of advance in α , and η_{β}' is the cross-elasticity of demand for β -imports with respect to β -domestic prices. Assuming exchange stability, the net outcome depends on the values of k and of the two cross-elasticities, η_{α}' and η_{β}' . If $\eta_{\alpha}' = \eta_{\beta}'$ (both assumed positive), the outcome depends entirely on the value of k , i.e., the terms of trade move in favour of the more progressive country.

III

Now we suppose that there occurs an improvement in the efficiency of the α -export industries. Since factor prices are constant and the α -export

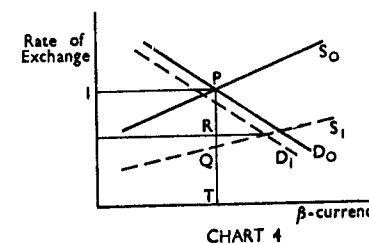


CHART 4

industries are competitive, there must follow a reduction of α -export prices (quoted in α -currency). What are the implications of this price-cut for the curves of demand for and supply of foreign exchange? Let us consider first the supply curve. It is clear that, from the point of view of β -residents, the decline in α -export prices would be exactly offset if there were a proportional decline in the rate of exchange. Hence the effect of the price-cut is a uniform percentage-wise downward movement of the entire supply curve. We may suppose that its new position is that of the S_1 -curve of Chart 4, $PQ \div (PT = 1)$ representing the proportion by which α -export prices are cut. The effect on the demand curve is more complicated. If the exchange rate were to fall in proportion to the cut in α -export prices, the prices (expressed in α -currency) of α -imports and α -exports would be restored to their initial relative levels. One might be tempted, on that account, to argue that the D_0 -curve should be displaced in a downward

direction by a proportion similar to that by which the S_0 -curve was depressed. The argument would be mistaken. For while the import and export prices would be restored to their initial position *relative to each other*, there would be an absolute decline in the prices both of imports and exports. Given money national income, this decline implies an increase in the demand for α -imports, and hence a movement to the right of the curve of demand for foreign exchange. The final position of the demand curve conceivably could be to the right of D_0 , but is more likely to be slightly to its left. Its final position depends on the value of the cross-elasticity of demand for α -imports with respect to export prices. Let us denote this elasticity by η_α'' . Now normally $\eta_\alpha'' > 0$, i.e., $-\eta_\alpha'' < 0$, and the effect of the technological advance will be

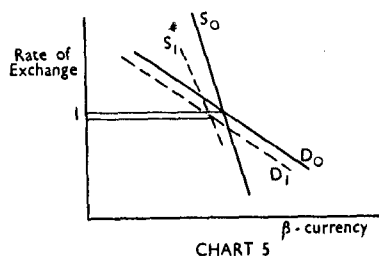


CHART 5

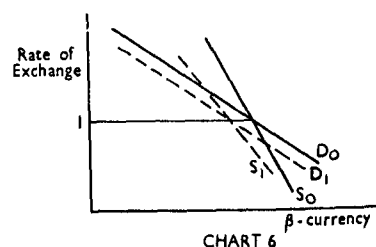


CHART 6

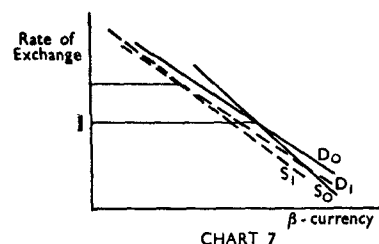


CHART 7

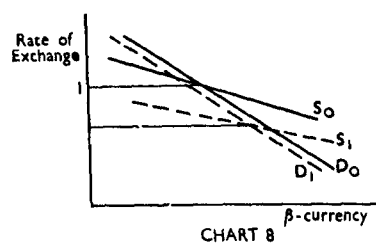


CHART 8

a decline in the demand for α -imports and, hence, in the demand for foreign exchange. This normal case is illustrated by Chart 4.

It is clear that in the case illustrated by Chart 4 the rate of exchange will fall, but by a proportion somewhat less than the fall in price of α -exports. The extent of the fall depends not only on the value of η_α'' but also on the elasticity of the supply curve, i.e., on the value of $-(1 + \eta_\beta)$ (equation (1)). The fall in the rate of exchange is indicated by PR , which is less than PQ .

But this is not the only possible outcome. Further possibilities are illustrated by Charts 5–8. All four charts show negatively inclined supply curves, implying an inelastic demand by β -residents for α -exports. It is clear that the rate of exchange may rise, remain unchanged, fall less than the price of α -exports or fall further than the price of α -exports, the outcome depending on the relative inclinations of the demand and supply curves. Chart 8, however, illustrates an unstable market situation. If we make an exception of this case, there remain three possibilities: the rate of exchange may rise, remain unchanged or fall less than the price of α -exports. •

These results may be formalised. It is shown in the Appendix that

$$(6) \quad \frac{dr}{d\pi} = \frac{1 - \eta_\alpha'' + \eta_\beta}{1 + \eta_\alpha + \eta_\beta}$$

where π is the price of α -exports, expressed in α -currency. Assuming that the market for foreign exchange is stable, i.e., that $1 + \eta_\alpha + \eta_\beta < 0$, the outcome of a cut in the price of α -exports is determined by the sign of the numerator of (6). Turning to the terms of the numerator, it is evident that normally $\eta_\beta < 0$, the income- and substitution-effects of an increase in the price of β -imports working together against β -imports. The sign of η_α'' , as we have seen, is ambiguous, since, as far as α -imports are concerned, the income- and substitution-effects of an increase in the price of α -exports normally work against each other. But regardless of the sign of η_α'' , it is clear that $(1 - \eta_\alpha'' + \eta_\beta)$, and hence $\left(-\frac{dr}{d\pi}\right)$, may be positive, negative or zero. The first possibility is illustrated by Chart 7; the second by Charts 4 and 5; and the third by Chart 6. Charts 4 and 5 are distinguished by the sign of $(1 + \eta_\beta)$ (see equation (1) above).

The preceding paragraphs have been in the nature of a digression. It is time to return to the problem of defining the relation between the terms of trade and a cut in the price of α -exports. Under our assumptions concerning initial prices, we may write

$$(7) \quad \mu = \frac{\pi}{r}$$

and, as an approximation, $\Delta\mu = \frac{\Delta\pi}{r} - \frac{\pi}{r^2} \Delta r$. Because all prices are 1, this becomes

$$(8) \quad \Delta\mu = \Delta\pi - \Delta r$$

Now we have just argued that, if the market for foreign exchange is stable, $\Delta\pi > \Delta r$. Hence $\Delta\mu \geq 0$ according as the price of α -exports increases or decreases. In other words, the terms of trade always move against the country which becomes more efficient in the production of its export commodity.

This result, too, may be formalised. It is shown in the Appendix that

$$(9) \quad \frac{d\mu}{d\pi} = \frac{\eta_\alpha + \eta_\alpha''}{1 + \eta_\alpha + \eta_\beta}$$

Because in the case of η_α'' the income- and substitution-effects normally work against each other, one would expect that normally η_α'' is numerically smaller than η_α , i.e.,

$$(10) \quad \eta_\alpha + \eta_\alpha'' < 0$$

Hence, if the market for foreign exchange is stable,

$$(11) \quad \frac{d\mu}{d\pi} > 0.$$

Finally, we may note a result derived in the Appendix. If efficiency improves simultaneously in the export industries of both α and β , then

$$(12) \quad \frac{d\mu}{d\pi} = \frac{(\eta_\alpha + \eta_{\alpha''}) - k(\eta_\beta + \eta_{\beta''})}{(1 + \eta_\alpha + \eta_\beta)}$$

where $\eta_{\beta''}$ is the cross-elasticity of demand for β -imports with respect to β -export prices. Assuming exchange stability, the net outcome depends on the values of k , of the two direct demand elasticities and of the two cross-elasticities. Only if $(\eta_\alpha + \eta_{\alpha''}) = (\eta_\beta + \eta_{\beta''})$ does the outcome hinge on k , the measure of the relative progressiveness of α and β .

IV

We turn to the possibility that both types of technological advance occur simultaneously. We need not spend much time on this case, since it is intuitively clear (and proven rigorously in the Appendix) that the effect on the terms of trade is the simple sum of the effects of each type considered in isolation. Employing the symbolism of earlier sections,

$$(13) \quad \frac{d\mu}{d\pi} = \frac{\eta_\alpha + \eta_{\alpha'} + \eta_{\alpha''}}{1 + \eta_\alpha + \eta_\beta}$$

where π now represents the general price level of α -commodities, expressed in α -currency.

In the absence of assumptions more restrictive than those made so far, the sign of $\frac{d\mu}{d\pi}$ is indeterminate. In effect, the numerator $(\eta_\alpha + \eta_{\alpha'} + \eta_{\alpha''})$ of (13) represents the effect on the α -import demand of a uniform increase of all prices—import, export and domestic. Such a price increase is equivalent to a decline of disposable income. Hence, unless α -imports, considered as a group, are inferior goods, $(\eta_\alpha + \eta_{\alpha'} + \eta_{\alpha''})$ will be negative. If $(\eta_\alpha + \eta_{\alpha'} + \eta_{\alpha''}) < 0$, then $\frac{d\mu}{d\pi} > 0$ and, the case of technological advance, $(-\frac{d\mu}{d\pi}) < 0$. In other words, a uniform and simultaneous technological advance in all α -industries will normally give rise to a deterioration of the α -terms of trade.

Finally, we state a more general result which is derived in the Appendix. If there is an improvement in the efficiency of all industries, in both α and β , then

$$(14) \quad \frac{d\mu}{d\pi} = \frac{(\eta_\alpha + \eta_{\alpha'} + \eta_{\alpha''}) - k(\eta_\beta + \eta_{\beta'} + \eta_{\beta''})}{(1 + \eta_\alpha + \eta_\beta)}$$

Assuming exchange stability, the net outcome of the advances depends on

the values of k , of the two direct import-demand elasticities and of the four cross-elasticities. Only if $(\eta_\alpha + \eta_{\alpha'} + \eta_{\alpha''}) = (\eta_\beta + \eta_{\beta'} + \eta_{\beta''})$ does the outcome hinge on k , the measure of the relative progressiveness of α and β .

V

Care must be exercised in drawing welfare conclusions from the analysis of the preceding sections. It is possible, however, to formulate a few generalisations of interest. Sub-sections A, B and C of the present section correspond to Sections II, III and IV above.

A. We have seen that, normally, an increase of efficiency in the α -domestic industries will give rise to an improvement of the α -terms of trade. As a result, all α -residents are, at least potentially, better off: the aggregate disposable money income of α -residents is unchanged (see Section I), the prices of α -export commodities are unchanged, and the prices of α -domestic goods and of α -imports have fallen.

It is possible, of course, that individual α -residents may suffer. Consider the owners of a factor of production which is specific to the α -export industries. If the outputs of those industries fall, the extent of the unemployment of that factor will increase. Exports will be choked off by the appreciation of the rate of exchange; and even the home demand for export commodities will decline if, as is likely, the cross-elasticity of home demand for exported goods with respect to the price of domestic commodities is positive. Thus an intensification of the unemployment of factors specific to the export industries is probable. In that event one could say unambiguously that α is made better off by the technological advance only if the owners of the newly unemployed factors are compensated by those who are made better off, viz., the owners of those factors which remain in employment and benefit from the lower prices, and those who are newly employed in the domestic industries.

Turning our attention to β , it is clear that the outcome of the technological advance in α is quite unfavourable: the aggregate disposable money income of β -residents is unchanged, the prices of domestic and export commodities are unchanged and imports are more expensive. Most β -residents are made worse off by the higher prices of imports.

Some β -residents may be made better off by the change. In particular, the owners of factors newly employed in the expanding β -export industries will be in a more favourable position than before the change. But this select group could not compensate the majority, who are worse off.

B. The welfare implications of technological advance in the α -export industries are more complex.

In that case, all β -residents are, at least potentially, better off as the result of the favourable change in the terms of trade: prices of β -exports, expressed in β -currency, do not change, import prices decline, and disposable money income is constant. Since the prices of β -products, and total expendi-

ture on β -products, are constant, it is reasonable to assume, as a first approximation, that the output of each β -product is constant; that, as a result, there is no change in the distribution of money income in β ; and, hence, that all β -residents are in fact made better off by the change in the terms of trade, thus obviating the necessity of making compensation payments. However, it is possible that, in the view of β -residents, some β -exports are strong substitutes in demand for β -imports, the prices of which have fallen. The demand for such exports will decline. There will ensue a decline in the absolute and relative share of β 's national income accruing to those factor classes which are employed with greatest intensity in the declining industries. The newly-unemployed members of each factor class will have to be compensated. If the redistribution is sufficiently marked, the collective purchasing power of the members of a factor class may shrink. But, even if these possibilities do eventuate, those who benefit from the improved terms of trade could compensate the losers and remain better off than before the change.

The outcome for α is less clearly defined, and does not lend itself to such sweeping generalisations. There are two cases to be considered. If $(1 - \eta_{\alpha}'' + \eta_{\beta}) \leq 0$ (Equation (5) and Charts 4-6), then the rate of exchange either falls or remains at its initial level, in which case the prices, in α -currency, of α -imports fall or, at worst, remain at their initial level. Thus, in this case some prices fall, none rise; α is better off in precisely the same sense as that in which β is better off: the gainers could compensate the losers and remain better off than before the change. If, on the other hand, $(1 - \eta_{\alpha}'' + \eta_{\beta}) > 0$ (Chart 7), then the rate of exchange rises, resulting in an inflation (in terms of α -currency) of import prices. In this case some prices rise, others fall. Whether or not compensation of those who lose could be effected depends on the preferences of α -residents between imported and exported commodities and on the extent of the price changes.

To summarise, β always is made better off (in the sense indicated above) by improved efficiency in α 's export industries; α sometimes is made better off, sometimes worse off. This conclusion must be regarded as something of a paradox.

C. We consider, finally, the welfare implications of a uniform technological advance in all α -industries. We have seen, in Section IV, that normally the terms of trade will move against α .

The analysis of β 's position is, in detail, identical with that provided in sub-section B and need not be repeated. In general, all β -residents are, at least potentially, better off as the result of the change in the terms of trade: prices of β -exports and of β -domestic goods do not change, import prices decline and disposable money income is constant. The qualifications of this general position necessitated by the redistribution of income have been set out in B.

As in B, the outcome for α is less clearly defined and does not lend itself to sweeping generalisations. Again, there are two cases to be considered, that in which the rate of exchange falls or remains unchanged, and that in

which it rises. Comparison of (4) and (5) suggests the following formula, which is derived rigorously in the Appendix:

$$(15) \quad \frac{dr}{d\pi} = \frac{1 - \eta_{\alpha}' - \eta_{\alpha}'' + \eta_{\beta}}{1 + \eta_{\alpha} + \eta_{\beta}}$$

If $(1 - \eta_{\alpha}' - \eta_{\alpha}'' + \eta_{\beta}) \leq 0$, the rate of exchange either falls or remains at its initial level. In that case, the prices, in α -currency, of α -imports fall or, at worst, remain unchanged. Thus, in this case some prices fall, none rise; α is better off in the same sense as that in which β is better off: the gainers could compensate the losers and remain better off than before the change. If, on the other hand, $(1 - \eta_{\alpha}' - \eta_{\alpha}'' + \eta_{\beta}) > 0$, the rate of exchange rises, resulting in an inflation, in terms of α -currency, of α -import prices. In this case some prices rise, others fall. Whether or not compensation of those who lose could be effected depends on the preferences of α -residents between imported and exported commodities and on the extent of the price changes.

To summarise, β always is made better off by a general improvement of efficiency in α ; α sometimes is made better off, sometimes worse off.

VI

The questions raised in this paper have excited the interest of a number of international trade theorists, including J. S. Mill, Edgeworth, Nicholson, Bastable and Ohlin. In this Section we note briefly the points of similarity and dissimilarity between their conclusions and those of the present paper.

Mill, in his well-known chapter on International Values,¹ concluded that a technological improvement confined to the export industry of a single country, say α , would turn the terms of trade against that country and, further, that the proportion in which the terms of trade would change would be greater than, equal to or less than that in which the cost of producing the commodity changed according as the elasticity of overseas demand for the commodity was less than, equal to or greater than unity. This conclusion, which was affirmed by Edgeworth, Bastable and Ohlin,² is valid for the special case in which the cross-elasticity of demand for α -imports with respect to the price of the α -export commodity, η_{α}'' , vanished (equation (9)). In that case we have

$$(16) \quad \frac{d\mu}{d\pi} = \frac{\eta_{\alpha}}{1 + \eta_{\alpha} + \eta_{\beta}}$$

whence $\frac{d\mu}{d\pi} \leq 1$ according as $\eta_{\beta} \leq -1$. Otherwise Mill's conclusion is inapplicable.

It was for Edgeworth to state explicitly the welfare implications of Mill's

¹ J. S. Mill, *Principles of Political Economy*, Book III, Chapter XVIII, § 5.

² F. Y. Edgeworth, "The Theory of International Values," *Economic Journal*, Vol. IV, pp. 40-2, and "On a Point in the Pure Theory of International Trade," *Economic Journal*, Vol. IX, pp. 125-8; C. F. Bastable, *The Theory of International Trade*, 4th ed. (London, 1903), Appendix C, § 2; Bertil Ohlin, *Inter-regional and International Trade* (Cambridge, 1933), pp. 517-18.

analysis and, in particular, to point out that the innovating country *may* be made worse off by the innovation, even if the residents of that country consume their export commodity.¹ These implications were established rigorously by Bastable,² who concluded, further, that

“Where the gain from the improvement was greater than that from foreign trade, detriment to the country exporting the article now made cheaper was impossible. It is only where the benefit from improvement is smaller than the advantage of interchange that loss could result from it.”³

VII

Under the assumptions outlined in Section I, and taking for granted that the market for foreign exchange is stable, we have reached two conclusions of some generality. First, unless the technological advance is confined to domestic industries, the terms of trade always move against the progressive country. Second, unless the technological advance is confined to domestic industries the unprogressive country always benefits from the change in the terms of trade; the progressive country sometimes benefits, sometimes suffers. In this final section we seek to guard against possible misinterpretation of the results, the product of failure to bear in mind the special assumptions on which they are based.

It does *not* follow that, because the terms of trade have moved against it, a country must be relatively unprogressive. Trends in relative tariff levels, in exchange and trade restrictions, in relative degrees of monopoly, in capital movements and in debt services, all have an important bearing on movements of the terms of trade.

Nor does it follow that it is a matter of indifference to a country whether or not it becomes more efficient in the production of its export commodities. The plausibility of such an inference stems from the assumption that, over time, improvements in the efficiency of a country's export industries as often cause a deterioration of welfare as an improvement. But typically the manufactured exports of a country face competition from close substitutes produced by several other countries; in the case of many staples the substitutes are almost perfect. This consideration suggests that the demand for the products of any single trading country is likely to be elastic—the smaller the country, the more elastic the demand—and that an improvement in the export industries of that country is likely to result in an enhancement of its welfare.

¹ Edgeworth, *ECONOMIC JOURNAL*, Vol. IV, p. 40. Nicholson (*The Principles of Political Economy* (London, 1897), Vol. II, Book III, Chapter XXVII, § 8) attacked Edgeworth's conclusion on the ground that it was based on the unrealistic assumptions: (i) that the residents of the innovating country did not consume their export commodity; and (ii) that the amount of labour devoted by the innovating country to the production of its export commodity was fixed. The attack failed since Edgeworth in fact did not employ assumptions (i) and (ii); nor are they necessary to his conclusion. (Edgeworth, *ECONOMIC JOURNAL*, Vol. IX, pp. 125-8.)

² Bastable, *loc. cit.*

³ Bastable, *op. cit.*, pp. 186-7.

Finally, it does not follow that a country should concentrate on improving the efficiency of its domestic industries. Throughout this paper we have treated technological change as autonomous and costless. In practice, it is the product of costly research. There are no *a priori* grounds for believing research to be more fruitful in domestic than in export industries.

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APPENDIX

Our purpose in this appendix is the rigorous derivation of the results of Sections I-IV. In Section AI of the Appendix we derive the results of Section II, in section AII those of Section III and in Section AIII those of Section IV.

The static model of the world economy implicit in the discussion of the text is partially described by the following system of equations:

$$(A0.1) \left\{ \begin{array}{l} y = e(\tau, \pi, \rho, y) + \pi M(T, \Pi, P, Y) \\ Y = E(T, \Pi, P, Y) + \Pi m(\tau, \pi, \rho, y) \\ \tau m(\tau, \pi, \rho, y) = \pi M(T, \Pi, P, Y) \\ \tau = r\Pi \\ T = \pi/r \\ \mu = \pi/\tau \end{array} \right.$$

¹ In this system, the symbols have the following interpretations:

- y = the national product of α , valued at factor cost and expressed in α -currency;
- Y = the national product of β , valued at factor cost and expressed in β -currency;
- e = the total spending in α on home-produced commodities, expressed in α -currency;
- E = the total spending in β on home-produced commodities, expressed in β -currency;
- m = the volume of α -imports;
- M = the volume of β -imports;
- r = the number of units of α -currency which exchange against a unit of β -currency;
- τ = the price of α -imports, expressed in α -currency;
- T = the price of β -imports, expressed in β -currency;
- π = the price of α -exports, expressed in α -currency;
- Π = the price of β -exports, expressed in β -currency;
- ρ = the price of α -domestic commodities, expressed in α -currency;
- P = the price of β -domestic commodities, expressed in β -currency;
- μ = the α -terms of trade.

The first three equations of (A0.1) express conditions of equilibrium; the fourth, fifth and sixth are definitions. Of the equilibrium conditions the first two state that the national product must be equal to total spending on home-produced commodities, the third states that the demand for and supply of foreign exchange must be equal.

Without loss of generality currency units may be chosen so that, initially, $r = 1$. Similarly, quantity units may be chosen so that, initially, all commodity prices are unity. It follows that, initially,

$$(A0.2) \quad r = \tau = \pi = \rho = T = \Pi = P = 1$$

and

$$(A0.3) \quad m = M$$

The assumptions of Section I imply a number of restrictions on the functions e , E , m and M . In particular, we have assumed that total spending, in α and in β , is invariant under changes in absolute and relative prices. Now total spending in α , expressed in α -currency, is equal to $[e + \tau m]$; total spending in β , expressed in β -currency, is equal to $[E + TM]$. Hence, we have, as implications of the assumption, the following identities:

$$(A0.4) \quad \left\{ \begin{array}{l} \frac{\partial}{\partial \tau} [e + \tau m] = e_\tau + m_\tau + m = 0 \\ \frac{\partial}{\partial \pi} [e + \tau m] = e_\pi + m_\pi = 0 \\ \frac{\partial}{\partial \rho} [e + \tau m] = e_\rho + m_\rho = 0 \\ \frac{\partial}{\partial T} [E + TM] = E_T + M_T + M = 0 \\ \frac{\partial}{\partial \Pi} [E + TM] = E_\Pi + M_\Pi = 0 \\ \frac{\partial}{\partial P} [E + TM] = E_P + M_P = 0 \end{array} \right.$$

In (A0.4) and below subscripts indicate partial differentiation.

AI

Each equation of the system (A0.1) is an identity in π and ρ . Now we have remarked in Section II that technological progress in the α -domestic industries may be represented by a decline in ρ . Hence, to find the effect, on other variables of the model, of technological progress in the α -domestic industries, we must differentiate through (A0.1) with respect to ρ . The differentiation yields a system of six linear equations in the unknowns $\frac{dy}{d\rho}$, $\frac{dY}{d\rho}$, $\frac{d\tau}{d\rho}$, $\frac{dT}{d\rho}$, $\frac{d\pi}{d\rho}$, $\frac{d\Pi}{d\rho}$, $\frac{dP}{d\rho}$ and $\frac{d\mu}{d\rho}$. Recalling (A0.2), this derived system may be written

$$(A1.1) \quad \left\{ \begin{array}{l} (1 - e_y) \frac{dy}{d\rho} - My \frac{dY}{d\rho} - e_\tau \frac{d\tau}{d\rho} - \\ M_\tau \frac{d\tau}{d\rho} - (p_\pi + M) \frac{d\pi}{d\rho} - M_\Pi \frac{d\Pi}{d\rho} - M_P \frac{dP}{d\rho} = e_\rho \\ m_y \frac{dy}{d\rho} - (1 - E_Y) \frac{dY}{d\rho} + m_\tau \frac{d\tau}{d\rho} + \\ E_T \frac{dT}{d\rho} + m_\pi \frac{d\pi}{d\rho} + (m + E_\Pi) \frac{d\Pi}{d\rho} + E_P \frac{dP}{d\rho} = -m_\rho \\ m_y \frac{dy}{d\rho} - M_Y \frac{dY}{d\rho} + (m + m_\tau) \frac{d\tau}{d\rho} - M_T \frac{dT}{d\rho} + \\ (m_\pi - M) \frac{d\pi}{d\rho} - M_\Pi \frac{d\Pi}{d\rho} - M_P \frac{dP}{d\rho} = -m_p \\ \frac{d\tau}{d\rho} - \frac{d\Pi}{d\rho} - \frac{dr}{d\rho} = 0 \\ \frac{dT}{d\rho} - \frac{d\pi}{d\rho} + \frac{dr}{d\rho} = 0 \\ \frac{d\tau}{d\rho} - \frac{d\pi}{d\rho} + \frac{d\mu}{d\rho} = 0 \end{array} \right.$$

This, of course, is not a complete system and must be augmented before solution is possible. Now if technology in the β -domestic industries is advancing at a rate equal to k times that of the α -domestic industries, we must add the relation

$$(A1.2) \quad \frac{dP}{d\rho} = k$$

Further, the assumption of static technology in the α - and β -export industries is expressed by the relations

$$(A1.3) \quad \frac{d\pi}{d\rho} = \frac{d\Pi}{d\rho} = 0$$

Adding (A1.1), (A1.2) and (A1.3) we obtain the system (A1.4) of nine linear equations in nine unknowns.

$$(A1.4) \quad \left\{ \begin{array}{l} (A0.5) \\ (A1.2) \\ (A1.3) \end{array} \right.$$

Solving for $\frac{d\mu}{d\rho}$ we obtain

$$(A1.5) \quad \frac{d\mu}{d\rho} = \frac{\eta_\alpha' - k\eta_\beta'}{1 + \eta_\alpha + \eta_\beta}$$

where $\eta_\alpha = \frac{m_\tau}{m}$ is the direct price elasticity of demand for α -imports;

$\eta_\alpha' = \frac{m_p}{m}$ is the cross-elasticity of demand for α -imports with respect to α -domestic prices;

$\eta_\beta = \frac{M_T}{M}$ is the direct price elasticity of demand for β -imports;

$\eta_\beta' = \frac{M_P}{M}$ is the cross-elasticity of demand for β -imports with respect to β -domestic prices;

By setting $k = 0$ we obtain a result for the special case considered in Section II.

AII

Technological progress in the α -export industries may be represented by a decline in π . Hence, to find the effect, on other variables of the model, of technological progress in the α -export industries, we must differentiate through (A0.1) with respect to π . Recalling (A0.2), the derived system of equations may be written

$$(A2.1) \left\{ \begin{array}{l} (1 - e_y) \frac{dy}{d\pi} - M_T \frac{dY}{d\pi} - e_r \frac{d\tau}{d\pi} - \\ M_T \frac{dT}{d\pi} - M_{II} \frac{d\Pi}{d\pi} - e_p \frac{dp}{d\pi} - M_P \frac{dP}{d\pi} \\ m_y \frac{dy}{d\pi} - (1 - E_Y) \frac{dY}{d\pi} + E_T \frac{d\tau}{d\pi} + \\ M_T \frac{dT}{d\pi} + (m + E_{II}) \frac{d\Pi}{d\pi} + m_p \frac{dp}{d\pi} + E_P \frac{dP}{d\pi} \\ m_y \frac{dy}{d\pi} - M_T \frac{dY}{d\pi} + (m + m_r) \frac{d\tau}{d\pi} - M_T \frac{dT}{d\pi} - \\ M_{II} \frac{d\Pi}{d\pi} + m_p \frac{dp}{d\pi} - M_P \frac{dP}{d\pi} \\ \frac{d\tau}{d\pi} - \frac{d\Pi}{d\pi} - \frac{dr}{d\pi} \\ \frac{dT}{d\pi} + \frac{dr}{d\pi} \\ \frac{d\tau}{d\pi} + \frac{d\mu}{d\pi} \end{array} \right. = \begin{array}{l} e_\pi + M \\ -m_\pi \\ M - m_\pi \\ 0 \\ 1 \\ 1 \end{array}$$

Again we have an incomplete system. But if technological progress in the β -export industries is taking place at a rate equal to k times that of the α -export industries, we must add the relation

$$(A2.2) \quad \frac{d\Pi}{d\pi} = k$$

Further, the assumption of static technology in the α - and β -domestic industries is expressed by the relations

$$(A2.3) \quad \frac{dp}{d\pi} = \frac{dP}{d\pi} = 0$$

Adding (A2.1), (A2.2) and (A2.3) we obtain the system (A2.4) of nine linear equations in the unknowns $\frac{dy}{d\pi}$, $\frac{dY}{d\pi}$, $\frac{d\tau}{d\pi}$, $\frac{dT}{d\pi}$, $\frac{d\Pi}{d\pi}$, $\frac{dp}{d\pi}$, $\frac{dP}{d\pi}$, $\frac{dr}{d\pi}$ and $\frac{d\mu}{d\pi}$.

$$(A2.4) \quad \left\{ \begin{array}{l} (A2.1) \\ (A2.2) \\ (A2.3) \end{array} \right.$$

Solving for $\frac{d\mu}{d\pi}$ and $\frac{dr}{d\pi}$, we obtain

$$(A2.5) \quad \frac{d\mu}{d\pi} = \frac{(\eta_\alpha + \eta_\alpha'') - k(\eta_\beta + \eta_\beta'')}{(1 + \eta_\alpha + \eta_\beta)}$$

and

$$(A2.6) \quad \frac{dr}{d\pi} = \frac{(1 + \eta_p - \eta_\alpha'') - k(1 + \eta_\alpha - \eta_\beta'')}{(1 + \eta_\alpha + \eta_\beta)}$$

where $\eta_\alpha'' = \frac{m_\pi}{m}$ is the cross-elasticity of demand for α -imports with respect to α -export prices;

and $\eta_\beta'' = \frac{M_{II}}{M}$ is the cross-elasticity of demand for β -imports with respect to β -export prices.

By setting $k = 0$ we obtain results for the special case considered in Section III.

AIII

Finally, we consider the possibility of a uniform technological advance in all α -industries and, simultaneously, a uniform technological advance in all β -industries at a rate equal to k times that of the α -industries. To the system (A2.1) we must add (A1.2), (A2.2) and

$$(A3.1) \quad \frac{dp}{d\pi} = 1$$

giving us

$$(A3.2) \quad \left\{ \begin{array}{l} (A1.2) \\ (A2.1) \\ (A2.2) \\ (A3.1) \end{array} \right.$$

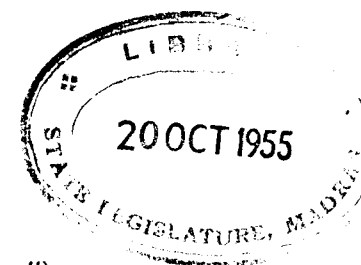
a system of nine linear equations in the unknowns $\frac{dy}{d\pi}$, $\frac{dY}{d\pi}$, $\frac{d\tau}{d\pi}$, $\frac{dT}{d\pi}$, $\frac{d\Pi}{d\pi}$, $\frac{dp}{d\pi}$, $\frac{dP}{d\pi}$, $\frac{dr}{d\pi}$ and $\frac{d\mu}{d\pi}$. Solving $\frac{d\mu}{d\pi}$ and $\frac{dr}{d\pi}$, we obtain

$$(A3.3) \quad \frac{d\mu}{d\pi} = \frac{(\eta_\alpha + \eta_\alpha' + \eta_\alpha'') - k(\eta_\beta + \eta_\beta' + \eta_\beta'')}{(1 + \eta_\alpha + \eta_\beta)}$$

and

$$(A3.4) \quad \frac{dr}{d\pi} = \frac{(1 - \eta_\alpha' - \eta_\alpha'' + \eta_\beta) - k(1 - \eta_\beta' - \eta_\beta'' + \eta_\alpha)}{(1 + \eta_\alpha + \eta_\beta)}$$

By setting $k = 0$ we obtain results for the special case considered in Section IV.



KEYNES AND SUPPLY FUNCTIONS

THE page references in what follows are, unless otherwise stated, to Mr. de Jong's article in this JOURNAL, March 1954.

1. The following points about Keynes' function, or as I shall call it curve, $Z = \phi(N)$ (*General Theory*, p. 25) seem to me to be clear.

(i) It is a curve of aggregate costs, in what de Jong calls the Robinsonian sense, not of marginal or average costs.

(ii) In "costs" it includes such profits as emerge when price is equated with marginal factor cost, these being, under the competitive conditions assumed in Keynes' book, the maximum profits which entrepreneurs are in a position to make. De Jong is mistaken (p. 17) in saying that Hansen has failed to perceive this; but Hansen is mistaken in describing the profits so included as "normal";¹ clearly in a position of pronounced under-employment equilibrium, if such exists, profits are likely to be below normal, in any ordinary sense of that word.²

(iii) It is a "familiar" supply curve in de Jong's sense (p. 23) that the factor costs included in it are costs as they present themselves to the entrepreneur, not to any other party.

2. In support of the above statement I offer the following evidence. In making some comments (no longer extant) on an earlier draft of this chapter (also, as far as I know, no longer extant) which Keynes sent me, I had misunderstood the nature of this curve, which was then somewhat confusingly labelled D' , suggesting some kind or other of demand curve. In setting me right Keynes wrote as follows: " D is the sale-proceeds for which it is expected that the output from employing N men can be sold. D' is the sale-proceeds the expectation of which will cause the output from employing N men to be produced. It is simply the age-old Supply Function." A little farther on he alluded again to D' as "only a re-concoction of our friend the Supply Function." To my complaint (anticipating apparently that of some later critics) that after this passage D' was never heard of again, he replied that it "is frequently heard of again. It runs through the whole book. . . . For I make the volume of output essentially depend on the conditions of demand and supply."

Certainly in his own view Keynes did not "dispense with the familiar

¹ "Current production is undertaken in expectation of sales proceeds adequate to cover all costs (including normal profits)" (*A Guide to Keynes*, p. 28).

² Hansen also slips up (*op. cit.*, p. 32) in criticising Keynes for describing aggregate demand D as a function of employment N . For on the assumption of the validity of the multiplier analysis, which Hansen accepts, the D_1 (consumption) component of D , and therefore D itself, is a function of N . Hansen has, I think, mistaken Keynes' statement " $D_1 + D_2 = D = \phi(N)$ " on *General Theory*, p. 29, for a definition,—it is not, it is a condition of equilibrium, exactly equivalent to Hansen's own " $D_1 + D_2 = D = Z$ " on his p. 31.

supply function," as Hawtrey says he did.¹ And I think that on this point Keynes' own view of what he was doing can be accepted.

3. How are we to represent the intersection of D and Z on a two-dimensional diagram? Let us assume, as Keynes does in *General Theory*, p. 27, that the money wage-rate does not alter (without necessarily accepting his assurance that it would make no difference if it did). We have three choices as to what to plot along the X axis—(i) real output, (ii) the money value of real output, (iii) numbers employed; and two choices of what to plot along the Y axis, (a) money sales proceeds, (b) the real value of money sales proceeds.

The method nearest to that familiar from partial analysis is (i) (a). The method suggested by Keynes' own treatment and adopted by Dillard on p. 30 of his *Economics of John Maynard Keynes* (cf. de Jong's Fig. 5, p. 9) is (iii) (a). (iii) (b) would also seem to be a plausible method.

My attempt to exhibit the behaviour of D and Z curves under these three methods led me into error, from which I have been rescued by Mr. H. G. Johnson, who, without taking any responsibility for the rest of this article, has kindly added a mathematical note at the end. Here are his results as regards Z . Under (i) (a) Z will be convex to the X axis, unless (over a range) marginal costs are rising at a sufficiently rapidly decreasing rate (the ordinary curve representing them is sufficiently concave to the X axis). Similarly under (iii) (a) Z will be convex to the X axis² unless (over a range) the marginal productivity of labour is falling at a sufficiently rapidly decreasing rate (the ordinary curve representing it is sufficiently convex to the origin). Under (iii) (b), on the other hand, Z will be concave to the X axis.

There remain (ii) (b), which nobody, I think, would suggest using; and (ii) (a) and (i) (b)—respectively Dillard's figure on his p. 34 and de Jong's Fig. 7 (p. 13)—in each of which Z is reduced to a mere 45° line. It is perhaps this fact that suggests to many minds that Z is bogus or otiose. But the tautological nature of Z in these popular pictures is merely the result of the fact that, unlike what occurs under (i) (a) or (iii), all the stuffing, so to speak, has been taken out of it before it is allowed to appear in the diagram.

On his own plane of reasoning, then, Keynes was right. But equally Patinkin and many others have been right in intuiting that the position of "equilibrium" whose establishment is indicated by this apparatus is for a number of reasons a very precarious and inconclusive one.

4. De Jong then is justified (p. 19) in placing his point of "equilibrium" at E in his Fig. 7. But what about his verbal exposition? First, he surely leads us astray in saying that for any volume of output the intercept between the 45° line and the curve of aggregate factor costs "indicates entrepreneurial expected profits"; what it indicates is the profits which, if they were expected, would suffice to elicit that volume of output.

¹ This JOURNAL, December 1954, p. 837.

² Dillard therefore puts our thoughts in a wrong direction by drawing it as a straight line, and a 45° one at that.

Secondly, he issues a challenge by suddenly changing the description of his D curve to make it mean the (real value of the) sales proceeds which entrepreneurs will *actually* (his italics) receive for any volume of output. Now for this he will find no warrant on pp. 25 or 29 of the *General Theory*, or in my quotation from Keynes above, which are all deliberately framed in terms of expectation. But if he looks very carefully he will find some support on *General Theory*, p. 30, where, as I pointed out many years ago,¹ what entrepreneurs do expect is unobtrusively transformed into what they "can expect," i.e., presumably what they ought to expect because that is what in fact will happen.

Let me at this point disclose, since I hope it is of more than personal interest, another excuse for having been defeated by the first draft of this crucial chapter. In addition to D and D' (now Z) there dodged through its pages another symbol X , still further complicating the landscape. X , it was explained to me, was actual, as contrasted with D , expected, sales proceeds or income. X eventually dropped out; but there is an echo of his existence on *General Theory*, p. 78, where, in the course of a criticism of myself, Keynes suddenly alludes to the contrast, "so vital for causal analysis," which he has "tried to make between effective demand and income,"—a contrast of which the reader of the published book now hears for the first (and I think the last) time.

Is, then, De Jong's transformation of Keynes' "expected" into "actual" sales proceeds, for which this much (though no more) warrant can be found in Keynes' own pages, required in order to make the whole apparatus viable? I think that either this, or some more restricted definition of the word "expected," is so required. Otherwise, as I have pointed out,² if entrepreneurs have been reading J. B. Say and are consequently expecting that all income will be spent, the difference between Keynes' $D(N)$ and $Z(N)$ will vanish; and any disappointment which entrepreneurs suffer from expanding employment beyond the equilibrium point will have to be explained not in terms of a difference between $D(N)$ and $Z(N)$, but in terms of a difference between effective demand (i.e., expected income) and income actually received.

5. I fully agree with de Jong (this JOURNAL, December 1954, pp. 840–1) that to give a fair run to this whole order of ideas we must use $S = I$ (a condition of equilibrium) and define our terms appropriately. But it is no use pretending that Keynes did this; he used $S \equiv I$ (an identity), deliberately rejected both my suggested distinction between received income and disposable income and the Swedish *ex ante* analysis, and expressed approval of his expositors who did likewise. De Jong, I think, realises this; but the chief moral of the debate (if it is a debate) between himself and Hawtrey seems to me to be that it would be convenient if some words other than Keynesian could be found to denote trains of analysis which embody not only concepts which Keynes invented or made use of but also others which he expressly repudiated.

¹ *Essays in Monetary Theory*, p. 115.

² *Loc. cit.*

6. I agree with what I take to be Hawtrey's view (*ibid.*, p. 837) that Keynes' definition of "involuntary employment" is quite unacceptable. It was, I think, almost immediately abandoned by some of his English expositors,¹ but is defended by Hansen,² and not, I think, rejected by de Jong. So far as the number of adult male workers seeking work is concerned, the whole notion of a forward-rising supply curve of labour seems to be completely beside the mark.³ As Pigou has explained,⁴ in this connection the "classical" supply curve of labour must be thought of either (if "thorough-going competition" between workers prevails) as a vertical straight line or (if the wage-rate is temporarily fixed by convention or collective action) as temporarily a horizontal straight line; there is no room for anything between.⁵

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MATHEMATICAL APPENDIX

1. Let x be aggregate real output, and p be the general price level measured in wage units;⁶ on Keynes' assumption of competition, the price level is determined by marginal production cost, and the latter is assumed to be rising as output increases.

Case (i) (a) plots px as a function of x . The curvature of the graph is given by $\frac{d^2(px)}{dx^2} = 2\frac{dp}{dx} + x\frac{d^2p}{dx^2}$. Since $\frac{dp}{dx}$ is positive by assumption, $\frac{d^2(px)}{dx^2}$ must be positive, indicating convexity to the X -axis, unless $\frac{d^2p}{dx^2}$ is negative (signifying a decreasing rate of increase of marginal cost) and its absolute value exceeds $\frac{2}{x}\frac{dp}{dx}$. If px is defined and possesses a derivative throughout the interval $x \geq 0$, and it is assumed that $px = 0$ for $x = 0$ and $\frac{dp}{dx}$ is positive for all non-negative values of x ,

¹ See J. Robinson, *Essays in the Theory of Employment*, pp. 10–13. Mr. Harrod, however, informs me that he still regards it as serviceable and important.

² Hansen admits that Keynes' exposition is confused, and would like to re-write the "second classical postulate," which Keynes says (*General Theory*, p. 5) he is attacking, as follows (*A Guide to Keynes*, p. 22): "(1) Workers will refuse the proffer of employment if the real wage rate is cut below the current real wage; (2) a cut in money wage rates is an effective means to reduce real wage rates." (2) is in order; but I cannot recognise in (1) any resemblance to any "classical" doctrine. It seems to imply that the "Classics" held that, as a result of a cut in money wages, believed by them to entail a cut in real wages, the number of unemployed men would be indefinitely increased. In point of fact they held that it would be diminished.

³ The concept of a backward-rising curve may have some relevance to the connection between adult male wages and the numbers of women and juveniles seeking work.

⁴ *Employment and Equilibrium*, 2nd edition, pp. 70 and 86.

⁵ An intriguing puzzle arising out of Keynes' definition is the following. Suppose a man has been drawn back by "reflationary" action of some kind into employment; how long must he wait before demanding a rise in wages in order that he may be given retrospective credit for having been involuntarily, and not voluntarily, unemployed?

⁶ p is measured in "wage units" purely for economy of symbols; following the text § 3, the "wage unit" in terms of money is assumed constant.

it can be shown by the Mean Value Theorem that the graph must be convex to the X -axis over part of its range;¹ it cannot be concave throughout.

Case (ii) (b) is the reciprocal of Case (i) (a).

2. On the assumption that labour is the only variable factor, rising marginal production cost implies diminishing marginal productivity of labour.

Case (iii) (b) plots output x as a function of employment n . The curvature is given by $\frac{d^2x}{dn^2}$, which by assumption is negative, indicating concavity to the X -axis.

3. On the same assumption, the price level in wage units p will be equal to the reciprocal of the marginal product of labour $m \left(= \frac{dx}{dn} \right)$. Case (iii) (a) plots the value of output $px \left(= \frac{x}{m} \right)$ as a function of employment n . The curvature is

given by $\frac{d^2 \left(\frac{x}{m} \right)}{dn^2} = \frac{1}{m^3} \left[2x \left(\frac{dm}{dn} \right)^2 - m^2 \frac{dm}{dn} - mx \frac{d^2m}{dn^2} \right]$. Since $\frac{dm}{dn}$ is negative by assumption, $\frac{d^2 \left(\frac{px}{m} \right)}{dn^2}$ will be positive, indicating convexity to the X -axis, unless $\frac{d^2m}{dn^2}$ is positive (signifying a decreasing rate of decrease of marginal productivity of labour) and sufficiently large. As in 1 above, it can be shown that the graph cannot be concave to the X -axis over the whole range.

4. Let c be aggregate real demand for output, assumed to depend only on aggregate real output x . Case (i) (a) plots pc as a function of x . The curvature of the graph is given by $\frac{d^2(pc)}{dx^2} = 2 \frac{dc}{dx} \frac{dp}{dx} + c \frac{d^2p}{dx^2} + p \frac{d^2c}{dx^2}$, which indicates convexity to the X -axis unless marginal cost rises at a decreasing rate or the marginal propensity to consume decreases as output increases.

In Case (iii) (b), the curvature is given by $\frac{d^2c}{dn^2} = m^2 \frac{d^2c}{dx^2} + \frac{dc}{dx} \frac{d^2x}{dn^2}$, indicating concavity to the X -axis unless the marginal propensity to consume increases as output increases. In Case (iii) (a), the curvature is given by

$$\frac{d^2 \left(\frac{c}{m} \right)}{dn^2} = \frac{d^2c}{dx^2} m - \frac{1}{m^3} \left[m^2 \frac{dm}{dn} \frac{dc}{dx} + mc \frac{d^2m}{dn^2} - 2c \left(\frac{dm}{dn} \right)^2 \right];$$

this indicates convexity to the X -axis unless the marginal propensity to consume decreases as output increases or the marginal productivity of labour falls at a decreasing rate as employment increases.

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¹ I am grateful to Professor Robert Strotz of Northwestern University for providing a rigorous proof of this restriction.

KEYNES AND SUPPLY FUNCTIONS: SECOND REJOINDER, WITH A NOTE ON THE CONCEPT OF MONETARY EQUILIBRIUM

THE first section of this paper is devoted to a rejoinder to the stimulating Comment of Professor Robertson. For the sake of brevity, I will avoid quoting his statements by following the articulation of his Comment. I agree with all points made by Professor Robertson which are not mentioned below in Section 1.

In a personal interview, Professor Koopmans of Amsterdam told me that, in the sketch of his concept of monetary equilibrium inserted in my first rejoinder (that to Professor Hawtrey¹), I have misinterpreted him at a certain point. The issue of the second section of this paper will therefore be to present a brief exposition of the kernel of Koopmans' theory.

§ 1. REJOINDER TO PROFESSOR ROBERTSON

1. In the passage from Hansen, cited by Professor Robertson, "normal profits" are explicitly subsumed under "costs." I feel that this concept of normal profits must be the same as Marshall's.² Normal profits in this sense are constituted of managers' salaries and interest. If this is true, I believe that one may indeed say that Hansen makes "essentially the same error" as Dillard, as I stated on p. 17.

3. The considerations of Professor Robertson and Mr. Johnson on the representation of the functions D and Z on a two-dimensional diagram are certainly very instructive. Personally, I do not think that a decreasing rate of increase of marginal costs, an increasing rate of decrease of marginal productivity of labour, and an increasing marginal propensity to consume as output increases, are—in the short run, at any rate—very probable cases. Under (iii) (a), *i.e.*, p. 30 in Dillard or p. 9, Fig. 5, in my article, the D and Z curves may therefore probably be assumed to be approximately linear over a certain range, while they will become convex to the X axis as soon as employment surpasses a certain value. This result is indeed different from Dillard's picture, which I have copied in my article, especially for the matter of the D curve. But it is not quite true that Dillard draws the Z curve as a 45°-line. Incidentally, if in his diagram the straight Z curve is produced to the left, it intersects the N -axis to the right of O .

I have been puzzled by the diagram, produced by Hansen on p. 31 of his book, where the curve $Z = Z(N)$ is drawn as a 45°-line passing through the Origin. I feel that, in Hansen's exposition, where Z covers all costs (in-

¹ This JOURNAL, December 1954, pp. 840-2.

² A. Marshall, *Principles of Economics*, eighth edition (London, 1920), Book VI, ch. viii, esp. pp. 618-19: "Thus the whole of normal profits enter into true or long-period supply price."

cluding "normal profits") and costs only, this can make sense only if a new system (iii) (c) is assumed where (c) indicates that $Z_W \equiv \frac{Z}{W}$ and $D_W \equiv \frac{D}{W}$ are plotted along the Y axis. Z_W and D_W are measured in the same units as N .¹ The 45°-line can then be regarded as the sale proceeds divided by the wage unit, the expectation of which will cause the output from employing N men to be produced. Since Z_W covers only costs, this output (according to this train of thought, at any rate) will be produced if $Z_W = N$,² provided that entrepreneurial labour is included in N and Z_W ; this is required since the rewards of this labour, managerial salaries, are a constituent of normal costs and are therefore covered by Z . However, even in this interpretation, Hansen's diagram is erroneous, since his concept of Z is erroneous (see 1).

4. I fully agree with Professor Robertson that his statement:³ "the intercept between the 45°-line and the curve of aggregate factor costs . . . indicates . . . the profits which, if they were expected, would suffice to elicit that volume of output," is the exact formulation. When writing the passage, criticised by Professor Robertson, I had an uneasy feeling that something in the argument went wrong, but I could not identify the obscure point. I am glad that Professor Robertson has accomplished this, and I believe also that his response to the "challenge" issued by me by suddenly changing the description of the D curve to make it mean the sales proceeds which entrepreneurs will *actually* receive for any volume of output, is the correct response. There must, however, be some bridge between Keynes' "expected" and his (and my) "actual" sales proceeds. In a stationary state these concepts coincide. In an economy which has become stationary at a certain moment a certain time must elapse before equilibrium is reached. During this time of adaptation, it may happen that entrepreneurs' expectations do not appear to come true. Under the influence of this result, entrepreneurs will change their expectations from period to period until the expectations come true, that is, until equilibrium is ultimately brought about. As soon as equilibrium prevails, "expectations" involve only what entrepreneurs "can expect" in the sense pointed out by Professor Robertson.

In some cases static analysis is a less lucid method than dynamic analysis.

¹ See Keynes, *General Theory*, p. 44, top of page.

² In this reasoning, the condition that genuine profits should be maximised is neglected; as a matter of fact, profits in the proper sense (profit as a residual income) are zero. See my criticism of Dillard and Hansen on p. 17 of my article.

³ This statement refers to Fig. 7 on p. 13 of my article, i.e., case (i) (b), and the text of p. 19, middle of page. A point of historical interest is made by E. Schneider, *Einführung in die Wirtschaftstheorie*, Volume III (Tübingen, 1952), p. 100 n. Schneider states that the nowadays widely applied 45°-line method was used for the first time by the Danish author, Ivar Jantzen, in an article entitled "Lidt planøkonomisk Teori" (*A Little on the Economic Theory of Planning*), which appeared in the *Nordisk Tidsskrift for Teknisk Økonomi*, I (1935); an English translation of this article is inserted in his *Basic Principles of Business Economics and National Calculation*, being a special issue of the same *Tidsskrift*, V (1939).

My conviction is that especially in matters of analysis of the circular flow of income, dynamic analysis can much more easily be understood than static analysis. Keynes wrote on p. 78: "Thus Mr. Robertson's method¹ might be regarded as an alternative attempt to mine (being, perhaps, a first approximation to it) to make the same distinction, so vital for causal analysis, that I have tried to make by the contrast between effective demand and income." In my opinion, Robertson's method, as an expository device, is superior to that of Keynes, provided that we define the "period," involved in his method, not as the well-known Robertsonian "day" but as the income propagation period involved in dynamic multiplier analysis.² If we lump all firms together to a single giant firm³ and all households to a single giant household, and if we denote the receipts of the household by Y_H , the receipts of the firm by Y_F , spontaneous or *ex ante* consumption expenditures by C , spontaneous or *ex ante* saving by S and spontaneous or *ex ante* investment by I , it holds good within one and the same period for a closed "anarchistic" economy that

$$Y_H = C + S \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (1)$$

$$C + I = Y_F \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (2)$$

while Y_H of *this* period is defined identically equal to Y_F of the *previous* period.⁴ If we label Y_H "disposable income" and Y_F "earned income," it is obvious that these equations are just a repetition of those inserted in my first rejoinder on p. 840. During the upswing of the business cycle, when $S < I$, it holds good that $Y_H < Y_F$. During the downswing, the situation is characterised by $S > I$ and $Y_H > Y_F$. I feel that Y_F may be identified with "effective demand" (or, expected income) and Y_H with "income" (or, income actually received) in the passage quoted from Keynes, and I think that equation (2) can be regarded as the "more restricted definition of the word 'expected' (income)" as required by Professor Robertson.

The model will be in equilibrium only if $Y_H = Y_F$, that is, if

$$S = I \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (3)$$

Y_F is constant in the course of time if and when the equilibrium condition

¹ That is, the method of defining "to-day's" disposable income as being equal to "yesterday's" earned income. D. H. Robertson: "Saving and Hoarding," this *JOURNAL*, XLIII (1933), pp. 399-413, reprinted in *Essays in Monetary Theory*, pp. 56-82.

² See L. A. Metzler, "Three Lags in the Circular Flow of Income," in the volume: *Income, Employment and Public Policy: Essays in Honor of Alvin H. Hansen* (New York, 1948), pp. 11-32. The lag, mentioned by Robertson (*Essays*, p. 65) represents, I think, only one of the three indicated by Metzler. I agree with those authors who state that the length of the income propagation period is equal to the reciprocal of the income velocity of *active* money, provided that payments in the financial sphere are considered to be done by means of inactive money.

³ J. R. Hicks, *The Social Framework*, 2nd edition (Oxford, 1952), p. 113.

⁴ For an open economy, the equations become more complicated. See the Tables in F. Machlup, *International Trade and the National Income Multiplier* (Philadelphia, 1943). His "past Y " corresponds to my Y_H , his "current Y " to my Y_F . The consecutive order of my equations (1) and (2), and—within each equation—of the terms, corresponds to the inner logic of Machlup's Tables.

(3) is satisfied; we may therefore label this situation as *income equilibrium*.¹ When income equilibrium prevails, entrepreneurs do expect what they "can expect" according to Keynes' formulation (*General Theory*, p. 30).

In Keynes' book a situation of income equilibrium is always reached *immediately* after a change in the *data* has occurred, since Keynes applies the static method. Indeed, it is no great step from dynamics to statics, since in the words of Frisch² "statics can be considered as a limiting case of dynamics by stating that in the static model world all time rates of reaction are infinitely large, whereas in the dynamic model the time rates of reaction are finite magnitudes." Let us once more inspect Fig. 1 on p. 4 of my article in the March 1954 issue of this JOURNAL. Along the horizontal axis, disposable income is plotted, since consumption is a function of disposable income. The intercept between the 45°-line and the consumption function can now easily be seen to represent savings,³ as it should be. *D* denotes earned income. Point *E* is the equilibrium point, which is arrived at immediately; thus, at any moment, entrepreneurs do expect what they "can expect." In Keynes' train of thought, the last statement is always true. However, to my mind, this is seen much more easily if we do not start from statics but from dynamics, and switch over to statistics afterwards.

5. Professor Robertson's testimony that Keynes meant $S \equiv I$ must, of course, be accepted.⁴ But it follows from this—to quote a passage from Section 3 of his Comment—that the position of equilibrium whose establishment is indicated by Keynes' apparatus is an inconclusive one. Since a word other than "Keynesian" is required to denote analyses of the type as exposed, for instance, in Subsection 4 of this rejoinder, we could perhaps best label them "neo-Keynesian."

6. I believe that Keynes himself has torpedoed the relevance of his 1936 definition of "involuntary unemployment" already in 1939.⁵ I have left this problem out of consideration in my article (see p. 8 n.). As a matter of fact, I agree with the opinion of A. H. Hansen, quoted by Professor

¹ In my first rejoinder I identified income equilibrium with monetary equilibrium as defined by Koopmans. I will show in Section 2 that this identification is illegitimate. The theory of income equilibrium is essentially a dynamised version of the Keynesian theory of effective demand.

² R. Frisch: "Statikk og dynamikk i den økonomiske teori" (*Statics and Dynamics in Economic Theory*), *Nationaløkonomisk Tidsskrift*, LXVII (1929), pp. 321–79, esp. p. 326.

³ According to equation (1) of this rejoinder.

⁴ Professor Hawtrey is another witness who makes the same statement in a letter to me dated March 22, 1955. He adds to this: "Keynes would not accept my suggestion that investment should be defined to exclude undesigned increments (or decrements) in the stock of unsold goods (pp. 75–6 of *General Theory*). It is because he includes them that investment is identically equal to saving." It follows from this that Keynes' argument is entirely *ex post* and can therefore yield no conclusive equilibrium theory. To obtain such a theory, all magnitudes in the behaviour equations must be defined *ex ante*, that is, as "designed" or "spontaneous" magnitudes. If we define *ex ante* magnitudes as "either autonomous magnitudes or magnitudes in accordance with the behaviour equations concerned," induced magnitudes are also *ex ante* in so far as they are not "undesigned."

⁵ J. M. Keynes, "Relative Movements of Real Wages and Output," this JOURNAL, XLIX (1939), pp. 34–51. See on this: A. H. Hansen, *Monetary Theory and Fiscal Policy* (New York, 1949), pp. 119–20.

Robertson in a footnote on the last page of his Comment, and I do not think that neo-Keynesian economics should in this respect necessarily deviate from classical economics.

The question of the form of the labour supply curve is difficult. I supply of labour N_{FE} (see my article, p. 20, equation (6.5)) is defined as a flow of manhours per annum, and if, for the sake of simplicity, we define N_{FE} as a function of real wages $\frac{W}{p}$, the short-run form of this curve may presumably approximately be in accordance with the picture of Fig. 4 or p. 8 of my article, with this one amendment that the upward slanting part will not be linear but convex to the N -axis; it may well tend to become vertical as N grows larger. The upward-slanting part is due to the willingness of workers to work longer for higher wages (overtime). In the long run, however, the curve may be found to be sloping backward, at any rate in the vicinity of the present real wage level in the Netherlands; this is due to the fact that workers tend to shorten the weekly working time as real wages become higher.

§ 2. A NOTE ON THE CONCEPT OF MONETARY EQUILIBRIUM

On p. 25 of his *Guide to Keynes*, Hansen writes concerning Chapter 3 of Keynes' *General Theory*: "This chapter is of special significance because here, after repeated failures, an impressive attack was at long last made upon Say's law."

In fact, Say's law was already rejected three years earlier by Koopmans.¹

The first principal line of his argument runs as follows. In a non-monetary economy goods are bartered against goods. In a monetary economy barter transactions can be divided into two complementary halves: goods are offered against money, and in exchange for money goods are demanded. The monetary economy offers an opportunity which is non-existent in a non-monetary economy, viz., to proceed no farther than a half barter transaction. If one sells a good and does not spend the money received within the same period,² the second stage of the barter transaction does not come off; we can label this transaction a "pure supply" (this term was, however, not used by Koopmans). If one buys a good with money which one has not "earned" during the *same* period but which one has dishoarded or received from a bank ("creation" of money), it is the first half of the barter transaction that is non-existent; Koopmans labels this transaction a "pure demand" (a term taken from H. Neisser). If in a certain period, there is net pure supply in the entire economy, the situation in that period is deflationary; if there is net pure demand, the situation is inflationary.³ In neither case does Say's law apply. If net pure demand

¹ J. G. Koopmans, "Zum Problem des neutralen Geldes," in the volume *Beiträge zur Geldtheorie*, F. A. von Hayek ed. (Vienna, 1933), pp. 211–359.

² The money is then either "hoarded," i.e., added to the cash balance, or "annihilated," i.e., handed over to the banking system.

³ Inflation is therefore not identical with rising prices. Rising prices are only a special case of inflation.

(or supply) is nil, monetary equilibrium—or, as Koopmans put it in 1933: a situation of “neutral money”—prevails. Monetary equilibrium is the zero-point between inflation and deflation.

If spontaneous hoarding is denoted by ΔL and spontaneous creation of money by ΔM , it must hold good in any period for all individuals that *income receipts* + ΔM = *spendings out of income* + ΔL . Income receipts can be used for C and/or S ; income is spent on C and/or I . Three possible analytical definitions of monetary equilibrium are therefore: *income receipts* = *income spendings*, $S = I$, and $\Delta L = \Delta M$. An essential point in this definition is that “income receipts” and “income spendings” are considered to take place within the *same* period; a lagged relationship like that in the theory of income equilibrium, where the disposable income of *this* period is identically equal to the income earned in the *previous* period, is excluded by definition.¹ This does not mean that such a lagged relationship will never exist in reality; it means only that monetary equilibrium requires a situation where the result is exactly the same *as if* this lag did not exist. Personally, I feel that this requirement is fulfilled, *inter alia*, if income equilibrium prevails; therefore, income equilibrium always implies monetary equilibrium. On the other hand, monetary equilibrium can even exist when income equilibrium does not prevail; this is the case if and when “income receipts” and “income spendings” change simultaneously at an equal rate so that their equality is not disturbed. If this vision is true, *income equilibrium is a special case of monetary equilibrium*.

If we step over to statics, Keynesian equilibrium as determined by effective demand, too, implies monetary equilibrium.

The second principal line in Koopmans' work is to demonstrate that monetary equilibrium does *not* necessarily imply constancy of any variable or set of variables in some monetary equation of exchange of the Fisherian or Robertsonian types (*e.g.*, stock of money M , flow of money MV , general price level P , money national income Y , or real national income Y_r). Pressure of space forbids me to follow up this second line.

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¹ This is the point which I have overlooked in my first rejoinder.

INDUSTRIAL PRODUCTION AND PROFITS IN THE UNITED KINGDOM AND THE UNITED STATES

BELOW (on pp. 487, 491 and 492) four sets of graphs are presented, all of which show a fairly close correlation between the volume of output and money profits in industry in the United Kingdom and the United States. They record intriguing phenomena, for which full explanations are wanting. They pose questions to which the answers are still outstanding.

They convey the impression that in these two countries profits rise and fall with the rise and fall in volume of output in such close correspondence that from the annual change in output the level of profits earned might be predicted long before they are published—subject, of course, to the errors inherent in data conforming to a trend, but diverging from it in individual years. Money profits appear hardly to be affected, or at least not directly, by changes in monetary policy, prices, exchange rates, wages, social-security payments, rates of interest, taxation, government interference at home or abroad and many other ghosts which have been haunting entrepreneurs. Changes in the volume of output and almost nothing else would appear to be the determinant of changes in profits, even in this turbulent twentieth century. The relationship between the volume of output and money profits is not quite as plain and simple as that, as is indicated, *inter alia*, by the occasional break of trend, of which more later on. Moreover, output fluctuations themselves may have responded to the changes in the economic climate. Interdependence is a normal feature of economic life.

I

In the first two sets of graphs (marked A and B) the correlation is shown for several successive periods, namely four periods in the case of the United Kingdom and three periods in the case of the United States. The “multiplier,” *i.e.*, the parameter in the regression equation, is calculated on the basis of both output and profits being expressed as percentages of levels attained at about the middle of each period. These bases have been chosen for being near the middle of the period as well as with an eye to their output or profit levels being close to the average tendency as represented by the lines of regression. The two other sets of graphs (marked C and D) use the same data of output and profits but in their form as percentages of one single year, namely, 1935, which happens to be not far from the centre of the period 1919–53.

Before producing the graphs and commenting on them a short explanation may be helpful of what they represent. The x -axis represents the volume of industrial production as expressed through indices of production. The y -axis represents money profits earned in the same periods in which

output was produced, inasmuch as they are known from published data and also expressed through indices. In the United Kingdom samples the "profits" are those available to shareholders, preferred and ordinary, subject to income tax, *i.e.*, are calculated after depreciation provisions, debenture charges, taxation borne by the companies which includes Excess Profits Tax in 1946 and Excess Profits Levy in 1952 and 1953, National Defence Contribution and Profits Tax, but not Income Tax, whether on distributed or on undistributed income. In the United States samples the "profits" are also those available to shareholders, preferred and common, subject to shareholders' income tax, *i.e.*, are calculated after depreciation provisions, in a few cases also after provision for depletion and amortisation, debenture interest and after all company-borne taxation, which in this case represents mainly Corporation Income Tax.

It was not possible to separate the U.S. Excess Profits Tax from the Corporation Income Tax for the 3 years 1951-53 of this impost. The after-E.P.T. data of these 3 years appear, however, so strongly affected that they have been omitted from the calculation of the correlation, and are shown in the graphs to the right of the regression line. As regards the U.K. data, it was not necessary to exclude the results of the two years 1952/53 burdened with Excess Profits Levy, the correlation continuing to be very close.

War years have been omitted. A more detailed account of the indices of output and profits used and of their shortcomings is given in the Appendix.

Several features of the graphs spring to the eye, namely:

- The correlation is a linear one.
- It is close in each period, the coefficients of correlation being as follows—

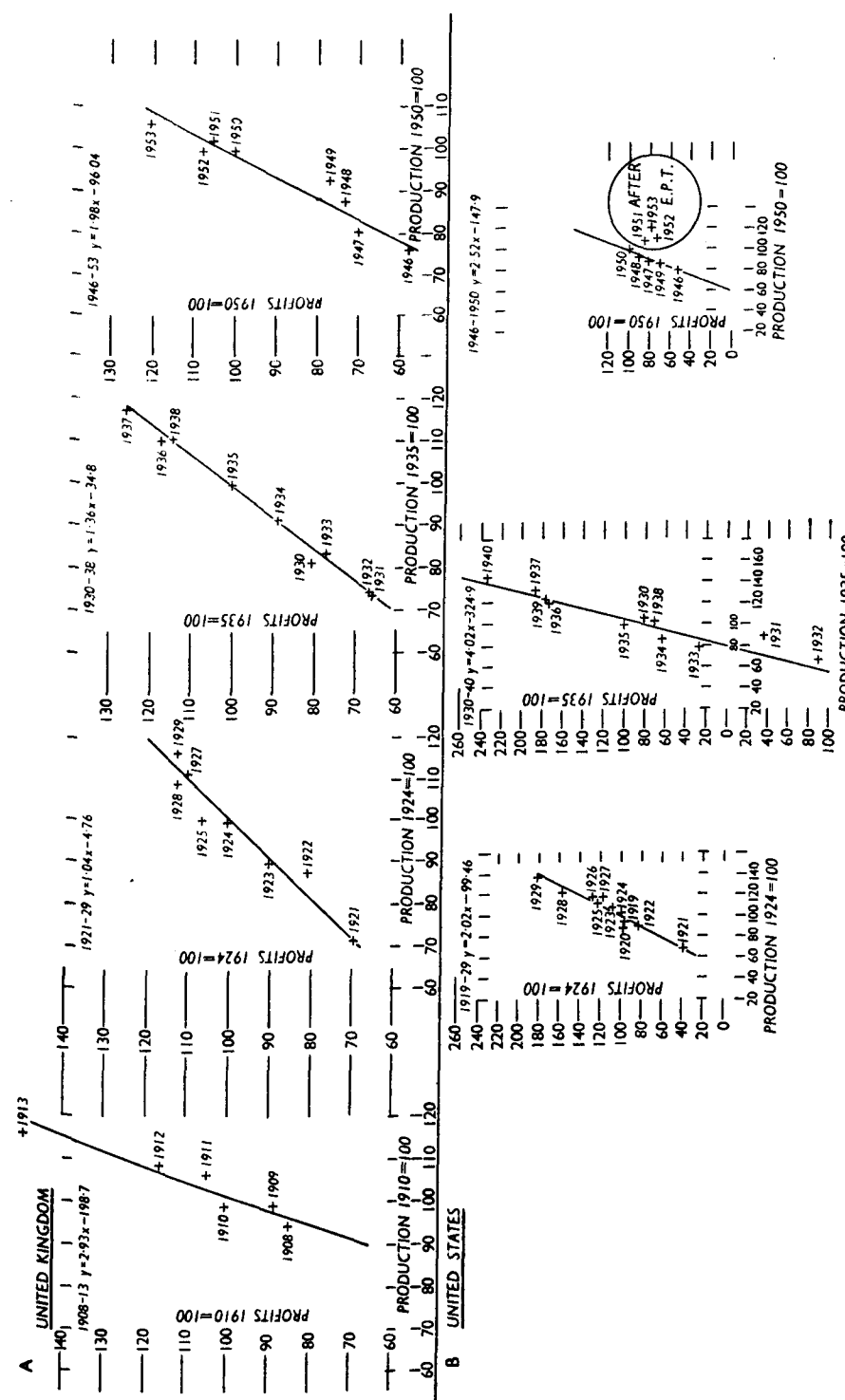
United Kingdom.		United States.	
1908-13	$r = 0.913$	—	—
1921-29 ¹	$r = 0.977$	1919-29	$r = 0.962$
1930-38	$r = 0.979$	1930-40	$r = 0.951$
1946-53	$r = 0.956$	1946-50	$r = 0.972$

- The rate of change of profits, expressed as a percentage of profit in the base period, associated with each 1% change of output in the base period may be read from the following equations—

United Kingdom.		United States.	
1908-13 (1910 = 100)	$y = 2.93x - 198.7$	—	—
1921-29 ¹ (1924 = 100)	$y = 1.04x - 4.8$	1919-29 (1924 = 100)	$y = 2.02x - 99.4$
1930-38 (1935 = 100)	$y = 1.36x - 34.8$	1930-40 (1935 = 100)	$y = 4.02x - 324.9$
1946-53 (1950 = 100)	$y = 1.98x - 96.0$	1946-50 (1950 = 100)	$y = 2.52x - 147.9$

The rates of change of profits associated with each 1% of change in output (reflected in the parameters of the regression equations above) have successively increased in each post-1913 period in the United Kingdom, but not so in the United States. On the other hand, where comparable data

¹ In the case of the United Kingdom series, the year 1920 has been omitted from the series of the 1920s as belonging to a preceding series probably comprising 1914-20. And so has the year 1926 because of the distorting influence of the General Strike and the long-drawn-out strike in the coal-mines.



exist the rate of change has always been larger in the United States than in the United Kingdom, and was particularly large in the United States in the 1930s. So far in the post-Second World War period the difference in the amplitudes of profit fluctuations between the two countries has been less pronounced.

Several explanations can be put forward for the reduction in that period of the correlated rates of change of profits in the United States data. One is the very large increase in the rates of company-borne taxation. That increase in tax levels, coupled with changes in the tax rates so as to raise them when profits promised to rise steeply and to reduce them when profits fell or their rise slowed down, tends to limit the fluctuations of profits as published after such taxation, as indeed that tax policy is designed to do. The other explanation is that depreciation provisions may have been lower in terms of replacement costs than in preceding periods or at least in the 1930s and helped to reduce one major component of fixed costs. A third explanation may be found in the fact that throughout the 1946-53 period output was at a higher ratio to capacity than, say, in the 1930s, so that even if depreciation provisions had been made at replacement costs the influence of that component of fixed costs would have been reduced as compared with the 1930s. While not affecting the closeness of the correlation between output and profits, these three factors are apt to affect the parameter, *i.e.*, the amplitude of the profit fluctuations. On the other hand, there may be other factors tending to increase these amplitudes from period to period. One such factor may be an increase in mechanisation and in the stability of wages and salaries, including pension provisions and others tending to increase the ratio of fixed to total costs. That ratio is a composite of many elements, of which those dealt with above are only a selection.

The question is apposite why such explanations as put forward if applied to the United Kingdom data would not have us expect also a decline in the parameter in 1946-53, whereas there has been a considerable increase. The answer is: first, the changes in company-borne taxation, which in the United Kingdom does not include income tax, have been by no means as large as in the United States; second, while the effect of reduced depreciation provisions, if re-calculated in terms of replacements, costs and the increase in the average ratio of output to capacity, may have tended to reduce the fixed-costs ratio as much as in the United States, the other factors tending to increase the fixed-costs ratio as, *e.g.*, increase in rate of mechanisation, link between wage changes and price changes and others may have been so much stronger in the United Kingdom than in the United States if the last period is compared with previous periods. Those factors may have been strong enough to raise the total fixed-costs ratio and with it the amplitude of profit fluctuations, although the total equipment supporting a unit of output might still be much smaller in the United Kingdom than in the United States.

The amplitudes of profit fluctuations in the United Kingdom appear to have been very large in the years before the First World War and higher

than in any later period, but those early data may be less accurate than those of later periods. Apart therefrom company-borne taxation and its changes have been smaller.

(d) Because the correlation is linear, the rate of change in profits associated with a 1% change in output, each calculated as from the levels of each successive year instead of from those of a basic period, *i.e.*, the marginal rate of change of profit, is not stable in any one period. On the contrary, as output rises the marginal rate of change will get smaller and smaller, and eventually approach 1%—provided the trend continued unbroken long enough. For instance, if output and profits and their changes are expressed as percentages of 1950 there is a tendency for profits in 1953 to change by about 1.8% in the United Kingdom and about 2.0% in the United States for each 1% of change in output. In 1953 output in either country was larger than in the base period 1950. If output were to rise further, say to 150% of 1950, there would be a tendency for profits to change by slightly less than 1.5% in the United Kingdom and slightly more than 1.6% in the United States for each 1% rise of output over output in the preceding year.¹

However, as will be seen in the two sets of graphs marked C and D (on pp. 491 and 492), the trends do not continue unbroken for more than one major business cycle.

(e) The correlation being linear makes it easy to read off the graphs the break-even levels in each period, that is to say, the levels of output at which profits tend to become zero and beyond which losses will tend to appear if output continues to fall.

II

In the foregoing graphs A and B the whole of the period from 1908 to 1953 (war years being excluded) has been broken up into four separate periods. There were two reasons for doing so, as follows:

(a) Because the correlation between output and profits is linear rather than curvilinear, a stable rate of change of profits emerges, if the change is related to, and expressed as a percentage of, one base year. Such rates of change are easier to visualise, if they are expressed as a percentage of levels not far distant from the individual years surveyed. While in the post-Second World War period there has been a tendency for rates of profits in the United Kingdom to change by 2% and in the United States by 2½% for each 1% change of output, both these rates of change being a percentage of the respective levels of profits and of output in 1950, the same correlation becomes 3.4% change of profits for 1% change of output in the case of the U.K. and 8.1% in the case of the U.S., if profits and output are expressed as a percentage of their 1935 levels, which were so much lower. The latter, though correct, is somewhat confusing when we deal with 1954, or with 1924 for that matter.

¹ $\frac{\Delta y}{y(n)} = \frac{y(n) + c}{y(n)}$; *c* being the constant in the respective regression equations.

(b) Moreover, the more distant the period which serves as a base of the indices of output and profits, the less accurate the indices, though the correlation may still be close. To some extent this shortcoming has been overcome by linking successive indices based on changed compositions of the samples included in the indices. Yet, inaccuracy increases as time goes on.

Nevertheless, because the correlation between output and profits is so close, something is to be gained from examining it over the whole period, that is to say by reviewing output and profit data expressed as percentages on one base year for the whole period. With this end in view the following set of graphs, marked C and D, is presented. Here output and profits of every year are expressed as percentages of their respective levels in 1935.

From the Graphs C and D several features are easily picked out, namely:

(a) Correlations are very close and linear.

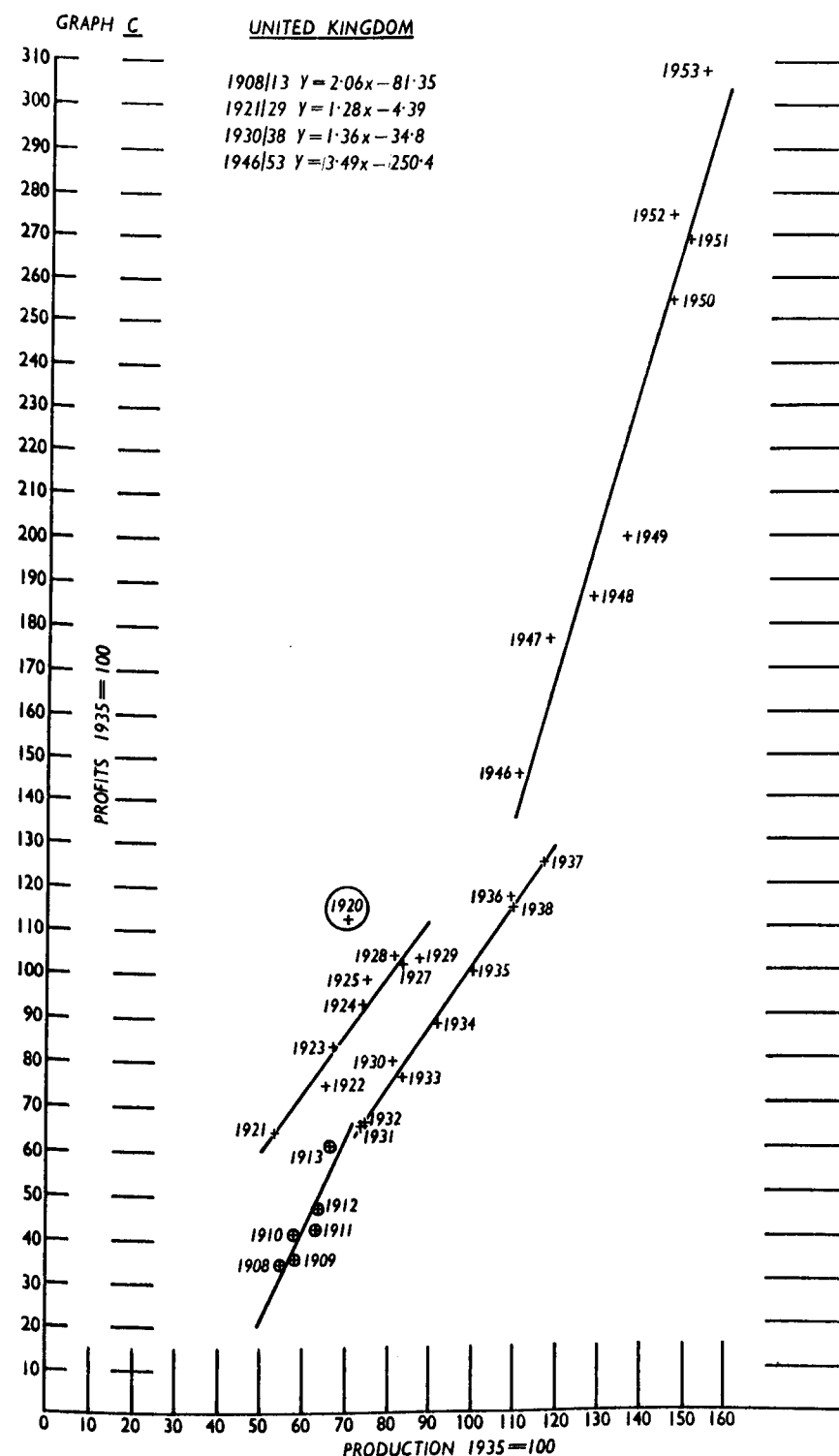
(b) The trend does not continue unbroken over the whole period but, on the contrary, distinctly different trends emerge. There is a break of trend between the period before the First World War and the 1920s, easily understood in view of the catastrophe which separates the two periods. So is the break of trend between the 1930s and the period after the Second World War. It may be remembered that war involved the United Kingdom in 1939, but the United States only in 1941. However, there is also a distinct break of trend from the 1920s to the 1930s. The years since 1946 are as yet part of one unbroken economic period.

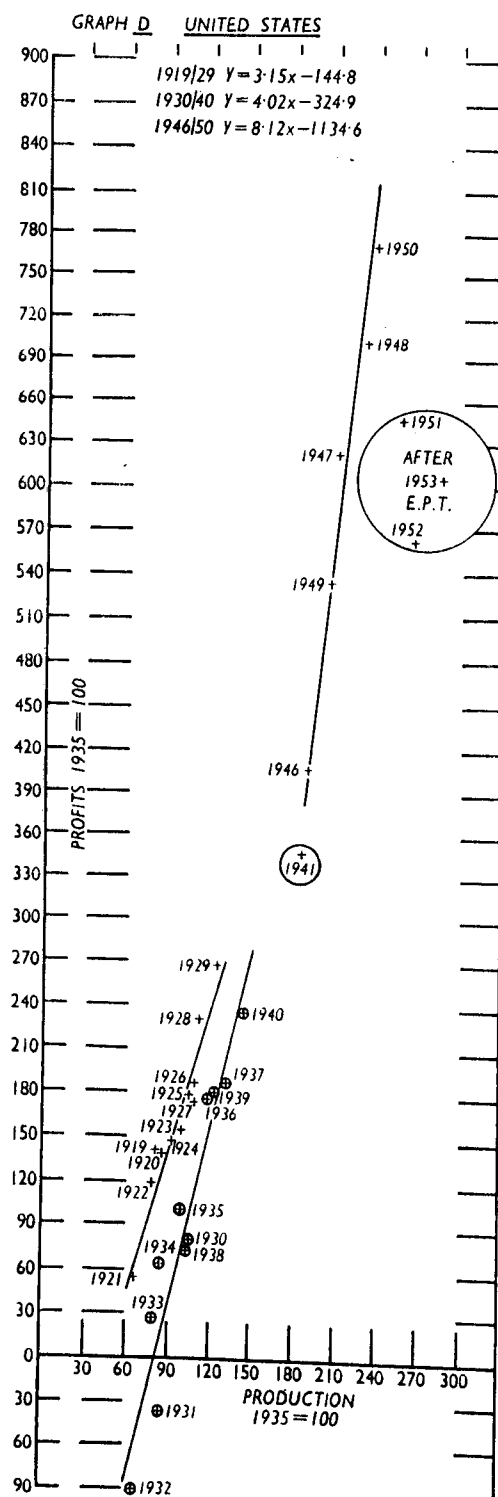
The division of the whole into four separate periods as presented in Graphs A and B has been made in accordance with these breaks in trend. It so happens that this division corresponds to the division into major business cycles.

As regards the break of trend which separates the 1920s from the 1908-13 period and the 1946-53 period from the 1930s, the explanation can be put forward that the decade following both the First and the Second World Wars was distinguished from the decade before either war by a much higher price level, so that average profit margins had been also elevated to a higher level, illustrated in a shift of the regression line, of which more in the next paragraph (c). Only omission of the war years may have made the change appear as an abrupt break. Such an explanation may form only part of the whole story. It would not explain a similar abrupt break between the 1920s and the 1930s. True, the price level changed, but that change did not take place in the one year 1930, whereas the average profit margins subject to output fluctuations appear to have changed in that one single year for the whole decade. Obviously, these breaks in trend want further examination.

(c) From period to period the regression line shifts distinctly, sometimes to the right, sometimes to the left. In the United Kingdom it shifts to the left from the pre-First World War period to the 1920s,¹ back to the right during the 1930s and again to the left in the years following the Second

¹ As regards the year 1920 see the footnote to p. 486.





World War. In the comparable periods of the United States similar shifts will be observed.

These shifts are significant: a shift to the left indicates an increase in the average profit margins, *i.e.*, an increase of money profits per volume unit of output, and a shift to the right a decline in average profit margins. The shift of the regression line to the right from the 1920s to the 1930s means that in the 1930s profits of the same magnitude as in the 1920s were associated with, or could be derived only from, a higher volume of output. That much can be easily read from the graphs. Surveying the whole period, but keeping in mind the reservations made in the Appendix as to the accuracy of the statistics, one will probably conclude that the average profit margins rose considerably between the pre-First World War years and the 1920s and stayed high throughout that decade. With the onset of the depression of the 1930s they declined and stayed lower throughout that latter decade. Indeed, in the United Kingdom they appear to have fallen below the levels in the 1907-13 period, but data for the early period may not be accurate enough to say so positively. After the Second World War profit margins are up again and have remained at that higher level so far.

Such changes in the profit margins are as characteristic for the United Kingdom as for the United States. They are not surprising. On the contrary, they confirm what one had expected from other records of the economic history of those periods, though the abruptness of the breaks is puzzling.

(d) With every successive period after the First World War the regression lines become steeper. The United Kingdom line for 1908-13 appears to contradict this tendency, but as stated the data of this period may be less accurate than later data. If instead of being expressed as percentages of 1935, the magnitudes are expressed as percentages of mid-decade levels, a tendency of the regression lines to become successively steeper is not proven as yet, as has been commented upon on p. 489 when referring to Graphs A and B.

Their becoming steeper from period to period if magnitudes are expressed in terms of one base year may mean no more than that production capacities and fixed costs increase as time goes on and that the amplitudes of fluctuations in profits cannot fail to increase too, if output and profits are expressed as percentages of one single year. It is easily understood that in the 1950s each 1% of output of the 1935 level is supported by more equipment than was so supported in the 1930s. Consequently, fixed costs per 1% of the 1935 level of output are higher in the 1950s than they were in earlier periods, irrespective of prices having risen all round. As a further consequence, money profits, apart from being absolutely higher than in 1935 and based on higher profit margins, will if expressed as a percentage of 1935 profits fluctuate with greater amplitudes than in earlier periods. The same is true of the 1930s as compared with the 1920s, in spite of the fall in prices. Fixed costs continued to rise. So far, therefore, the rise in the steepness of the regression lines would be of no significance.

However, it may also mean that the fixed-costs ratio to total costs has

been rising from period to period, as has been put forward as an explanation when commenting upon Graphs A and B.

Whatever the explanation, where the amplitudes of correlated change are large profits tend to rise to comparatively high levels, if and when industry is working close to capacity, as in recent years.

(e) Where the lines are steeper, the break-even levels, *i.e.*, the point at which the regression line cuts the *x*-axis, will be found more to the right, that is to say break-even levels are at higher percentages of the 1935 output. This must follow from the fact just commented upon that equipment, and consequently fixed costs, increase as time goes on. The break-even levels are, of course, the same in any year and only expressed in different percentages if the base levels are different. In the United Kingdom the break-even levels of the 1946–53 period tend to be at 48% of the 1950 output, as may be read from Graph A, which is the same as 70% of the 1935 output, as may be read from Graph C and corresponds to the output of 1950 being 146% of the output in 1935.

However, the increase of equipment and the consequent increase in fixed costs are not the only factors having a bearing on the break-even levels. The changes in average profit margins are another factor. The higher the profit margins, the lower the break-even levels, and vice versa, other things remaining equal. That much would follow from the arithmetic, and that much can be easily read from the graphs. When the line of regression shifts to the left, indicating an increase in the average profit margin, the break-even level shifts to the left too, indicating a lower level to which output may fall before profits disappear.

Subject to certain provisos presently to be stated some conclusions in respect of break-even levels will be ventured. They are very tentative indeed. The provisos are:

(i) British profits statistics are not very accurate, though their changes may be accurately enough recorded in the indices to disclose the correlation with output changes. They are probably far less accurate than American profits statistics.

(ii) The trend will continue unbroken, if and when output declines to the indicated break-even levels. As a matter of fact, in the United States the trend did not break when in 1931 and 1932 output fell below break-even levels, but there the break-even levels were not as low as are indicated for the United Kingdom.

Subject to these provisos, it appears that in the United Kingdom break-even levels have been comfortably low for a very long time, at least ever since the First World War. They have always been considerably lower than even the lowest annual output recorded in each period. They never came nearer than to 59% of the lowest output in any period, as, *e.g.*, in 1946. In other words, output could have fallen more than another third in any depression before profits would have disappeared. Output in the year

1931, the lowest output in the decade of the 1930s, was still about three times as high as the break-even level of that period. From this it may be concluded very tentatively that British profit margins are fairly high or fixed costs fairly moderate or, of course, that both factors have combined to keep break-even levels low. If, for instance, a very high profit margin combined with a relatively low fixed-costs ratio, the latter possibly due to lack of growth and modernisation, were the explanation of the very low break-even level in the 1920s, it would disclose as potent a cause of the difficulties of that decade as deflation, wage struggles or what else has been held responsible. At any rate, in no period have losses for the whole of the samples been recorded. Indeed, in no year of the 1920s or of the 1930s were profits of the whole of the samples less than about two-thirds of 1935 profits.

This article does no more than record, and comment on, certain phenomena which, as far as we are aware, have as yet attracted little, if any, attention. It poses questions without supplying the answers. It intends to stimulate discussion rather than to explain the phenomena. In particular, it has no answer to the phenomenon—assuming the data to be sufficiently accurate—of the correlation being linear and being fairly close in each period, in spite of wide changes in various important economic conditions.

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APPENDIX

United Kingdom Data

(a) The production series is a chain of indices of industrial production which are fairly crude in the early periods, but are getting gradually more refined and probably more exact in the later periods. The 1907–13 data are taken from Dr. Walter Hoffmann's calculations of an index of industrial production published in *Weltwirtschaftliches Archiv*, 1934, p. 383; the 1920–30 data correspond to the index of production of the London and Cambridge Service, adjusted, however, by excluding agricultural production; the 1930–33 data are an average of this adjusted London and Cambridge Service index and the Index of Industrial Production of the Board of Trade, and the 1933–35 data are those by Carter, Reddaway and Stone in their publication *The Measurement of Production Movements* (Cambridge University Press, 1948). These various indices are linked together by bench-mark indices of 1907, 1924, 1930 and 1933 taken from the afore-mentioned publication on *The Measurement of Production Movements*, intermediate data of the various indices being roughly adjusted so as to fit in with these bench-mark levels. The 1935–38 data, linked up at 1935 with the previous index, are those of the Central Statistical Office averaging the latter's two series of the index, one based on 1935 weights and the other based on 1946 weights. These two latter indices have been published in *The Interim Index of Industrial Production*, No. 1, 1949. Finally, the 1946–53 data are also those of the Central Statistical Office, based on 1948 weights, and this index, having been extended back to 1938, provided a link with the preceding index at 1938.

(b) The series of profits indices is even less accurate. They are taken from *The Economist*, which has been publishing data of company profits and indices built on them for a long time. The composition and the limitations of the latter have been extensively described by Hargreaves Parkinson in *The Economist* of December 17, 1938, dealing with data to 1937. *The Economist* sample starts with 775 companies in 1908, rising to 2,279 companies by 1937 and to 2,756 in 1953, all of them having their shares quoted on the London Stock Exchange. They represent the bulk of the larger companies in this country, and include some companies operating overseas. Up to 1937 about two-thirds of the companies were engaged in domestic industry, the rest in communications, trade and mining, partly overseas. By 1953 the proportion engaged in domestic industry has further increased. The bulk of the companies are identical year after year, but a few differ from year to year, a shortcoming largely repaired by annually linking the indices of two successive years. The indices of 1907 to 1947 used here are those of *The Economist* chain index of industrial profits, namely those to 1927, as published in Hargreaves Parkinson's article in *The Economist* of December 17, 1938, those of 1928 and 1929 as published in *The Economist* of February 18, 1939, those of 1930-47 in successive issues of *The Economist* of March 15, 1941, March 14, 1942, March 13, 1943, March 18, 1944, March 23, 1945 and *The Economist* supplement "Records and Statistics" of February 7, 1948. 1948-53 is an index prepared by Union Corporation, Ltd., London, linked to *The Economist* indices and based on profits data as published at regular intervals in *The Economist*. The Union Corporation index has not been published elsewhere. Whereas *The Economist* indices count the data published in the twelve months' period from mid-year to mid-year as earned in the calendar year in which this twelve months' period starts, the Union Corporation index counts all profits published in one calendar year as having been earned in the preceding calendar year.

All profits are after depreciation, debenture interest and taxes borne by the company, but before income tax, and represent profits available to Preferred and Ordinary shareholders subject to income tax at the standard rate. In the years prior to 1936 some of the profits are after income tax—sorting out has not been possible in every case. Taxes borne by the company include: Corporation Tax (5% 1921 and 1922, 2½% 1923, nil thereafter); National Defence Contribution (5% 1937 and 1938); Profits Tax (25% 1946-48, 30% 1949 and 1950, 50% 1951, 22½% 1952 and 1953 (equivalent to about 45% under the 1951 method of calculation)); Excess Profits Levy (30% in 1952 and 1953, but differing in impact from company to company). According to *The Economist*, 1921 profits may have been overstated, inasmuch as company-borne Excess Profits Tax charged in previous years was refunded in 1921.

The year 1926 has been omitted as it is thought that the General Strike and the long-drawn-out strike of the coal-miners in that year has rendered any index too inaccurate.

United States Data

(a) The index of production is the Federal Reserve Board's index of industrial production, which includes manufactures and minerals. It is taken from the comprehensive description in the December 1953 issue of the *Federal Reserve Bulletin* and later issues to April 1954, and incorporates all revisions made by the

Federal Reserve Board to their original indices. It is regarded as a fairly accurate measure of growth and fluctuations of industrial output in the United States.

(b) The index of profits is a chain of three indices. The period 1929-53 is represented by an index of the profits of the three groups of manufacturing industries, mining and contract construction, based on data of corporate income taken from the *National Income*, 1954 Edition, Supplement II, of the Department of Commerce Survey of Current Business. These data are after provisions for depreciation (in some cases also after provisions for amortisation and depletion) and Debenture interest and they are also after company-borne taxes, such as Federal Income Tax, Federal Excess Profits Tax and various State taxes.

The period 1927-28 is represented by an index of the Standard Statistics Company based on 400 companies engaged in industry, trade and mining, and excludes railroads and public utilities. These 400 companies had a profit of about \$2 billion in 1927 and about \$3 billion in 1929 and a total invested capital of about \$29 billion for the average of the years 1928-30. The period 1920-26 is represented by another index of Standard Statistics based on sixty-eight companies engaged in industry, trade or mining, also excluding railroads and public utilities. They had a total invested capital of about \$11 billion for the average 1928-30.

The indices of the sixty-eight companies' sample and of the 400 companies' sample are linked together by taking the average 1928-30 of both as 100 and then linked to the 1929-53 index based on the Department of Commerce data by taking the 1929 magnitudes of the latter and of the 400 companies' sample of Standard Statistics as 100.

While the indices of 1929-53 are based on fairly comprehensive data which include newly incorporated businesses, the two indices representing the 1920s are based on samples of identical companies and presuppose that the companies included in the samples maintained throughout the period their share in total profits.

This index, like any other based on samples of identical companies, may understate the growth of profits to some extent. It takes no account of profit-earning companies added to the total of companies in the country. This deficiency may or may not be offset by the expansion of profits following on mergers of companies inside with those outside the sample. Though less accurate than the index covering 1929-53, it is regarded as sufficiently representative of the changes in profits earned by industrial companies in the 1920s.

REVIEWS

The Process of Economic Growth. By W. W. ROSTOW. (London: Oxford University Press, 1953. Pp. vi + 282. 25s.)

PROFESSOR ROSTOW describes his work as "an historian's book about economic theory." This arouses our interest at once, for historians are rarely venturesome, especially in this fashionable field of "growth economics," where the theory so soon becomes especially difficult. The economic growth with which Professor Rostow is concerned is that of the capitalist economies, including primary areas, over the past century and a half. His main object is to present a particular theoretical framework within which future research should be organised. It is, as he says, "about theory"; a programme for action more than a report on work done.

This schema for the study of economic growth can usefully be divided into two sections, partly because the two aspects seem fairly distinct and partly because many readers may find one a more useful tool of analysis than the other. In his first theoretical section he sets up a simple model of growth and attempts to justify it. This is clearly the core of the book so far as Professor Rostow is concerned, yet it is likely to attract the least support. Some will be alienated by the particular form of the model and others by the influences he suggests are dominant. The second theoretical section offers a system for analysing the factors which determine the volume of output at any moment. The influences are divided according to the rapidity with which they vary. He advocates four groups: very long term influences, long term, medium run and short run, and he discusses the likely pattern of some of them.

In his first section on the model of growth, Professor Rostow sets out to study the causes of changes in the total volume of goods and services produced by one country; that is to say what is it that determines the amount, the productivity and the degree of utilisation of labour and capital in an economy. In this long-period analysis the constants which make the short period so manageable (capital stock, labour force, technology, natural resources, social attitudes and institutions) shift and turn. Indeed, it is a fair starting point to suppose that these short-run constants are the most important long-run variables. What is it, then, which makes them alter? Professor Rostow's answer, reasonably enough, is that a whole complex of forces and motives are operative, many of them outside the discipline of economics and more properly the concern of the sociologist, the anthropologist, the social psychologist, or the geographer. So far so good, but with his next step he begins to part company with some readers. He maintains that there is no reason to suppose that the scale of economic output is in the long run mainly determined by economic factors. As we might expect from this, Professor Rostow is highly critical of explanations of growth which are

largely economic, and he spends some time attacking the Marxists, the classical economists and the secular stagnationists. He also has interesting sections on the Harrod-Hicks-Mrs. Robinson type of modern growth theories, which he criticises as being concerned only with the problem of adjustment to an increasing supply of factors and not with what causes the quantity and quality of factors to change.

Although Professor Rostow will not allow economic motivation and opportunity to play the main roles in his story of long-term growth (the sociologist or the psychologist must supply those characters) he maintains strongly that economic theory has an important part to play in this co-operative historical analysis. The task of economic theory is to provide the framework within which all the behavioural sciences can make their contribution. Specifically, he believes that in the study of short-term fluctuations theoretical economics has developed some powerful analytical tools which can be used in long-period work. In particular, he values the concept of the propensity to consume, a precisely defined, measurable relationship. The economic theorist, then, sets up a model of economic growth using "propensity" relationships. The econometrician tries to measure these propensities for past periods. The other behavioural sciences try to describe why they altered when they did.

So Professor Rostow offers us a model of growth utilising six such propensities. (A propensity is defined as expressing how a society will respond at a given moment to variations in income and/or profit possibilities.) Output depends first on the propensity to develop fundamental science (physical and social); secondly, on the propensity to apply science to economic ends; thirdly, on the propensity to accept innovations; fourthly, on the propensity to seek material advance; fifthly, on the propensity to consume; sixthly, on the propensity to have children.

The first reaction to this list is the intuitive feeling that sociologists and psychologists will find it difficult to fit their explanation of men's actions into this economic strait jacket. The second is to wonder whether they need try, for if Professor Rostow is right and economic motives are often not a major factor, is this model very useful? To illustrate—he says, "It might be the case that the scale on which fundamental science was pursued was determined wholly by tradition, love of truth, etc., and that the supply curve of resources for this purpose was inelastic with respect to the income yield believed to attach to this form of activity" (p. 31). Perhaps so; but in that case an approach to the subject of science via the degree of reaction to income and profit is unhelpful. It gives us a relationship in which the main determinants (in this illustration tradition and love of truth) are exogenous and without even a known probability distribution to help us out. Put more generally, if non-economic attitudes and goals are more important than income plus profit, then the main determinants of growth lie outside the model and are unexplained by it. But the weaknesses of this model may be even more fundamental than this. Suppose for a moment that we assume that there are no non-economic influences, that the propensities depend solely

on income and profit. We still have a model in which output depends on two variables, income and profit, which are both highly correlated with output. It hardly seems likely that such an approach to economic growth could be the most productive.

The next reflection is on the form of the relationships. Professor Rostow is most anxious that his propensities should be operational: "Although difficulties of definition may attach to certain of these conceptions and practical difficulties in measurement would exist for certain of them, these are reasonably unequivocal and conceptually measurable aspects of a society's behaviour for any given period of time" (p. 22). Now to say the least of it, that seems optimistic. Probably the easiest to measure would be our old friend the propensity to consume. Yet econometricians have found this a formidable task, even for the United States, where statistics for the past century and a half are so much better than elsewhere. The old difficulty of distinguishing between a movement along a curve and a shift of the propensity itself has proved almost insurmountable. Picture an econometrician trying to measure, say, the "propensity to seek material advance" in France in 1830 compared with 1913. In our search for explanations of economic expansion over the past century and a half we must work with the statistics which have survived, poor though they are. Certainly they seem inadequate for the calculation, however roughly, of most of Professor Rostow's propensities.

The fourth reflection which this list of propensities evokes is surprise that Professor Rostow should urge the setting up of a model of growth in terms of aggregative relationships. Previously, and indeed in other sections of the present work, he had emphasised that aggregates disguise differences between sectors which are vital to the process of expansion. For example, sectoral peculiarities such as the land-tenure system, the attitude of the peasants, a commercial middle class with a small free pool of capital, the aims and organisation of the State power; these are most important determinants of growth which could be lost in an approach such as this, which describes only the average conditions in the economy.

Perhaps too much should not be made of his suggestion for a model of economic growth in terms of six measurable propensities. Although in this book he devotes a great deal of time to them, he admits that they are offered as a tool of analysis which has helped him, but which may not appeal to everybody. But before leaving them it is interesting to notice that one of the roles he gives these propensities is to help to keep the economy on a fairly steady trend despite booms and slumps. He rejects entirely economic explanations of the trend, such as autonomous investment, and emphasises his belief that the real reason for long-term stability is that these propensities change only slowly. This is so largely because men's ideas, attitudes and goals are acquired early in life and change little, despite temporary changes in economic fortune. Men cling to their ideas particularly because they "serve to bring order to a fundamentally unstable and treacherous world" (p. 41).

Those who have followed Professor Rostow's earlier work, especially his *British Economy of the Nineteenth Century*, may feel regrets that he has shifted from largely economic explanations of economic history, to the broader, more nebulous, sociological interpretation advocated in this model. However, this present volume has many ideas outside the six propensities which are interesting. As, for instance, when he outlines his proposals for the study of "take-off" in economic growth, "an increase in the volume and productivity of investment in a society, such that a sustained increase in *per capita* real income results" (p. 104). This is a generalised version of the "industrial revolution" concept, and he suggests, as a first approach, dividing "take-off" into those cases where a shift in the propensities seems to have been the main cause—as in Japan—and those which were triggered by new potentialities for profit suddenly appearing—as in Australia and New Zealand. With the attempts now being made all over the world to persuade backward economies to "take-off," it is safe to predict that economic historians will be studying this subject a great deal in the future; going back over this stage in the history of the more advanced countries to see what further lessons can be learned.

We turn now to the second theoretical section of this book, in which Professor Rostow gives his schema for studying the factors influencing economic growth at any given time. He distinguishes, as I have said, four sets of forces, the interaction of which determines current events; the very long run, long run, medium term and short run. The last is the ordinary trade cycle, whose length used to be taken as about nine years. At first sight this approach may seem similar to Schumpeter's theory of the interplay of Kondratieff, Juglar and Kitchen cycles, but in fact there is little in common.

Professor Rostow's very long-term influences are climate, geography, soil conditions and the like, which he suggests change so slowly that they can almost be regarded as given data. (At once one wants to ask if transport improvements do not effectively alter geography quite rapidly; and if major irrigation projects do not affect soil conditions.) His long-term influences are those which alter quite slowly, so that it may take up to a century or more for a change fully to be worked out: for example, the quality of the labour force, political attitudes, the exhaustion of mineral resources, institutional changes, such as the growth of a trade-union movement, and so on. Here is where the slow movement of the six propensities mostly fits into the schema. But Professor Rostow only sketches in very lightly his theory of long-period fluctuations and we are left with many questions unanswered. Certainly he is not a stagnationist, either of the Hansen or the Schumpeter variety; nor does he suggest long-period "stages" in the growth process; free competition, welfare capitalism, imperialism, for example. Perhaps the position can best be put by saying that he recognises that long-term changes will be operating without having yet formed a view as to the likely pattern.

It is in his discussion of medium- and short-term influences that Professor Rostow is most precise and stimulating, perhaps because he is presenting an analysis based on the detailed researches of his *British Economy of the Nineteenth*

Century, though generalised to apply to economic expansion everywhere. On medium trends he says:

"The course of modern economic history has been marked not only by cyclical fluctuations but also by protracted periods covering several cycles in real income and employment in which the world economy exhibited trend movements in relative intersectoral prices, intersectoral income distribution, the prevailing character of, and yield from, new investment, and the trend of general prices. It is believed that these trend periods are in large part to be accounted for by prolonged over-shooting in particular sectors and by the reaction from such excessive distortions in sectoral patterns of growth. It is in turn believed that wars and "lumpy" forms of (mainly agricultural and raw material) investment, with very long periods of gestation have been at the basis of such distortion" (p. 126).

The periods of rising general prices, rising relative agricultural prices, high profits and a comparatively poor share for the industrial worker were 1793-1815, 1848-73, 1896-1920 and 1935 to the present. These periods were caused by major wars and the development of primary areas. The reverse trends tended to prevail 1815-48, 1873-96 and 1920-35. These were periods of peace and a heavier concentration on industrial investment. It is to be emphasised that these periods are not marked by different rates of growth in the world economy nor by different proportions of income invested; the accent is on the direction and type of investment outlays.

This theory of medium-term fluctuations is clearly quite different from Schumpeter's and Kondratieff's, though all are trying to account for the same "fifty-year cycle" of the past century and a half. First, as Professor Rostow points out, unlike Schumpeter's, it does not point to innovations in industrial countries as causing the swings in the price level. He would argue that the upward trend of prices after 1793 was caused by the expenditures of the Napoleonic wars and not by investment in the cotton industry, which was of quite minor weight. Similarly, the expansion of the automobile, chemical and electrical industries is inadequate to explain the rise in world prices after 1896. The major factor was the huge investments in world primary areas. Even railway investment, though more important quantitatively, was not sufficiently specific to the period following 1848 to be responsible for the upturn. Secondly, it is assumed in Schumpeter's analysis that this "bunching" of major innovations will always yield a Kondratieff cycle of roughly fifty years. There is no such necessity in Professor Rostow's theory of medium-trend periods. The duration of the low-price period can vary with the extent to which primary-area capacity overshoots world demand, with the rate at which world demand for primaries continues to expand and to overtake primary capacity and with the onset of a major war or a world armaments race.

The question of the onset of wars raises the problem of the place of exogenous factors in this medium-term analysis. In this book, as in his previous

work, Professor Rostow, in contrast to Kondratieff, takes wars as an exogenous influence, though a vital one. It is on non-economic grounds that we must explain the fact that the major wars of the nineteenth century occurred in batches and with thirty or forty years between the groups. On the endogenous or exogenous nature of another variable usually considered important, gold discoveries and production, Professor Rostow was previously uncommitted. Now, on this issue at least, he has joined Kondratieff. "Although no great weight would be placed on this factor, the present argument would also regard the changing importance of gold production, as endogenous to the system, in the sense that protracted periods of falling prices, in an era of stable gold standards, increased the incentive to find and to mine gold" (p. 143). This is a proposition which sounds reasonable in theory but seems unrealistic when we consider the circumstances of most gold discoveries and the unrestrained rushes which followed. However, whether an exogenous variable or not, his description of the way in which gold and silver mining affected prices is still the completely non-monetary analysis which Professor Robertson has previously attacked. Gold-mining is like war expenditure; it does not produce goods which people buy. Its influence is via its multiplier effect and not via the banking and credit system.

But if Professor Rostow has remained unmoved by Sir Dennis' criticisms on this point he does seem to have given ground in two other places. The first, a minor one, is on the dating of the end of the "Great Depression." He concedes that for the world economy as a whole the traditional date in the middle nineties is preferable to 1900, which he had suggested for Britain. Of more weight is the question whether periods of low prices were also depressed in the sense that investment was lower and unemployment higher. In opposition to Professor Rostow's thesis, Sir Dennis argued that unemployment in Britain was higher in 1873-96 than in the periods before and after. In this revised and generalised presentation Professor Rostow now argues that these medium-term fluctuations "are not trends in the overall rate of growth of output. Nor would they necessarily imply secular changes in the average level of unemployment, although some reflections in the average level of unemployment would not be excluded *prima facie* by this definition" (p. 127).

A major difficulty in accepting this model of medium-term trends in the growth of the world economy is that, like Schumpeter's, it presumes certain institutional conditions to be present and not subject to marked change. It assumes that capital will swing easily from home industrial investment to the opening of primary areas, usually abroad, in response to the pull of relative prices. But even in the nineteenth century the world capital market was far from perfect and far from constant in its imperfections. In lending countries the willingness to invest abroad was always changing, especially with the rise of industrial nations whose international investment was heavily biased away from primary-area development. The more we try to extend Professor Rostow's analysis into the twentieth century—and this is what he wants us to do—the greater become the objections to this free-market postulate.

Internationally we have governments controlling the quantity and the objects of international lending; tariffs, quotas, commodity agreements, stockpiles all help to thwart the normal influence of market demand on prices, capacity and investment. Inside countries, the price mechanism is obstructed by trade-union strength, by oligopolistic non-price competition, and by the State through price support, investment planning and the rest. All these changes are abstracted from Professor Rostow's theory of medium-term trends by his assumption that such institutional forces change sufficiently slowly to be allocated to long-run influences. The difficulty is that after a time, and not a very long time either, these long-term forces may so have changed conditions that the old medium-term analysis is no longer appropriate.

Finally, in Professor Rostow's schema, conditions in the economy at any moment depend on short-term, trade-cycle, influences, as well as on the very long-, long- and medium-term trends discussed above. The short-term analysis is in many respects similar to the medium. Cycles depend on conditions in certain sectors of the economy. Investment in each sector depends on the relationship between demand and capacity. A boom is started when shortage of capacity in certain key lines, say cotton and shipbuilding, leads some entrepreneurs in those industries to expand their plant. Other entrepreneurs in those lines join in, and the rise is helped by investment in certain other sectors where demand is beginning to press on capacity. But the boom is not general to all sectors of the economy. The length of the up-swing depends on the extent to which capacity was short in the key lines, and also on the gestation period of the investment there, for when entrepreneurs begin to see new plant producing goods (perhaps even a little earlier) they have second thoughts. They realise that when all the expansion plans which have been started come to fruition there may well be a glut. This, plus high costs and interest rates, causes a curtailment of fresh expansion projects and the down-turn is on. It should be noted that the down-turn does not come because all resources are fully employed or because of limitations of credit. Nor are harvest fluctuations and changes in the foreign-exchange position given a role to play, although in his previous work on the British economy Rostow had stressed their part in the down-swing in the cycles up to 1850, and possibly to 1870. The down-swing is cushioned primarily by the fact that investment projects which have been started are usually completed, and because the largest projects are usually started only in the later period of the up-swing when optimism is highest. The net effect of the cycle is that capacity in the key sectors has been expanded far beyond even peak demand, and they have to wait for well over a decade before the growth of the economy again causes demand to press against their output possibilities. For this reason the next boom sees the lead being taken in a different group of key lines; a group which hardly shared in boom number one.

As a theory of the cycle this is incomplete without a description of the bottom turning point. What is it that causes demand to outstrip capacity in the key sectors? Professor Rostow firmly rejects the concept of a rising

stream of autonomous investment, unconnected with the cycle. He substitutes rising consumption as population continues to expand and, on the supply side, falling costs and interest rates plus the flow of innovations, which is only slightly affected by the cycle. These, with the constancy of psychological attitudes and ideas already discussed, will make conditions ripe, after a time, for an up-swing.

This description of the trade cycle as a problem of misdirection and over-concentration of investment rather than inappropriate total volume is interesting, particularly since it comes from one who has examined the British experience in such detail. One implication, as Professor Rostow points out, is that it would not be enough for governments to ensure the necessary *total* of investment to control the cycle. They would need also to influence its distribution between various lines.

There can be no doubt that historically booms have been famous for a "mania" of expansion in certain sectors, but Professor Rostow's analysis raises at least two major questions as to the extent to which the key sectors control the cycle. Even if we grant that they start the up-swing, that excesses of investment are most marked in these lines, and that the end result is that their capacity is expanded far beyond current peak demand, it still is not clear that they dominate the cycle after the initial phase. Professor Rostow has criticised Schumpeter for believing that investment in cotton was weighty enough to have dominated the British economy after 1793. Similarly, we may doubt whether the same things which trigger a boom necessarily control it throughout. When the more weighty industries and public utilities join in with increased investment, even if only half-heartedly, we would expect their behaviour to be decisive from then on, purely because of their greater scale. Secondly, to link the length of the up-swing with the gestation period of investment is to minimise the role of anticipation in investment planning. It assumes that entrepreneurs begin to revise their estimates of the future mainly when new plant begins to operate, rather than when they see it under construction or when they learn of its future construction.

If we take a broad look at this attempt to describe economic growth in terms of these four types of change, very long, long, medium and short, we are struck by the international character of the medium-term analysis and the single-country approach of the other time periods. This contrast is most marked between the medium trends and the short cycles. Medium trends are presented as an experience of the whole world trading area. Short swings are presented largely in terms of a single-country model. If economies are inter-related in a decisive manner in the medium run, one would expect something similar over the shorter periods: that the cycle in one country would lead on and be encouraged by the cycle in the next, or be damped by sluggishness abroad. But this is a part of the story which is only weakly developed.

Secondly, and more generally, any model for the study of historical change has to steer the difficult course between unrealism (over-simplification of the influences at work and insufficient attention to the differences

between cases) and unhelpfulness (too much emphasis on the multiplicity of factors and the peculiarities of each case). To judge Professor Rostow's four-period schema in this respect is a matter of individual judgment; to my view he seems to have steered too close to unreality in his tendency to pigeonhole factors once and for all as "long-term" or "medium-run" influences. It is an unfortunate but essential complication that they are far from constant in their rate of change and defy permanent classification in this respect.

Professor Rostow has described his own book well. It is a book about theory; it suggests a schema for analysing the process of growth; it calls for the study of recent world economic history within a particular framework and it offers tentatively an explanation of medium and short fluctuations. It is an immensely interesting presentation, both on its own account and in showing the development of Professor Rostow's ideas as he moves from his work on the British economy to a wider viewpoint.

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The Social Foundations of Wage Policy. By BARBARA WOOTTON. (London: Allen & Unwin, 1955. Pp. 200. 15s.)

THE sub-title of Dr. Wootton's book, "A Study of Contemporary British Wage and Salary Structure," affords perhaps a more accurate description than her main title. In Chapter I, "The Economist's Theory of Wages," she gives a very brief and unfavourable account of the existing condition of wage theory as exemplified by a number of (chiefly) text-books, among which it may be noted Marshall is not included. Chapter II, "Some Economic Curiosities of British Wage Structure," contains a very interesting analysis of relative wage and salary scales in a wide variety of occupations. Chapter III, "Modern Methods of Wage Determination," deals a little perfunctorily with collective bargaining, wages councils and arbitration. In Chapters IV and V, "Wages Policy in a Vacuum: Attitudes of Government and Trade Union Congress" and "Attitudes of Trade Unions, Employers and Arbitrators," after recounting the story of Government intervention in wage policy which culminated in the issue of the 1948 White Paper on Personal Incomes, Costs and Prices, she provides a critical and often illuminating commentary on wage negotiations and arbitration decisions in recent years. Finally, in Chapter VI, "Towards a Rational Wage Policy," she adumbrates a wage policy which would conform to her own notion of what would be socially and economically desirable.

Dr. Wootton is a severe critic of the professional economist for his abstract, unrealistic and predominantly static approach to the problem of wages. Some of her blows are well aimed and strike home, but others seem merely to be beating the air. What reputable economist in modern times has ever approached wage determination "from a presumption that bishops

and sweepers should normally earn the same remuneration"? Since the days of Cairnes every economist has surely been familiar with the concept of non-competing groups, and has always treated the *tendency* towards the equalisation of net advantages as being applicable only within a group where there is effective mobility. Again the observation that some dirty or dangerous or otherwise undesirable occupations are or have been associated with relatively low wages is not, as she contends, in conflict with the general doctrine. For if, owing to necessity, lack of alternative jobs or any other reason, the disadvantages of a particular job do not in fact deter large numbers of workers from applying for it, the wages there may continue to be relatively low unless or until there is some relevant change in the general conditions of the labour market, or in the attitude of workers themselves towards those disadvantages. Is it entirely fair to judge, and scoff at, all economists by what a few of them can manage to find room for when they are endeavouring to cover the whole of economics in outline in an elementary text-book designed for first-year students? This is not to deny that some of these writers might find Dr. Wootton's book profitable reading when they come to revise their chapter on wages for a new edition.

Dr. Wootton's grasp of modern economic theory is not always very secure. The Keynesian doctrine, which now finds widespread acceptance, that reducing wages all round in a slump may only aggravate the depression, does *not* support her conclusion that: "It now appears that an increase in the general level of wages is as likely to be a cure as a cause of unemployment—at least in circumstances in which for some reason or other there are unused resources lying idle." The same unfounded statement is repeated later in a more emphatic form: "In the event of a slump, the arguments from general welfare would be entirely on the side of wage advances."

Dr. Wootton makes much of the distinction between the economic and the ethical factors which influence wages—the principal example of the former being a claim for a wage increase based on undermanning, while both the cost of living and the preservation of existing or former relativities are classed as predominantly ethical in content. She also stresses the importance of social considerations, such as the association of prestige with pay, in affecting the wage and salary structure in this country. Much of what she has to say on these topics is valuable and of great interest; though she continually tends to overstate her case—partly because her definition of what is economic is as narrow as her definition of what is ethical or social is wide.

Wages surely are governed inescapably by *all* the forces affecting the demand for and supply of different kinds of labour. Sociological as well as economic factors enter into both demand and supply, but particularly into the latter, where supply price can play so important a role. As Dr. Wootton justly points out: "A collective agreement demands a degree of social justification which a private bargain can ignore. Negotiators and diplomats, despite their reputation for cynicism, are incurably ethical in their choice of arguments." But it is none the less true that in the end it is the economic

considerations which have the last word. Dr. Wootton will not need to be reminded that many of the trades which experienced the greatest relative falls in wages in the inter-war period were precisely those in which trade-union organisation was strongest and most firmly established; yet all their influence on the supply price of labour was unable to withstand the impact of the fall in the value of the net product of the workers concerned.

Throughout her book it would seem that she has allowed herself to be over-much influenced by the post-war situation of this country, when a period of creeping inflation associated with a very marked increase of value productivity per head has brought with it a prolonged phase of wage advances all round. It is this abnormal, and in peace-time unprecedented, combination of *economic* circumstances which has led to the apparent emergence of those "sociological" factors to which she attaches so great an importance. It is true that they have always been present, but now they appear (but it is only an appearance) to dominate the whole scene. Supposing, however, that, say, the Lancashire cotton industry, at a time when employment was full elsewhere, were to find that its costs were such as to price its goods out of a large part of its foreign markets, would the appeal, either to the cost of living or to the principle of relativity, avail to prevent a downward adjustment of its labour costs (*inter alia*) to meet the new situation?

Dr. Wootton is troubled by the recent trend of wages. She is alarmed, we hope unduly, by the menace of the inflationary spiral of wages and prices. Is there not, though, something of meiosis in the term "near-full employment" which she habitually uses when referring to the present-day economic situation? Furthermore, she is an impassioned egalitarian, holding with Professor Tawney that existing inequalities of income and privilege cannot be reconciled with democracy, as they understand the term. (In this connection her discussion of the potentially revolutionary consequences of a widespread adoption of job evaluation is of great interest.) Finally, she sees clearly that wage movements as they are conditioned to-day are inconsistent with the ideal she cherishes of a planned economy, in which output and therefore labour supply would be determined by social priorities.

The wage policy she favours is that a forecast should be made in the first instance of the amount which would be available for granting wage increases in the ensuing period without adding to inflationary pressure. This amount should then be allocated with priority for those in the lower wage and salary scales, and with tapering increases for the higher incomes up to a maximum income, above which no increase at all should be granted. Exceptional increases could be permitted in industries which were undermanned as evidenced by the fact that their labour force was insufficient to produce the target of output prescribed by the planning authority. On the other hand, the mere fact that workers in a given industry happened to have an abnormally high productivity should not entitle them to differentially higher wages, apart from the larger earnings to be obtained under a system of payment by results. The implications of this last suggestion are clearly formidable, and they are not lessened by her own comment: "Where,

however (as may happen in industries that are privately owned), exceptional performance is synonymous with exceptional profit, any proposal to disregard overall results in wage determination carries the important corollary that, if the workers in an exceptionally productive industry are to forgo the fruits of their special position, the same rule must be applied to their employers also."

While feeling the greatest respect for the ideals and motives which lie behind the policy put forward by Dr. Wootton, it does seem to the present reviewer that her recommendations must be regarded as appertaining to the realm of her own private Utopia rather than to the world in which, one and all, we actually live.

Despite the criticisms that have been expressed in this review, it can be affirmed with confidence that Dr. Wootton has written the most interesting, stimulating and thought-provoking book on wages that has been published in this country for many years.

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Politicheskaya Ekonomia ; uchebnik. (Text-book of Political Economy.) Academy of Sciences of the U.S.S.R., Institute of Economics. (Moscow: State Political Editors, 1954. Pp. 632; no index. 9.50 roubles. 5 million copies printed.)

THIS book bears many traces of the peculiar circumstances of its birth. For nearly twenty-five years no economics text-book had been published, despite, or because of, the great transformations of the intervening period. Yet theories applicable to "capitalist" society, or to the mixed economy of the NEP period, were of doubtful relevance to the U.S.S.R. after 1931. The need for a new formulation, and a new book, was recognised publicly in the late thirties; according to a famous unsigned article published in 1943 in *Pod Znamenem Marksizma* (allegedly written by Stalin himself), work on a text-book was in progress, but nothing emerged. Some time in 1950-51 a committee of the most eminent academic economists were producing (probably not for the first time) a draft text-book, and this was discussed in academic and party circles in 1951-52, with Stalin joining in; his contributions form a large part of his last published work, *Economic Problems of Socialism*. On Stalin's own instructions, the final draft was to be submitted to the Central Committee of the party. No doubt, his death delayed matters, since the first printing did not begin until August 1954.

The work is thus almost as much political as economic—a fact symbolised by its being edited by those generally responsible for political tracts, though also bearing the imprint of the highest institute of economics in the land. The colossal printing of five million copies, surely unique in the history of the subject, shows that it is to be used as an authoritative statement of doctrine far beyond the narrow confines of economics faculties, though the latter will

have to use it too, in the absence of any alternative. It is something of a theological tract, on a subject so close to the heart of Marxist-Leninist beliefs, a party document, orthodox to the *n*th degree. Such original thought as might have been produced by any one of its nine authors seems to have been eliminated in the process of collaboration, or amended out of recognition by the party. The book stands as a monument to the intellectual stultification of the late-Stalin epoch, and indeed looks a little out of place in the less frosty atmosphere which has been observed of late, in economics as elsewhere. It is sad to observe how the student has been presented with dogmatic assertions of absolute truth, without ever being encouraged to think for himself. It was not always so. The senior member of the authors' panel, Professor Ostrovityanov, was co-author of a text-book published in 1929, and there, at the conclusion of every chapter, the student was shocked into thought by such questions as these: "Why can we not . . . draw the conclusion that exploitation exists in state enterprises, seeing that our workers are worse off than those in advanced capitalist countries?" On this occasion, all that one finds at the end of every chapter is a simplified and ultra-dogmatic summary, in italics, of the ground covered.

The book is arranged into three main sections: *pre-capitalist production*, *capitalist production* (subdivided into pre-monopoly and monopoly capitalism) and *socialist production* (subdivided into the transition period, the socialist economic system and a brief account of the progress of the "peoples' democracies" and China). A twelve-page conclusion points the moral: "All this is unquestionable proof that, in our century, all roads lead to Communism." Much of the earlier part is a kind of short economic history of the world, beginning with the period when man learnt to use his hands. However, the western reader would be most interested in the analysis of "capitalism" and of the Soviet economic system.

One looks in vain for any original approach to "capitalist" problems. The presentation follows Marx, except that in the section on "monopoly capitalism" there is a sizeable contribution from Lenin. Not one of the theories devised in the western world since Ricardo receives serious consideration or is allowed in any way to affect the analysis of the western economy. Various names are mentioned; thus on pp. 305-7 there are references to Menger, Wieser, Böhm-Bawerk, Marshall, J. B. Clark, Keynes, Alvin Hansen; but all are presented as crude apologists and hypocrites, aiming to disguise the essence of capitalism. For example, "J. B. Clark . . . preached the lying idea of the 'harmony of interests' of various classes in bourgeois society, advanced the theory of 'marginal productivity,' which in reality was a new attempt to link the old vulgar theory of the 'productivity of capital' with the Austrian school's vulgar theory of 'marginal utility.'" The most extreme of Marx's polemics are presented as absolute truth, and are illustrated by a bewildering set of numerical examples and rather odd statistics. For instance: mechanisation leads to an increase in hours of work, and in all "capitalist" examples the working day lasts at least twelve hours and the "norm of exploitation" is at least 100% (229%

in the United States in 1939); the basic law of capitalist accumulation is the absolute and relative pauperisation of the masses, and "in the twentieth century, real wages of workers in England, the United States, France, Italy and other capitalist countries are lower than in the middle of the nineteenth century"; taxes under capitalism are "means of redistributing part of the toilers' wages in the interests of the bourgeoisie"; the British national income in 1924 was divided between "toilers" and "capitalists" in the proportion of 45 : 55; British wages in 1952 were "20% below pre-war"; the fall in the birth-rate in western countries after 1870 was due to the impoverishment of the masses (with, of course, not a word about what happened to the death-rate), and so on. Of course, this section of the book is not a mere recital of absurdities; there is a well-written summary of traditional, orthodox Marxist doctrine on socially-necessary labour, surplus value, differential rent, the circulation of capital and the like. However, all this shows no development since 1883.

In dealing with the "monopoly-capitalist" stage the authors do not fail to cite Stalin's definition of the basic economic law of present-day western society—maximum profits, maximum exploitation, impoverishment, robbery of backward peoples, militarisation, war and so on. There is no attempt at any serious economic analysis: for instance, the meaning of "maximum" profits and the theoretical or actual price policies of monopolies are not considered. Everything is subordinated to the painting of a picture, in the darkest colours, of imperialist-monopoly capitalism moving inexorably towards its final crisis; there is far too much crude, cold-war pamphleteering, and one wonders sadly whether the authors believe what they write. We in the West suffer from similar efforts to "analyse" the U.S.S.R., in which the task of understanding is subordinated to political-warfare considerations; but fortunately there is serious scholarship too, while the reviewer has yet to read any article or book on the economy of the West published in the U.S.S.R. which transcends the over-simplified militant formulæ referred to above.

The same poverty of thought shows itself in the long section dealing with the Soviet economy. Much of it consists simply of a short economic history, along lines familiar to readers of such authoritative works as the *Short History of the Communist Party of the U.S.S.R.*, together with an uncritical description of economic organisation (for example, the state budget system, categories of agricultural producers and the like). The last thoughts of Stalin on the laws of socialism are reproduced almost verbatim, and are certainly not developed in any way. The question of the content and significance of *economic laws* under the present Soviet system is obviously of key importance, and it is deplorable that the authors avoid serious analysis by question-begging formulations. Thus there is said to be a law of "planned—proportionate—development of the economy," and "the law of value" operates. One might ask: what proportions correspond to this "law," and how does the law of value actually manifest itself in Soviet conditions? The answer to the latter question seems to be: that in fixing prices, the state

cannot wholly ignore supply and demand and must provide adequate incentives to the producers; for instance, if buying prices for potatoes are fixed too low, then the peasants will not produce enough potatoes; so the state "takes the law of value into account." As for the correct proportions, we are told with truly startling simplicity that "in accordance with the requirements of the basic law of socialism and the law of planned (proportionate) development of the economy," the necessary proportions are "established in a planned manner" (p. 545). The "basic law of socialism" referred to above is the one discovered by Stalin: maximum satisfaction of the people's needs on the basis of the highest technique. The term "maximum" is not defined; presumably it corresponds to the level of consumption reached at any given moment.

Formulations such as these, with their confusion between economic "laws" and what the state does, have their political advantages, since it can then be claimed that the party's policy at all times follows objective laws of economic development. However, it is to be doubted if such mental poverty is in the interests of, or even desired by, the Soviet government. The party leaders themselves must wish for some economic *criteria* by which alternative policies could be judged, or some original analysis of the interconnections between different sectors of the economy (without the utterly stultifying assumption that optimum proportions are a "law"). The leaders may well desire, also, serious consideration of the problem of allocating scarce resources economically between competing ends, a problem of which Khrushchev showed himself aware in some recent speeches, notably to the builders' conference. There has in fact been a long and lively discussion of the economic efficacy of alternative investment projects in the specialised press, but it is typical of this text-book's timid orthodoxy that it finds no reflection in its pages, presumably because no orthodox "solution" to this particular problem has yet been devised. It would be wrong to take the present book as typical of post-Stalin Soviet economic thought: for example, there have been some stimulating and original articles in the economic press, notably by Professor Strumilin, in which a number of orthodox concepts are re-examined in a critical spirit, even to the point of criticising Marx himself; however, such signs of "thaw" seem in no way to have affected the authors of the text-book.

The value of the "Soviet" section of the book lies largely in the deductions which can be drawn from it on general party-policy matters, and in the appearance of hitherto-unpublished statistical data. Thus the would-be prophets can attempt an interpretation of Soviet agricultural policy in the light of defined stages of the transition from socialism to communism; however, the various formulations bristle with ambiguities, and could be used to support a number of different policies. It is also of political interest to note that this book, fully six months before Malenkov's fall, went out of its way to emphasise the over-riding priority of producers' goods over consumers' goods, as an essential pre-condition of the necessary rate of growth. Among useful items of information is that average wages in 1953 were 201% of 1940,

that is about 8,160 roubles per annum. There are also some re-definitions, of which the most important concerns "necessary labour" and "surplus value" under socialism; Stalin, in his contribution to the discussion, asked that these inconvenient concepts be eliminated, and this the economists have duly done: labour time is divided into "work for oneself" and "work for society" (this sounds *much* better than surplus value, with its savour of exploitation; society utilises its share of the workers' product for the needs of culture, administration, defence, etc). On a lower theoretical level, a not-too-successful effort has been made to eliminate the concepts "turnover tax" and "profits," by calling them "centralised net income of the state" and "net income of enterprises" respectively; however, as the use of the old terms in the 1955 budget demonstrates, this has not caught on.

No, the long-awaited text-book is disappointing and pedestrian. It is evident that no serious contribution can be made by Soviet economists in the context of a work designed to serve politico-theological ends, although useful work is being done in certain sectors of applied economics.

A. NOVE

London.

International Economic Papers, No. 4. Translations prepared for the INTERNATIONAL ECONOMIC ASSOCIATION. (London: Macmillan (New York: The Macmillan Company), 1954. Pp. 229. 15s.)

No. 4 in the interesting series of *International Economic Papers* includes nine items of widely differing appeal. It is no doubt more important that a cosmopolitan collection like this should please all sorts of taste some of the time than that it should consistently please some particular section of readers; and criticism must be tempered accordingly. Different readers will inevitably make different selections from among this bunch of nine as worthy of their attention; and a reviewer may perhaps do something to assist a reader's choice, but cannot really presume to advise him.

Probably of most general interest will be a translation of the Preface to the French edition (of 1943) of Lord Keynes' *General Theory*. This Preface, which is dated February 20, 1939, is a restatement of the main intentions of his work in the light of discussion and criticism which had greeted the book's initial appearance. This restatement stresses in particular the book's concern with "the functioning of the economic system as a whole" and with the avoidance of those "grave errors" which have been committed in "extending to the whole system conclusions which have been correctly established for a part of the system treated in isolation." (It contains incidentally a tribute to Montesquieu as "the greatest French economist, justly to be compared to Adam Smith.") Unfortunately it consists of no more than four pages and has had to be translated from the French, since the original English manuscript has not been traced. We are told that the translation has not tried "to recapture the characteristic style of the author." This is understandable; yet some may regret that a style should have been

chosen quite so lacking in places the grace that was usual from this author (the translation contains, for example, two inept substitutions of "I would" for "I should" and two rather clumsy in-respect-of's where "regarding" would have been easier and may well have stood).

Next to it in interest for many economists may be the 1930 article of Luigi Amoroso (in the *Giornale degli Economisti*) on "The Static Supply Curve," in which an approach to questions of competition and monopoly, analogous to that of Mrs. Joan Robinson and Professor Chamberlin, was developed, mainly in algebraic form. It includes a formula for the relationship between marginal and average cost in a U-shaped curve and for the relationship between price and marginal cost; with the so-called "Ricardo" and "Cournot" cases treated as limiting cases. The treatment is marked by an insistence that the distinction between competition and monopoly turns, not on the existing number of firms in an industry, but on whether the number of firms varies with the price or is independent of the price; and in the duopoly case Cournot's solution is followed and defended against the Bertrand-Edgeworth and Pareto criticisms. In conclusion, the static nature of the supply curve is emphasised by the statement that "neither producers nor consumers in our scheme foresee future conditions and prospects"—which has some interest in view of the recently revived discussion about excess capacity.

For Schumpeter-fans there is an early article of 1918 on "The Crisis of the Tax State." This shows signs of developing a novel economic theory of the State: for instance, the contention that the tax system grew out of the needs of feudal princes for new forms of revenue, and that the tax system was the origin of the modern centralised State, which as such would disappear "where all areas of social life are 'socialised.'" But after some stimulating historical excursions it rather peters out in a discussion of the limits to taxation and of the financial problems of post-war Austria during the great inflation (including some rather general discussion of the prospects of a capital levy).

Of a very different mint is the article by Professor Oskar Lange from a Polish journal on "The Economic Laws of Socialist Society in the Light of Stalin's Last Work," which is an elaborate review-summary, with running commentary, of Stalin's *Economic Problems of Socialism in the U.S.S.R.* of three years ago. The main theme is the "objective character" of economic laws alike under socialism and capitalism, although this objectivity "does not imply that man is necessarily powerless before them" and "does not imply an acceptance of fatalism." ("Under socialist conditions economic laws have the character of known objective necessities, i.e., necessary connections or principles entering into objective reality. . . . To be effective, practical policy presupposes compatibility with the objective necessities inherent in the socialist mode of production . . . thus there exists an objective criterion of the correctness of economic policy.") This is written with Professor Lange's characteristic cogency and clarity; but the treatment remains rather general. Among specific questions covered are:

the place of commodity (market) relations, the difference between socialism as an historical phase and communism, and the future of collective farms in the light of the transition from one phase to the other (for example, should there be "nationalisation" of collective farm property?).

Two theoretical articles of specialised appeal are by a Brazilian and a German economist respectively; the former being a development of certain points raised in some lectures of Professor Nurkse, the other an application of the acceleration principle to changes in a country's imports. The author of the first (Celso Furtado) points out that the growth-rate of an economy can be conveniently treated as compounded of two ratios: the size of the output-increase to be expected from a given rate of investment and the proportion of the increase in national income that is not absorbed in consumption (the "coefficient of investment"). He calculates that the first of these is about 0.5 for his own country, and suggests that in the early stages of economic development "consumption will not be stimulated as strongly as production" so that the growth-rate can be a cumulatively increasing one (although he thinks that this may be counteracted nowadays by a sort of international Duesenberry-effect, only to be cured by "some form of compulsory saving" on the nature of which he does not enlarge). On the other hand, he thinks that in countries at early stages of development the income-elasticity of demand for imports is so high (in the case both of consumer goods and capital goods) that progress may be early arrested by balance-of-payments difficulties. From this he concludes that "the inflation which accompanies economic development . . . is not a monetary problem"; and that while this may require structural modifications in a country's economy to increase either its export-capacity or its capacity for finding substitutes for imports, "a reduction in investments, which is the remedy usually proposed . . . will not necessarily rectify the unbalance and will not put the other troubles right." But there he stops short, and one is left with some sense of disappointment—with a sense of being brought to the threshold of an interesting problem and no further.

The article from *Weltwirtschaftliches Archiv*, by Herbert Giersch of Münster, is a more elaborate affair. His acceptance and use of the acceleration principle is qualified by the relation being regarded as a variable one: varying in the case of investment in fixed capital with the level of capacity-utilisation, also with the state of expectations, the credit-situation and the price-elasticity of supply. (He admits that in this form the principle "appears degraded to a mere tendency and to just one factor among several others," but claims that it "gains greatly in realism"). This is then applied to a country's demand for imports by making the relation dependent, *inter alia*, upon the relative prices of foreign and home goods of particular kinds and on comparative elasticities of supply. After starting from simplified models, first of a country producing no capital goods, and then of a country producing no raw materials, the author reaches the interesting (but not unexpected) conclusion that the import-accelerator and the home-

investment-accelerator "compete with each other" ("the acceleration of imports weakens the accelerating forces in the home economy"); and that if internal economic policy is unable to ensure "that the divergence of the actual rate of growth of investment from the equilibrium rate be not greater than is necessary to lead national income asymptotically to the full employment level," then it is better to give the import-accelerator its head (with its dampening effect on the internal boom) than to control imports. This conclusion, of course, implies (and furnishes an argument for) a high degree of international liquidity. A concluding section tests out the theory against data on the movements of imports (of raw materials and capital equipment) and national income in Great Britain from 1870 to 1914.

There remain to mention an allusive and elusive (to the present reviewer at least) article with the intriguing title of "Economic Plans and Causal Analysis," by Professor Johan Åkerman; a somewhat prolix critique of wage-regulation according to a cost-of-living sliding-scale by Professor Jørgen Pedersen; and a short essay (by Henri Aujac) in a new French approach to the theory of inflation ("Inflation as the Monetary Consequence of the Behaviour of Social Groups: a Working Hypothesis"), which seems to promise more than it fulfils—while fertile in suggestions of new relationships, it rather tantalisingly refrains from showing how such a "working hypothesis" could be put to work.

M. H. DOBB

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Retail Trading in Britain 1850-1950. By JAMES B. JEFFERYS. National Institute of Economic and Social Research, Economic and Social Studies, No. XIII. (London: Cambridge University Press, 1954. Pp. xvii + 497. 50s.)

MR. JEFFERYS points out that the distributive trades have been neglected (presumably by economists) in the past, and castigates the "false belief that distribution is a sterile, unproductive activity." In his view (and it is strange that there should be any other) production and distribution are a single continuous process in the task of maximising material satisfactions, and "efficiency in the distributive trades is as essential as efficiency in productive industry."

It is difficult to believe that these self-evident propositions have not always been clearly understood by economists. Perhaps the real reason for the relative neglect of this sector is one only hinted at by the author: that to reduce the amorphous mass of distribution to a statistical or historical form useful to economists meant a sadly discouraging amount of hard, slogging work on first sources, such as directories and balance sheets, accompanied by arduous field work. It would perhaps have been difficult to finance such a time-consuming project, before the National Institute of Economic and Social Research (of which this is Study No. XIII) came into being.

But Mr. Jefferys has done the hard work, and the result is a volume both valuable and interesting—valuable, because we now have for the first time a concise economic history (the first 120 pages) of the play of invention and enterprise in retailing and of the interplay between mass production and mass distribution; interesting, because the author has not been content to stop at 1950, but has used his material and his detailed study of trends to hazard some conjectures on the future. This forecast will be discussed later.

The main bulk of the volume (pp. 121-443) is taken up by a careful study of the development of each of twenty-two different retail trades, grocery and provisions, clothing, footwear, and so on. In each case the measurements of growth and change which Mr. Jefferys has literally dug out are admirably presented in tables not claimed to be precise but fulfilling well the author's object of showing the rise of large-scale retailing.

In fact, the book is avowedly a study of this large-scale growth, and the individual retailer will have to await his own historian. To make an adequate study of the "little man" might have quadrupled the time spent on this book, and the author had sufficiently important things to say. So the history is not complete; and further, the service trades have had to be left out too. Perhaps the Institute will be able to fill these two gaps in the future.

Up to 1900 the book traces the origins of large-scale retailing (co-operative stores, multiple shops and department stores) and sets the stage for the remarkable spectacle of growth between 1900 and 1950. In this latter period the estimates show that large-scale retailers increased their proportion of national retail sales (excluding services) from somewhere between 11 and 12½% to somewhere between 34 and 38%. Within this total picture the sectional estimates show remarkable differences. In clothing and footwear the multiple shops increased their share from between 3½ and 5½% to between 27 and 30½%; the department stores from between 5½ and 7% to between 13 and 15½%; the co-operatives from between 4 and 5% to between 8 and 9½%. By difference the "independent retailer" in fifty years lost somewhere between 30 and 43½% of the national trade in these items. Even inside these figures there are interesting subdivisions. In 1950, for example, the department stores held 20-23% of the national trade in women's and girls' wear, and were still just ahead of the multiple shops.

Owing to the nature of his data, the author does not care to be more precise in his percentages. Food shows a similar trend, but the "independent" here is more resilient, losing between 20 and 26% of the trade. The trend in Mr. Jefferys' third group, comprising confectionery, reading and writing materials and tobacco goods, is somewhat different. The independent retailers, who had 95-97½% of the trade in 1900, still held between 82½ and 86% in 1950. This is attributed to the dominant influence of manufacturers in these fields, using branding, national advertising and resale price maintenance to counter the economies of large-scale buying so successful in the other fields.

The picture is completed by a further category "other goods," common to all.

prising such lines as chemists' goods, furniture and furnishing, household goods, jewellery, leather goods, toys and fancy goods. Here the multiple shops showed spectacular growth from 2-3½% of the trade to 23-27%, followed by department stores, which increased from between 1½ and 2½% to between 11 and 12½%, while the independent retailer lost 29-39% of the trade.

This period of phenomenal growth, 1900-50, did not, of course, show an even rate of expansion. Up to 1914 the department stores appeared to lead the way, closely followed by the older types of multiple. In the inter-war years the variety chain stores (Woolworths, Marks and Spencer, etc.) came strongly into the picture. From 1939 to 1950 the picture "froze," large-scale retailing gaining only 1½% of the national trade. This was obviously the result of war policy, rationing, fair shares, margin control and destruction of shopping centres coupled with building restriction.

What will happen now? Will the trend be resumed? Co-ops, for psychological reasons, and department stores, for organisational reasons, and multiples, for purely physical reasons of shortage of main-street sites, have limited expansion possibilities in the author's opinion. Finance may place severe limits on new enterprise. New methods of reducing distribution cost are to hand; self-service, self-selection, larger shops crossing the frontiers of present trades and a "partnership of equals" between manufacturing and retailing, in which the manufacturer would tend to undertake the functions of "designing, planning, ascertaining demand and promoting the sale of the product, while the retailer takes the responsibility of displaying and pricing the product. . . ." But the rapidity of development will depend on a balance between the expected benefits and the attractions of other forms of investment.

To summarise thus Mr. Jefferys' arguments may be somewhat unfair. It is clear, however, that he neatly side-steps the resale price-maintenance controversy by leaving "pricing" to the retailer. Branding and price-fixing are not, perhaps, unwelcome to the small man; they simplify the problems of selling. But the big stores and the multiples have only succumbed in small part to manufacturer dominance. The fight is still on. The expert buyer of the multiple or the big store still has the job of selecting a range of merchandise which will appeal to his own customers, and the *force majeure* of mass-advertising by manufacturers can still be to a large extent countered by reputation and service.

Then there is the question of the "advisory" function of the retailer. Mr. Jefferys sees this as declining in the future. I do not share his view. Big stores have always been at pains to train their assistants carefully to sell the article which really fills the customer's need. Of late, some of the variety chains have taken the same view. It is chimerical to think that manufacturers' advertising can replace skilled selling, or that protective mechanisms, such as consumers' advice bureaux, independent testing, standards or the like, can do more than frighten off the sharks.

If, however, Mr. Jefferys means that the fuller adoption of open-display self-selection techniques will economise selling effort he is on safer ground.

These techniques are not to be confused with self-service, which is almost confined to the food trade and (in a partial form) to some variety chains. In other trades there is a rapidly growing trend to open up the stock to the hand and eye of the customer. This largely eliminates question and answer and the production by the saleswoman of article after article from a partially-concealed stock. Thus it may shorten the process, but the skill and knowledge of the shop assistant is still required for the final choice.

All this may seem somewhat irrelevant to the economic issues involved. But, after all, the shape and cost of retailing will continue to be determined by the public in their capacity as shoppers. With a rising standard of living it does not seem likely that the "service" element in retailing will decline materially.

If Mr. Jefferys' forecasts are arguable—and that is the nature of forecasts—there can be no argument about the acceptability of this well-written book, which throws much light on a segment of economic history previously obscure. The book has much entertainment value too. It is titillating to know, for instance, that in 1890, when Marshall was writing, "higgling with the haberdasher for half an hour" was still a common practice in some parts of the country. And the collection of photographs of ancient and modern multiple shops and co-ops will give an effect to the older generation of nostalgia in reverse.

F. W. LAWE

London.

The London Capital Market. By N. MACRAE. (London: Staples, 1955. Pp. 285. 25s.)

THIS book is divided into two parts. The first 180 pages are concerned with the general concepts of national capital, saving and investment, the nature and roles of the various participants in the capital market, the stock exchanges and the new issue market, and the main sources of long- and short-term finance for industry. The second section, 102 pages in length, deals with the Bank of England and monetary policy, and is, in effect, a minor text-book on central banking policy.

Perhaps the best way of describing the scope and approach of the book is to say it is the obvious course of reading for any student of economics who wishes to proceed to the contemporary discussions of monetary, fiscal and financial topics that appear week by week and month by month in *The Economist* and *The Banker*. It covers much the same area of discussion and carries, too, the stamp of the practitioner or financial journalist rather than that of the academician. The emphasis is on recent and current problems, and the author does not hesitate to pass judgment, sometimes, it must be admitted, rather dogmatically, on present-day policy in public affairs and in the affairs of the institutions he describes. Indeed, one of the book's faults, if fault it is, is that in some places analysis that might have led to a deeper

understanding has been sacrificed to topicality and discussions of policy for which some readers may find themselves inadequately prepared.

A major feature of the book is the quantitative approach that has been adopted. Mr. Macrae lays stress—rightly in my opinion—on the importance of giving students some idea of the sizes of the various classes of phenomena that are discussed. In addition to data drawn from generally available sources on the finance of national investment, distribution of incomes, national debt and so on, he provides estimates of national capital, of capital held by persons by different classes of assets and of holdings of long- and short-term government debt by government departments, the banking system, overseas holders of sterling balances and the other financial institutions. Generally, wherever the discussion can be illustrated by numerical data this is done.

The deplorable gaps in British government and banking statistics force the author to rely for some of his figures on rough estimates arrived at in roundabout ways. This leads to one of the weaknesses of the book. In my view Mr. Macrae has made a mistake in not relegating to an appendix his discussion of the methods of calculation he has used and his actual calculations. By leaving these in the main body of the work he slows down the reading pace and renders the book correspondingly less palatable to all but those with an appetite for the semi-detective work involved in exploring the tangled web of official and unofficial statistics. On the other hand, he may well stimulate any student who happens to possess such an appetite.

The question must now be put whether Mr. Macrae has provided a satisfactory general text-book on the modern role of the City of London. The answer must be that while the book undoubtedly fills in a part of the picture for which hitherto there has been no satisfactory general text, yet by itself it is not enough. Indeed, it would be asking for more than most men could provide to demand in less than 300 pages a satisfying formal description of the capital market, including the role of the monetary authority, an adequate understanding of the significance and use of national-income statistics and concepts, a real insight into the significance of property rights in a capitalist economy and an appreciation of the peculiar way in which these ideas are manifested on the British scene, together with quantitative illustrations. Most of the important ideas are, indeed, in the book; but, because they are often necessarily touched on rather than expounded in detail, the uninstructed reader will, I think, sometimes fail to perceive them.

Despite its age, Lavington's book remains the indispensable foundation for the study of the capital market in this country. Mr. Macrae's book can be recommended as providing, when joined with the *Business Finance* of Professor Paish and the banking text-books of Mr. Manning Dacey and Professor Sayers, a helpful bridge between general economic studies and applications in this field.

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H. C. EDEY

Methods of Crop Forecasting. By F. H. SANDERSON. Harvard Economic Studies, Vol. XCIII. (Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1954. Pp. xiv + 259. 40s.)

No complete text-book on crop forecasting is known to have been published prior to the appearance in 1954 of the volume under review, a statement which appears to be confirmed by the absence of any such book among the hundreds of references to papers, bulletins and year-books with which the author's chapters are documented. A very special word of welcome is therefore appropriate, particularly as the book is authoritative, self-contained and well-written. The author made a special study of the subject in his doctoral dissertation of 1943; in addition, he has incorporated much of what is now standard practice in the design and analysis of sample surveys, and his writing is pleasant, well-informed and accurate.

Early, and somewhat empirical, beginnings in crop forecasting are described; English readers, at least, will recall work done by R. H. Hooker on the correlation of the weather and crops, by Napier Shaw on weather cycles and by R. A. Fisher on the influence of rainfall on wheat. Developments of statistical theory in the present century have consistently improved the scale of work done, and the author has been much influenced by two specific research projects aimed at developing objective methods of crop-estimating by simultaneous measurement of crop yields and weather factors. This country can take pride in the pioneer work done in the Crop-weather Scheme initiated in 1924; in America the Bankhead-Jones Research Project, begun in 1936, has unfortunately had to be discontinued.

There is no doubt as to the economic value of timely forecasts of crop conditions. Ordinary methods of doing so are subjective in character, and one of the chief aims of the book is to substitute for this a more scientific and thus more accurate scheme of assessment. Part I covers the knowledge required of the theory of statistics; there is a good short chapter on sample surveys, followed by one dealing with the statistical tests needed, in their forecasting role using regression methods. Part II consists of a single chapter on the methods of estimating and forecasting acreage, while Part III describes both subjective and objective methods for forecasting crop yields. The former has a long history of government bulletins on recommended methods, while the latter brings in sampling theory and is more experimental. It is here that the two specific projects mentioned above are described in detail. Part IV continues the study of forecasting yields, but this time with special reference to observing environmental factors; one chapter is informative on ecological and other factors in plant growth, while the second describes a number of specific correlation studies on the relation of weather factors to crop yield. The last chapter of all is inspired by the work of R. A. Fisher, which has been copied since in many studies throughout the world, and has as its basis the use of regression integrals to analyse weather-crop relationships.

One omission of importance, at any rate on the methodological side, is

the multiple correlation method used by Gilbert Walker in some very successful forecasting of the Indian monsoon rainfall. Apart from this, work in the British Commonwealth has been duly taken notice of, and faithfully reported. The book can be recommended as a comprehensive treatise for the reader who wishes to gather up pretty well all that is known on this interesting and important topic.

Cambridge.

JOHN WISHART

Linear Aggregation of Economic Relations. By H. THEIL. Contributions to Economic Analysis, No. VII. (Amsterdam: North Holland Publishing Company, 1954. Pp. xi + 205. 36s.)

THE seventh in the interesting series of monographs edited by Professor Tinbergen and his colleagues, this is the first book-length treatment of the important problem of aggregation, and fully justifies its inclusion in that series.

The aggregation problem, as it is usually understood, arises through the desire or, more commonly, the necessity of substituting one macro-variable for a large number of micro-variables. In dealing only with aggregates in this way, a large amount of information is compressed, but a great deal is also thrown away. Professor Theil is concerned exclusively with the case of linear aggregation, which includes summation as a special case, and which is by far the most common type.

The essential difficulty is that there are so many points on a straight line (a straight line because the aggregation is linear; more generally, a curve is mapped into a point). A considerable shift can occur in the levels of the variables of the underlying microstructure without disturbing the level of the macro-variables. Very odd perversities can occur, as in the following example: Let two individuals have marginal propensities to consume of 0.7 and 0.3 and initial incomes of £50 each. Now let aggregate income increase by £20, but the initial income distribution change to £10 and £110 respectively. Total consumption will then decline by £10 to £40, giving an aggregate marginal propensity to consume of $-\frac{1}{2}$, although both of the individual's propensities are strongly positive. If the change in distribution had been reversed, to £110 and £10 respectively, total consumption would have been £80, and the aggregate marginal propensity to consume $\frac{3}{2}$, although neither individual propensity is even half that figure.

It is considerations like this that drive most of us to indulge in considerable hand-waving and mumbled abracadabra in the transition from the micro to the macro-economy. Professor Theil is of much harderier, and more honest, stock, and does not flinch from the task. In a series of chapters of carefully increasing difficulty, he deals with aggregation over commodities, over individuals and over time periods, and over various mixtures of the three. A typical result is that in, for example, a demand study, the income parameter in the macro-equation depends on *all* the micro-parameters, not only the income micro-parameter.

In the most valuable part of the book, the aggregation of simultaneous equation models of Cowles Commission type is discussed, and the importance of identifiability in the passage from micro-structural equations to macro-structural equations *via* the micro- and macro-reduced forms is brought out. The problem of aggregation in a changing economy is all too briefly discussed, and the last part of the book debates the possibility of perfect aggregation. A perfectly aggregated macro-equation is one that does not contradict, under any conditions, the predictions of the micro-equations from which it was derived; not many macro-equations are perfect.

Dr. Theil has segregated the worst of the mathematics in an appendix, leaving the book itself bare of anything but elementary algebra. On the other hand, a fair amount of statistics is assumed, and the notation is unavoidably difficult. It is doubtful whether those with sufficient sophistication in these matters really to understand the text would not also possess the little mathematics needed for the appendix. As it stands, the manner of presentation seems to have the worst of both worlds. It would have been better to expand the "literary" summaries on pp. 133-9 and 171-82, and to present a compact, fully rigorous derivation of the results, which are mainly special cases of a few main theorems. This would probably have shortened the book, to its advantage.

In order to clothe the skeleton of the text a little, it would perhaps have helped to have had some actual empirical examples. On the theoretical side, two important omissions seem to be, first, Arrow's fruitful suggestion that the micro-parameters be regarded as having a joint frequency distribution, a given set of micro-parameters then being a point of the sample space and, secondly, Hurwicz's approach to aggregation as a problem in statistical decision functions. This latter approach would be a method of "good" aggregation according to Theil, as opposed to a method of "actual" aggregation.

One of the outstanding problems in econometrics is the degree of aggregation that a model should possess for efficient prediction. At the moment the choice is mainly an art; perhaps one day it will yield to analysis. If it does, Professor Theil's work will have been one of the main reasons.

PETER NEWMAN

London.

Distributed Lags and Investment Analysis. By L. M. KOYCK. *Price-determining Factors in American Tobacco Markets.* By H. GORIS. Contributions to Economic Analysis, IV and V. (Amsterdam: North-Holland Publishing Company, 1954. Pp. 111 and 109. 20s. each.)

THE new Dutch series of *Contributions to Economic Analysis* continues to enrich us with studies in quantitative economics. Two of the most recent publications in this series deal with method and substance of great interest to econometrics.

In the first of these two studies, Dr. Koyck takes up an interesting general

problem, namely that of estimating statistical investment equations with distributed lags. The part of his study dealing with statistical method has general applicability to many types of statistical relations involving lags in econometrics. His objective is to give a quantitative description of the time shape of economic reactions and, if successfully attained, will enable him to distinguish between short- and long-run elasticities or multipliers.

A customary difficulty in estimating relations with distributed lags, say an investment equation making capital formation a function of various lagged values of output, is the existence of a high degree of multi-collinearity among the several lagged values which are the "independent" variables in regression analysis of the problem. Dr. Koyck assumes, to get around this difficulty, that after a certain point in historical time the coefficients of lagged variables taper off according to a geometric law:

$$y_t = \sum_{i=0}^{k-1} \alpha_i x_{t-i} + \sum_{i=0}^{\infty} \alpha_k \lambda^i x_{t-k-i} + u_t$$

In this equation the coefficients of lagged values after the k th decrease at each time period by the factor λ (assumed to be in the range $0 < \lambda < 1$). After multiplying both sides by λ , subtracting from the original equation and rearranging, he gets

$$y_t - \lambda y_{t-1} = \sum_{i=0}^k \beta_i x_{t-i} - (1 - \lambda) y_{t-1} + u_t - \lambda u_{t-1}$$

He then estimates the β_i and $(1 - \lambda)$ by the method of least squares, but these estimates will be biased, since $u_t - \lambda u_{t-1}$ is not a series of non-autocorrelated disturbances. Dr. Koyck assumes that u_t satisfies a first-order autoregressive scheme, and for given values of the autoregressive parameter he can obtain consistent estimates of the β_i and $(1 - \lambda)$. For the most part, he sets $k = 0$, and therefore deals only with the regression of $y_t - \lambda y_{t-1}$ on x_t and y_{t-1} .

This device, although admirably motivated and carefully developed, is quite arbitrary. It leaves little freedom to the coefficients of successive lags. They must be all of the same sign, a restriction which limits the possibilities of dynamic development in the economy.

Following the points on pure statistical procedures, Dr. Koyck takes up interesting aspects of economic theory. He writes a useful chapter on the theory of the firm in terms of capital and output variables, and gives interesting comments on the acceleration principle. His empirical investigations of investment functions cover capital as a function of output in the following American industries; railroads, electric power, cement, steel and petroleum refining. The estimated speed of adjustment of capacity to output is low in each case, giving an unfavourable verdict on the existence of a strict acceleration principle. In all cases except that of hydro-electric capacity the estimates are insensitive to the value assumed for the unknown autoregressive parameter. The failure of the statistical technique in this case is discouraging.

In addition to some dissatisfaction with Dr. Koyck's statistical methods, the reviewer finds fault with his economic analysis, which builds investment

functions entirely on the basis of simple mechanical relations between capital and output. Surely financial variables such as profits and interest rates influence rail investment and some of the other types of capital formation as well. Regardless of the high correlations found between investment and output, structural behaviour patterns are not obtained without reference to other variables.

In the second study Miss Goris, like Dr. Koyck, is dissatisfied with existing statistical methods and substitutes her own brand of regression analysis for studying the factors determining the prices of tobacco in American markets. Her study is excellent as a description of an industry and its peculiar marketing arrangements. When she comes to statistical method, however, her criticism of modern econometrics, in the reviewer's opinion, is not well taken and serves mainly to relieve her of a substantial computational burden.

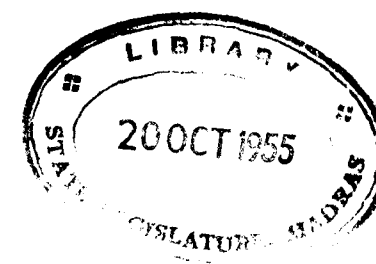
In formulating a mathematical model of price determination in the tobacco market, she is not always clear about the niche in a consistent body of economic theory for each structural equation put forward. She ends up, however, with a final equation for price as a function of supply (including carry-over stocks), lagged industrial production (as a proxy for disposable income), an index of total exports to tobacco-importing countries, a shift variable to denote agricultural legislation in 1933, lagged disappearance of leaf tobacco. It is notable that she achieves a good degree of disaggregation and studies separate equations for each of five tobacco types.

Original variables are transformed to logarithms, and three alternative regression equations are estimated by the method of least squares: direct correlation of the variables; correlation of first differences of all the variables (including a constant term and therefore implying a trend coefficient); correlation of deviations of each variable from its trend.

Miss Goris is not satisfied with any of the three estimation methods on the basis of "sign" criteria or general plausibility of coefficients. According to her interpretation, the method of first differences is best for estimating the coefficient of supply, while the method of trend elimination is best for estimating the coefficient of industrial production. She drops the other explanatory variables except time trend and forms her final estimates by the following mixture of procedures: she first correlates price with supply by the method of first differences; she then correlates the residuals from this relation with industrial production by the method of trend elimination; she finally correlates the residuals from the second step with a linear trend by the ordinary direct method. In this way she obtains estimates of coefficients of three separate variables, but it is difficult to interpret her findings in terms of any acceptable theory of statistical inference.

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National Income and Social Accounting. By H. C. EDEY and A. T. PEACOCK. (London: Hutchinson's University Library, 1954. Pp. vii + 222. 8s. 6d.)

THE authors of this introduction to the current theory and practice of national-income accounting have set themselves a formidable task. They have tried to provide in a form intelligible to the general reader, and within severe space restrictions, a rationale of social accounting which explains in addition the related techniques of input-output analysis and national budgeting. The emphasis throughout is on the functions of these concepts as tools of economic analysis rather than on the statistical techniques involved in their measurement.

The volume falls into three parts which are unequal in strength as well as in size. The first and longest part is a clear exposition of the basic structure of simple social accounting and input-output systems, relating them to each other and to the broad framework of macro-economic equations which emerge from *The General Theory*. This part is illustrated by United Kingdom and United States figures and provides a commentary on the principal statistics published in the Blue Books on national income and expenditure.

The shortest and most disappointing section deals with applications of social accounting. It is here that the authors seem to suffer most from the need to express themselves with extreme brevity and simplicity, and the result is occasionally uninspired or superficial. The subject of real product calculations, for example, deserves a more considered treatment, even at this elementary level.

The final part is devoted to a detailed description of a set of national-income accounts designed to bring out their systematic character and to relate the entries to actual accounting flows. The student who has the patience to work through the accounts presented in this section should emerge with a practical appreciation of the interdependence of economic transactions. These analyses of accounts might have been enlivened for the general reader by more explicit reference than is contained in the concluding paragraphs to the uses an economist or econometrician might make of these detailed data.

An elementary introduction to what is now a voluminous literature is necessarily selective, however, and the reviewer's assessment of the omissions will tend to be subjective. The authors have viewed a remarkably wide field with brevity and clarity and have given the serious inquirer a starting point for more intensive studies within this field.

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PHYLLIS DEANE

Mathematics and Statistics for Economists. By GERHARD TINTNER. (London: Constable, 1954. Pp. xiv + 363. 30s.)

IT is Professor Tintner's intention to provide the budding econometrician with some of the more primitive tools of his trade. He has, therefore, written a text-book on elementary mathematics and statistics in which every application is drawn from the field of economics. He hopes that the conscientious reader will eventually "understand most of the articles published in such journals as *Econometrica*, the *Review of Economic Studies* and the *Journal of the American Statistical Association*."

This is a most worthy objective, but it is doubtful whether it has really been achieved. The problem is the extremely difficult one of devising an elementary text-book for mature minds. The present work is an admirable school text-book for boys who somehow do not learn any mathematics until after the acquisition of some knowledge of economics. With its aid the reader is acquainted with the technical terms, the symbols and the techniques that he requires, but he is unlikely to achieve the understanding of what he is about, which, one hopes, distinguishes the university student from his younger counterpart.

A conspicuous example of the failure to illuminate a formal method by adequate exposition is shown by Tintner's treatment of the problem of Constrained maxima and minima which occupies about two-thirds of a page, excluding examples and applications. The problem of maximising (or minimising) some quantity subject to constraints is an economic problem *par excellence*, and it is essential that a student should be given some inkling why the use of Lagrange multipliers produces the right answer. The fact that the exact theory is deemed to be beyond the scope of the book is no justification for omitting any kind of explanation of the rationale of the method. It is, however, only fair to add that it is not easy to find helpful explanations in more advanced text-books on mathematical economics.

While it is clearly desirable that undergraduates should understand what they are doing, there is also a strong presumption that they will find tedious a process of learning by rote. If the study of elementary mathematics is to be a stimulating experience, some measure of intellectual effort is inevitably required. The study of the subject cannot be both worthwhile and painless. An undergraduate may subject himself to Professor Tintner's formal drill urged on by the prospect of an inescapable examination hurdle, but he is unlikely to be inspired solely by the intrinsic interest of the subject.

It is easier to say why Professor Tintner's book is not quite the ideal for which one looks than to provide a recipe designed to yield the required result. Until the perfect text-book is produced, Professor Tintner's work may be safely recommended to well-disciplined and persistent students.

A. D. ROY

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Social Security in the British Commonwealth. By RONALD MENDELSON. (London: University of London, The Athlone Press, 1954. Pp. xiv + 391. 35s.)

SOCIAL-SECURITY policies are still in an early stage of evolution, and although tentative solutions have been found for the many problems which arise, the systems now in force are experimental, and big changes will be made as more experience is gained, as economic conditions alter and as new social doctrines emerge.

Dr. Mendelson's work is of value in outlining this evolution since the beginning of the present century in Great Britain, Canada, Australia and New Zealand, all of them countries with high standards of living and of education. He compares and contrasts the present systems of social security, finance and administration in these countries. The book is in the words of its author "in the nature of an interim report" on a long-term evolution. Many questions are raised by the different methods adopted in the four countries. Should contributions and benefits be at a flat rate, or should they vary with income? Should schemes cover all citizens or only the workers or those with low or modest incomes? What is the place of means tests? What part should actuarial methods play? To what extent should social security be financed from ordinary tax revenues or by special earmarked contributions? Can a "pay as you go" system of finance be arranged, or to what extent must large sums be accumulated, especially for pensions? Can the somewhat cumbersome system of linking contributions directly with benefits be avoided? Is a single unified system preferable to a dual system consisting of Insurance and Assistance? What can a community afford to spend on social security?

From the systems reviewed, the means test seems to have aroused greater opposition in Britain than in the other countries. In the British insurance scheme contributions give rights to benefits, but this is not so in the Australian scheme. Only Britain and Canada have central records of insured persons, such records being necessary because benefits are linked with contributions. Britain has the widest cover, but cash benefits are low relatively to those in the other countries. In the years of the Great Depression unemployment schemes, except in Britain, were meagre and chaotic, and their serious inadequacy led to more effective methods being subsequently introduced. In addition to such data, the author discusses the psychological advantages of contributory systems, and the effects of social-security systems on the trade cycle, on mobility of labour, on individual thrift, on costs of production, and on the national income and its distribution.

Interesting figures (p. 299) show for 1938 and 1948 the proportion of the national income spent on social security in each of the four countries. Usually this ranged from 4% to somewhat over 5%, but in New Zealand in 1948 the percentage was 9.4. Dr. Mendelson considers this New Zealand proportion to be too high, and in his opinion the proper proportion of a country's national income to be spent on social security is around 5% in

periods of prosperity, and 7.5% in periods of adversity (p. 315). It would have been valuable if he had developed reasons for favouring these proportions.

The author considers that two main trends are likely, the first being towards universality, with cover for all members of the community and not merely for work-people or persons with incomes below some specified figure, and the second towards ensuring stability in the purchasing power of social-security benefits, perhaps by arranging for a stable proportion of the national income to be devoted to social-security purposes, which would largely solve problems which arise from changes in the value of money.

Dr. Mendelson rightly emphasises the importance of preventive and remedial measures, particularly to reduce the social-security burdens of unemployment and sickness. He seems to favour a system in which assistance and insurance would be merged in a unified scheme with a single contribution collected along with income tax, and without any direct link between contributions and benefits. This would make unnecessary the rather complex administrative methods of insurance, though it would no doubt involve a means test. But though favouring universality, he recognises (p. 284) that: "The more stable and prosperous a community, the smaller need be the rôle of social security. . . ." May this not, however, make universality unnecessary? Countries with very high standards of living, with little unemployment and with good health may turn away from universal comprehensive social-security schemes. A great majority of the populations of such countries would be able to provide for themselves by their own thrift, or be covered by sickness and pension schemes organised in association with their employment. Emphasis would be more on individual responsibility and less on dependence on the State. In such conditions a universal comprehensive scheme might be like using a steam hammer to crack a nut. What would be needed would be a much smaller and simpler scheme for a residue of people who had been unable to provide for themselves. This is no doubt looking far into the future, but may indicate a trend as advanced countries raise their standards of living still higher.

The book includes an appendix which conveniently summarises the main social-security provisions, including rates of benefit, in the four countries, and there is also a useful bibliography.

J. HENRY RICHARDSON

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Man, Motives and Money. By A. LAUTERBACH. (Ithaca, New York: Cornell University Press, 1954 (London: Geoffrey Cumberlege, 1955). Pp. v + 366. 40s.)

In a recent examination script I discovered the following sentence, "prolonged studies have shown that the worker is a human being." Soon examiners will, no doubt, be learning that prolonged studies show that even the entrepreneur is a human being. If so, Professor Lauterbach will have

made his points. "Businessmen have," he writes (pp. 71-2), "so long been associated with cold logical calculation" that their need for "security" (p. 71), and the factors underlying their "self-assertion and social prestige" (p. 50) and other less rational characteristics, now require study.

Applied to the manual worker, this sort of study has by now become perhaps, too prolonged. To judge from current amateur literature and discussion, the Elton Mayo sociological man has displaced the Adam Smith economic man as a stereotype. But economic man still confronts readers of text-books in the shape of the entrepreneur, and one must welcome Professor Lauterbach's attempt to look behind the frontage. He maintains (p. 69) that "important influences of a non-economic type . . . are not an exception but a rule in determining the ways in which business is started, expanded and currently done. . . . Decision making depends in a large degree on the institutional setting, . . . on the cultural value system and on the group loyalties, personalities and individual needs of the persons concerned." The businessman himself thinks he acts freely as an economic man, but this Professor Lauterbach dismisses as rationalisation or myth. "The free-enterprise myth tends to become a quasi-religious belief with some magical traits that promise a cure for all evils. . . . The way in which free enterprise is contrasted with government often resembles a fight for independence from 'father'."

One can sympathise with Professor Lauterbach's reaction to present-day American free-enterprise propaganda, particularly its hypocrisy, when, as he points out (p. 74) America, in fact "has long had an intricate network of public grants to private enterprise," and has social-security legislation, financial controls, T.V.A. and elaborate government programmes for trade promotion, soil conservation and research, not to mention defence.

The course of the argument is clearly explained in the introduction, but seems to fly off at a tangent. In the first two chapters the author examines how far business behaviour follows "those rules of economic decision making which economic analysis has assumed or developed" (p. xii). In Chapter 3 he applies the question to the particular circumstances of economic instability and looks into the relation of the stability of the economic system to the feeling of personal insecurity, and into methods of reforming instability. This brings the author in Chapter 4 to a discussion of the "personality traits" of reformers, and in particular of the labour leader in relation to the movement he leads. The author's summary on this (p. 197) is a fair sample of the style and substance of this book.

"... a labor movement that mobilizes in its members real ego involvement, at least periodically, represents a kind of economic reform in itself; for it helps many workers in overcoming frustrations that are rooted either in industrial occupations as such or in their "low" position in society. Participation in the labor movement, and the solidarity feelings that go with it, tend to give individuals new involvement objects and values. This occurs at a time when many people cannot derive adequate satisfaction either from purely financial in-

centives or from the traditional joys of creative and durable work, either from the promise of rewards after death or from temporal work for love, *à la* Father Divine, either from competitive or from co-operative stimuli as such. Moreover, the labor movement reflects the security strivings of large population groups in industrial societies which have witnessed the psychological as well as the economic disaster that goes with mass unemployment."

The author concludes (p. 240) with a number of specific suggestions for further research in economic psychology. But even in the area which he has covered one comes away with a certain feeling of hunger. There are so many appetising statements in the text without any solid evidence being provided in support. An example is that, among the executives of large corporations (p. 231) "the desire for continuity of production, financial stability or expansion is often more influential than a striving for immediate and definite profit." This, I take it, is one of the "number of promising hypotheses which may lend themselves to empirical verification sooner or later" and to which the author (p. 100) "must confine" himself. Solid evidence on some points appears, however, in the appendices, notably that on Personal Factors in Industrial Location, which brings out the economic inertia of many businesses, even in America. Typical examples: "We'll stay right here. We'll move nothing. We're an institution here. . . . In a way it's an asset to us to stay here and carry on the tradition, I guess" (p. 261). "Nobody wants to leave home. I'd hate to leave X. . . . I'd rather live in a satisfied community than make money" (p. 262).

The chief value of the book is perhaps focusing on a given problem the great variety of disciplines that have by now developed in social science. Omitting references to notes and the bibliography, the top scorers in the index of names are Freud with eleven references, and Marx, Veblen and Keynes with six apiece. But it is useful, too, to have the relevant conclusions of a host of contemporary American social psychologists with (pp. 316-56) a precise and annotated reference to their works.

P. SARGANT FLORENCE

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Controls and Subsidies on Agricultural Products and Requisites. By H. FRANKEL. Supplements to the *Farm Economist*, Vol. VII, Nos. 4-8. (Oxford: Agricultural Economics Research Institute, 1954. Pp. 51, 57, 57, 46, and 76. 2s. each.)

MANY readers will recall the *Agricultural Register*, published annually before the war by the Agricultural Economics Research Institute at Oxford, which summarised agricultural legislation and developments in production and organisation in the United Kingdom. This useful publication was brought to an end by the war. As a kind of successor to the Register, and as a supplement to its periodical publication *The Farm Economist*, the Institute has produced during the past couple of years a series of five booklets describ-

ing the measures of subsidisation and control of prices and distribution of agricultural commodities, both home-produced and imported, in operation in the period 1939-53. These booklets are issued on a commodity basis, and deal respectively with pigs, bacon and eggs, meat and livestock, wheat, flour and bread, sugar-beet and sugar, and potatoes. One more issue, "on a miscellaneous group of subjects," is to appear.

These volumes are not in any sense a history. Like their predecessor *The Agricultural Register*, they do not purport to do more than record facts. This task they perform very thoroughly and in general with commendable brevity and clarity.

It is easy to imagine that such summaries as these could have been cluttered up with superfluous detail. Some of them, indeed, are not altogether above criticism in this respect. For example, in describing the restrictions placed by the Ministry of Food on transport of potatoes between certain areas in order to spread supplies evenly and to conserve the supply of the longest-keeping varieties, it was hardly necessary to set out in full the areas defined and the varieties affected. Nor, one feels, need as much as thirteen pages have been devoted to the detailed changes in the margins paid to importers, wholesalers and retailers of meat during the control period, important though that subject may have been. But, in a work of this kind, which is likely to be widely used for reference purposes, it must always be difficult to decide what to leave out, and on the whole the author has steered an admirable middle course between too much and too little detail. The volume which perhaps is least satisfactory in this respect is that on potatoes—the latest in the series—which occupies seventy-six pages (compared with around fifty pages as a general average) in dealing with a commodity that on the whole appears to have presented less complicated problems of control than most.

The sources used in compiling these volumes have mainly been Parliamentary papers and other official documents and Departmental press notices, though some recourse has been had to the daily Press and trade periodicals. Sources of information are well footnoted.

In each report considerable space is devoted to the extent of subsidisation by the Government of the commodities concerned, whether by direct payments or through trading losses, and to the amount of remuneration paid to the various traders and trade organisations who acted as the distributive agencies of the Ministry of Food. No one reading these sections of the work can fail to be impressed by the difficulties, more particularly for those commodities of which the Ministry itself became the buyer and seller, of "estimating the subsidy proper as distinct from the cost of control." For it is rightly pointed out that where subsidies take the form of trading losses, these include not only trading losses deliberately incurred but also any losses due to inefficient trading or administration. The immense difficulty of fixing reasonable margins for manufacturers and distributors under control is well illustrated by the account given of the arrangements for wheat, bread and flour and the problems to which they gave rise, for example, the Flour

Millers' Remuneration Agreement with its provision for out-of-pocket expenses plus profits based on pre-war earnings, the problem of profits on millers' excess output over pre-war, the discovery after some years of war that the manufacturers of biscuits and semolina were unintentionally benefiting from the subsidy on flour, the bread subsidy to bakers with its provision for a rebate on flour used for bread but not for other purposes, such as cakes and flour confectionery—all necessitating complicated accounting arrangements and frequent costings investigations intended to ensure fair margins.

Each of these volumes is liberally supplied with statistics of production, consumption and prices of the commodities dealt with and of costs of distribution and subsidies during the control period.

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Thirty Years in Coal, 1917-1947. By W. A. LEE. (London: The Mining Association of Great Britain, 1954. Pp. 255. 15s.)

THIS is a defence of private enterprise in the coal industry from 1917 to 1947 written by the Chairman and former Director of the Mining Association. According to the author its main objects are to bring out objectively the essential nature of the British coal problem and to induce a juster appreciation of the achievements of the coal-owners during this period. In particular, he is concerned to correct two "fallacies"—that the British coal industry was inevitably a contracting industry and that industrial relationships under private enterprise were incorrigibly bad. (One impression left by the book is that there is much substance in both "fallacies.")

Mr. Lee has written an interesting book, but one which adds little to our knowledge and understanding of the period. Most of the facts recorded here are already well known, and it is doubtful if (for example) it was worth reproducing lengthy extracts from the "Foot Plan" or the substance of the selling schemes instituted by the 1930 Act. At the same time the book is not sufficiently systematic or comprehensive to be a useful reference book. Also it is somewhat biased in its approach to most of the problems discussed. This is not surprising in an apologia, but the foreword claims that it does not seek to argue a case but to present the facts soberly and dispassionately. This being so, it is not sufficient (for example) to quote declining productivity during a period of Government control as conclusive evidence that the former was the result of the latter (pp. 13-14). The statement (p. 95) that there was no important stoppage in any coalfield between 1926 and 1939 will also come as a surprise to many readers. Moreover, the book purports to deal with the fundamental factors governing the efficiency of the industry, but only some very scrappy and unsatisfactory information on capital investment from 1918 to 1925 is provided. Another disappointing feature of the book is that we are told so little about the functioning of the Mining Association itself. How did it come about that the Association was able to negotiate national wages agreements 1920-26, but thereafter ceased to have any power to negotiate

on wages questions? Was this merely a tactical move to make it more difficult for the owners to be pinned down on a question about which the miners felt very strongly? (We know little enough about employers' associations, and we are told that the Association was likely to be wound up in 1954, its centenary year. One wonders what is to happen to its records.)

There are a number of interesting titbits. We get, for example, a fairly full account of the negotiations for a European coal cartel and some confirmation that the 1944 wages agreement was conceived in the Ministry of Fuel and Power. But more important is the incidental illustration of some important factors which have bedevilled industrial relations. Thus, for example, we see how comparatively easy it is for top-level negotiators on both sides to appreciate each other's arguments sufficiently to reach an acceptable compromise. But whereas the owners' representatives could feel pretty certain that they could carry their organisation with them, the miners' representatives could not.

Mr. Lee has succeeded in one thing. He leaves a very clear impression that the post-1918 troubles of the industry were due less to the stupidity and obstinacy of the owners than to factors beyond their control. One of the most puzzling features of the period is that the miners publicised their case so well and the owners so badly. If he has corrected only a few wrongful impressions his book has been worth writing. It is to be hoped that some scholars will now be inspired to write up in more systematic and critical fashion the record of private enterprise during the past hundred years in an industry which has contributed so much to Britain's industrial pre-eminence.

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Leaders of British Industry. By G. H. COPEMAN. (London: Gee and Company, 1955. Pp. 173. 15s.)

THE first study of its kind to appear in this country, Mr. Copeman's book is based upon a questionnaire survey of just over a thousand directors of public companies. The population surveyed included all the directors of 445 quoted companies engaged in manufacturing, retailing and servicing with nominal assets of more than a million pounds. About 36% of the directors circularised returned filled-in forms. The questionnaire asked about the respondent's education, the occupation of his father, his early career, the number of different firms for which he had worked and the number of directorates he held. The core of this slender volume is contained in the forty pages which tabulate the answers received.

This core is surrounded by material which is not well integrated with it. The first part of the book is a review—based upon Palmer's *Company Law*, potted summaries of several recent writers and a few interviews—of the history of company law, the separation of ownership and management, and the legal status, duties and selection of directors. The chief point of these seven chapters is that one would expect to find a "mixed team" of directors

on each board, men recruited from within the firm as well as professional "outsiders," men with both administrative and technical experience and perhaps a representative of the founding family. The data which Mr. Copeman supplies in his statistical analysis do not test this hypothesis, however, since they are not presented in terms of the composite boards of individual firms. This elaborate digression on the variety of recruitment to each company board appears to have been an afterthought rather than, as its position and terminology would suggest, an hypothesis to be tested by the empirical data.

The short main body of the study contains some interesting material, but the writer presses too far his attempt to establish that his respondents formed, in fact, a representative sample of the population. A tabulation, in eleven classes, of why forty-nine men failed to respond is discussed at length but to little purpose. Furthermore, Mr. Copeman makes unwarranted deductions about the rest of the population from his empirical results. The fact that four out of five men who co-operated in the inquiry were full-time company directors is not evidence that part-time directors are not under-represented among the respondents (p. 86).

The main analysis is a summary in tables and prose of the answers. Because questions asked of the data were rather vaguely formulated the tables are somewhat jumbled and illogical. Breakdown into broader classes would have been helpful in some cases. As the writer realises, the alternative "training for an executive post" as a first occupation was ill-chosen when the questionnaire was formulated. It is not surprising that one in five men now in executive posts described their early careers in this way. Certainly this vague category does not justify the conclusion given elsewhere that such men were "experienced all-rounders" backed by no other evidence than the popular belief that the family man who is to succeed in the business was trained in every department.

Among the "cross-classifications" of the data given, I felt particularly disappointed that none were by industrial group. At one point the writer gives some results that suggest that this type of analysis would be very useful. He notes that 66% of the engineers are in the engineering industry and 47% of the scientists in the chemical. Such an analysis might play havoc with his hypothesis of the "balanced team" in each firm. His findings industry by industry would be all the more interesting because his respondents do seem to have grouped themselves quite well according to the relative number of companies in the population in the selected branches of manufacturing and trade.

The editing leaves much to be desired. Footnotes are in a desultory form, and the list of references at the end should never have passed muster. I do not like the innovation of printing in heavy type "all a busy man has time to read" and prefer to do my own skimming. More serious, however, are two general points about the use of evidence in this study. It seems to me that the quoting of anonymous statements in support of an argument (unless on the basis of a large-scale opinion survey) is to be deplored, par-

ticularly when it is reduced to the absurdity of quoting "several part-time directors" in support of the contention that part-time directors can serve a certain useful function (p. 46). Mr. Copeman himself is aware of the inherent difficulties of a questionnaire survey, though he is not always so cautious in interpreting his results.

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The Irish Pound 1797-1826. A reprint of the Report of the Committee of 1804 of the British House of Commons on the Condition of the Irish Currency, with selections from the minutes of evidence presented to the Committee and an introduction by F. W. FETTER. (London: Allen & Unwin, 1955. Pp. 136. 16s.)

PROFESSOR FETTER has added another to the list of classics on monetary theory and practice. Outside these islands, the topical interest of his subject is perhaps small, but its analytical interest is very great. As he says in his preface, the fame of the Bullion Report of 1810 has overshadowed the earlier Parliamentary Report of 1804 from "The Committee on the Circulating Paper, the Specie and the Current Coin of Ireland." Merely to reprint the Report, and make it accessible to students, would have been a worth-while task in itself, but in addition Professor Fetter's introduction, setting out the historical background and the analytical problems, is a work of art.

The Reports of the Committees of 1804 and 1810 have been given an added topical interest, since recently a somewhat similar situation has been created by the decision of the banks operating in the Irish Republic, under pressure from the Republican government, to refrain from increasing their lending and borrowing rates inside the Republic in conformity with the raising of Bank Rate in London. At the time of the Bank Restriction, the consequent problems appeared in a different guise, because monetary and banking techniques were different, but the essential issues faced by the Committee of 1804 are the same as those which a prospective Banking Commission of 1957 will have to face.

The central fact exercising both the Committee (and later the Bullion Committee) and Professor Fetter is the depreciation of the Irish pound in relation to the pound sterling, over a period when both pounds were subject to the same political sovereignty. An interesting point is the division, shown in other works also, between a Northern or "hard money" province and a Southern or "soft money" province, the former including Ulster and parts of Leinster and Connaught as well as Scotland and most of Northern England.

The depreciation showed itself then in the forms of an open premium on guineas in Dublin, a publicly quoted exchange rate between Belfast and Dublin and a discount on Bank of Ireland notes in terms of Bank of England

notes. It would be interesting to speculate on the probable effects now of a *prima facie* successful government effort to keep some short rates in the Republic below the level consistent with London rates. The 1804 Report and Professor Fetter's discussion show by implication how little the political sovereignty mattered: what did matter was the behaviour of different groups of borrowers and lenders within a paper system, integrated on paper.

Professor Fetter says truly that the 1804 Report "contains a large part of the doctrine later incorporated in the Bullion Report . . . discussed in a more concise and realistic way," and draws merited attention to the realistic influence of Henry Thornton on the Committee's work. His bibliography of the controversies which accompanied or followed the Committee's deliberations and Report is by itself a noteworthy piece of research, and a gold-mine for future students. The depressing task of selecting the worthwhile pieces out of the Minutes of Evidence he has performed with great skill—he has got the maximum of meat with the minimum of dope.

The special virtue of Professor Fetter's introduction is that he has taken an historic incident and fitted it firmly into its practical and theoretical context, and has, in so doing, successfully related the Report (reflecting the analysis of its day) to the very different modes of approach to such problems current among economists to-day.

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Dublin.*

Medieval Merchant Venturers: Collected Studies. By E. M. CARUS-WILSON. (London: Methuen, 1954. Pp. xx + 314. 30s.)

THE essays reprinted here appeared in various places between 1929 and 1950. Their republication presents an opportunity to review the results of Professor Carus-Wilson's researches into a central problem of medieval economic history—the expansion of the English cloth industry and cloth trade. The early phase of the history of the cloth industry was still regarded as an obscure matter by Lipson in 1945, and it was commonly supposed that after an initial period of growth in the twelfth and early thirteenth centuries a decline set in which was only halted in the reign of Edward III. Professor Carus-Wilson dispels some at least of the obscurity (Chapter V). Apart from cloth-workers supplying a local market in almost every English town, there was already a "great industry" working for export by the beginning of the thirteenth century, particularly in the towns of the eastern plain. This industry, moreover, was already "capitalist," the weavers and fullers being in effect employees of entrepreneurs, amongst whom the dyers were prominent. Nor did this industry decline in the thirteenth century (Chapter IV). Instead, a veritable "industrial revolution" took place, though it may be better not to venture into the thorny problem of what constitutes such a revolution. The crux of the matter was the mechanisation of the fulling process with the introduction of the fulling mill. This led, not to

the decline of the industry as a whole, but only of the traditional urban industry. It migrated from town to country and from the eastern plain to the hilly north and west in search of water power. The migration favoured the growth of the industry by freeing it from the burden of high urban taxation and gild restrictions.

It was this country industry which provided a major item in England's export trade in the later Middle Ages. Professor Carus-Wilson (Introduction and Chapter VI) provides a firm chronology of this expansion based upon an analysis of the customs accounts. They allow her to indicate the rate at which England was transformed from a primary producing to a manufacturing nation. Cloth exports were rivalling wool exports by the end of the fourteenth century; by the end of the fifteenth they dwarfed them. They also permit her to measure the growth of the English share in this trade. Under Edward I the greater part of English trade was carried by alien merchants. The wool trade and wine trade with Gascony (Chapter VII) passed largely into English hands in the fourteenth century, though these were contracting trades. Englishmen also carried about half the growing cloth exports. Here the London Merchant Adventurers, whose origins Professor Carus-Wilson was the first really to elucidate (Chapter III), came to be pre-eminent. Yet this company did not necessarily contain the most adventurous of merchant venturers. Their prominence in the fifteenth century, Professor Postan has argued, in part reflected the contraction of English enterprise to the one route across the narrow seas in face of the successful challenge of Hansards and Italians. Professor Carus-Wilson's essays on Bristol and the Iceland trade (Chapters I and II) display another aspect of the fifteenth century. They show that Englishmen did not submit easily to their exclusion from the northern and Baltic trades; that Bristol in no way relinquished the coastal trade with south-west Europe to the Italians; and that in the mid-century a "great pioneer," Robert Sturmy, was already venturing into the Mediterranean. It was perhaps natural for John Cabot to settle in Bristol to find support for his voyages to the New World.

Bristol, moreover, with its hinterland of Cotswold villages, was as much as anything else a cloth port. The central theme is thus prolonged from its small beginnings to the eve of Tudor expansion. Even this bald summary may be enough to indicate that Professor Carus-Wilson has re-written piecemeal an important chapter of English economic history. That alone justifies the publication of these essays. One may also hope that they will continue to inspire comparable studies of other branches of medieval trade and other medieval ports. They will serve as models for such investigations and for the handling of the often recalcitrant materials for the history of medieval trade and industry.

*St. John's College,
Cambridge.*

EDWARD MILLER

Economic Problems of Underdeveloped Countries in Asia. A Symposium edited by B. K. MADAN. (New Delhi: Indian Council of World Affairs (London: Geoffrey Cumberlege), 1954. Pp. 290. 21s.)

THIS study of the economic problems of underdeveloped countries in Asia, ably edited by Professor B. K. Madan, who also contributes a chapter on "Forms of Foreign Investment," consists of a co-operative effort by sixteen authorities of varied nationalities. Part I discusses problems and policies (such as capital requirements, technical assistance, the Colombo Plan) affecting all (or most of) the countries surveyed. Part II consists of a series of chapters each of which deals with one of the principal countries or areas under consideration (India, the Middle East, Pakistan, Burma, Malaya, Thailand, the Philippines, Indonesia and Ceylon); whilst Part III—by Professor V. K. R. V. Rao—discusses in detail the possibility of establishing an International Development Authority.

The book is in many ways interesting and useful, but in some respects it is disappointing. It covers a very wide field, so that of necessity the space allocated to each country or area is strictly limited. But even when full allowance is made for this fact, it remains true that whereas some of the authors have contrived to compress considerable illumination and much wise comment into their short contributions, others have done little more than summarise the main features of either the economies under consideration or of their plans for development. The result is that the greater part of the book consists of competent summaries of official data, rather than of enlightening contributions to the urgent problems involved.

Part I is clear and concise. Professor Madan (in Chapter 1) faces the facts that underdeveloped countries remain underdeveloped "not only because their resources of domestic capital and technological skills have not been fully mobilised, but primarily because these resources are small and very inadequate" and that "International (private) capital movements have been the prime movers of economic progress bearing the fruits of technical advancement and scientific progress . . . from country to country" (p. 3). This prepares the way for his excellent discussion of the relative merits and practicability of the various forms of international investment. He calls attention to the greatly reduced flow of private foreign investment since the war, insists upon the necessity for joint action by capital-importing and capital-exporting countries, and concludes that the most promising solution is a "new real international organisation for the distribution of economic aid funds" (p. 17)—a suggestion (as already noted) taken up at much greater length by Professor Rao in Part III. The latter concludes by criticising the scheme recommended by an *ad hoc* Committee of United Nations experts, and propounding his own concrete proposals. The rest of Part I provides able historical summaries of the various chosen topics, but some of them are unavoidably "dated."

Professor D. R. Gadgil's chapter on "Economic Development in India" is perhaps the most interesting in the whole book—partly because he writes

from a very definite standpoint, and perhaps partly because (unlike most of his fellow-countrymen) he tends to be pessimistic about the adequacy and success of Indian planning. He stresses throughout the need for a social revolution, and social control, but concludes that the Government is attempting to implement the Plan without sacrifice from the rich or any special effort on the part of the Government: hence that it will not succeed in generating the necessary mass enthusiasm. He is undoubtedly right to emphasise the tremendous task ahead, the need for present sacrifice if real progress is to be secured and the urgent need to arouse the active support of the masses. It is, however, encouraging that since he wrote the community and extension projects have been launched on a wide front, and already provide some hope of securing that support. Moreover, Professor Gadgil will surely approve of Mr. Nehru's proposed constitutional amendments which should provide more opportunities for Governmental action, although here we come to more controversial matters, because what may be gained by greater Governmental activity may be counterbalanced by losses if international investment in India is thereby endangered.

The other more substantial chapters in Part II are those on Pakistan, Malaya and Thailand. That on Pakistan is, however, mainly concerned with Government economic planning, and tends to be as optimistic as Professor Gadgil's chapter is pessimistic. Unfortunately recent political and other events and problems have necessarily put a serious brake on Pakistan's economic progress. The chapters on Malaya and Thailand are informative, but consist essentially of summarised official data, whilst the rest provide little more than brief introductions to the nature of the economies under consideration.

VERA ANSTEY

London School of Economics.

The Economic Development of Japan. Growth and structural change, 1868-1938.

By W. W. LOCKWOOD. (Princeton: Princeton University Press (London: Geoffrey Cumberlege), 1955. Pp. vii + 603. 63s.)

It is widely believed that lessons learned from the rapid development of the Japanese economy can be helpful in guiding policies for the development of other economies of Asia. The Japanese economy a hundred years ago was "underdeveloped" by any test: population pressures were already intense; her raw material resources and agricultural land were far from adequate; her social and political traditions did not appear to be auspicious; and yet in less than a century she had won for herself a place among the world's leading economies, and had far out-distanced the rest of Asia. Her experience has naturally had a fascination for students of development, though perhaps a morbid one, considering where she found herself by the end of the 1930s.

Professor Lockwood has provided us with a careful and intelligent account

of this experience. Though the focus of his interest is Japan since the Meiji Restoration, he is ever mindful of the interest his analysis may have for those who have to deal with to-day's problems. He has brought together an immense amount of data and his interpretations, though perhaps not always acceptable, at least make sense. This work is indeed unusual in the high quality of the economic analysis that holds it together. The author is not only familiar with modern theory, but he knows too when and how to apply it. On such matters as the proper role of foreign investment, fiscal and tax policy, government's role generally, the relative emphasis to be given to the processing as compared with the extractive industries, and trade policies, he has assembled a great deal of helpful information. Naturally, these lessons are not always applicable to other economies. It is doubtful whether the masses in them would permit the social injustices which accompanied development in Japan—if they had any say. It is not certain either whether the world setting is now so favourable. But the lessons are there nevertheless to be intelligently applied.

The policy for development adopted in Japan was far from a *laissez-faire* one. In many respects it resembled the mercantilist measures taken a century or more earlier in Europe. The Government took steps to stimulate industry and agriculture, and its task was the easier because it was able to proceed without paying more than the slightest attention to the well-being of the peasantry and labour force. While the Government did initiate undertakings in certain industries, most of its activities were confined to encouraging private enterprise, by subsidies, tax and monetary policy, the development of overseas markets and the stimulation of improved techniques.

Japan needed to import heavily from the beginning. While she was able to secure some help from abroad in the form of capital imports, she had to finance most of her purchases by developing markets abroad. In this connection she was most fortunate because while after the Russo-Japanese war she herself increasingly adopted restrictive trade policies, she could gain the advantages provided by relatively free and multilateral trade possibilities in expanding world markets. The author properly stresses her dependence upon such trade patterns.

Was Japanese experience special in the sense that she gained from being the first to develop in Asia? Probably not, according to Professor Lockwood—though his analysis here is not convincing. The fact that other parts of the Asian continent had made no significant advance certainly in one sense limited her markets, and perhaps the availability of supplies which she required. However, if development in these economies had proceeded further, Japan might have been faced with sterner competition in selling and buying. It is unlikely that Japan's development was favourable to the British economy. It is not at all certain that development elsewhere in Asia would have helped Japan.

The author notes that Japan's development, though most manifest in certain lines in manufacturing and utilities, required growth in agriculture and other extractive industries. Her growing population, increasingly

urbanised, needed growing supplies of foodstuffs and industrial raw materials. Fortunately, productivity grew quickly in these less spectacular sectors too, and she was able to overcome the agricultural gap, and even to provide her population with a slowly rising flow of consumer goods, *per capita*.

It is too bad, considering how much useful (and occasionally, nearly useless) material Professor Lockwood has brought together, that he has not been more successful in presenting it. The work is repetitive, and yet there is little helpful summarising. The index is nearly useless. The book deserves many readers, and should be invaluable as a work of reference. But it will be difficult to use. It is nevertheless a distinguished contribution to a most important subject.

Cambridge.

L. TARSHIS

NOTES AND MEMORANDA

MALTHUS ON PUBLIC WORKS

AMONG the treasures of the Rothschild Library, which are described in the magnificent catalogue recently published, there is even a crumb for economists. It consists of an autograph which fills a small gap in the Ricardo-Malthus correspondence.

The year 1816 had witnessed "the first experiment of the century" in a policy of works for the relief of unemployment. Ricardo, who regarded these measures as ineffective, early in 1817 wrote to Malthus asking him what he thought of them.¹ Malthus' reply being lost, one might have been tempted (rashly, as it turns out) to suppose it to be like his own statement of a few years later, that public works were well suited to achieve that object.² Malthus, however, is unpredictable, and in his reply, which is now before us, he *agrees* with Ricardo's conclusion and indeed claims it as peculiarly his own. (The agreement between them is purely accidental and arises from their applying different types of reasoning to opposite premises: Ricardo assuming that the funds "raised" for employing the poor are diverted from other productive employments, thus adding nothing to the numbers employed; while Malthus assumes that the funds are saved out of income and concludes that there is no addition to effective demand.)

The manuscript, which is printed below by permission of Lord Rothschild, consists only of the last page of the letter; the argument on public works is, nevertheless, complete. It is addressed to Ricardo at Upper Brook Street, and, although undated, has a postmark of January 11, 1817. It is a reply to Ricardo's letter of January 3 (letter 197 of the series), and is answered by one of January 24 (letter 199).

P. SRAFFA

Malthus to Ricardo

I am sorry to find from what you say that you do not feel yourself able to approach nearer to those opinions, which I still continue after repeated consideration to think correct.

Every thing that has occurred lately appears to me to favour my idea of the all powerful efficacy of demand, and to shew that is very far indeed from depending merely on supply. I quite agree with you in thinking that the funds raised for the support of the poor (though perhaps necessary at the moment) essentially interfere with other employments. But this opinion appears to me to accord with my view of the subject, more than with yours.

¹ *Works and Correspondence*, VII, 116.

² *Principles of Political Economy*, 1820, p. 512.

According to you and Say, if people were willing to subscribe and convert their *revenue* into *capital*, there ought to be no difficulty, if the sole want is the want of supply; but in my view of the subject there ought to be a difficulty, from the want of a proportionate demand.

I shall be most happy to visit you in Brook the very first time I am in Town; but I have now been a truant for some time and must stay at home a little.

Mrs M joins me in kind regards to Mrs Ricardo

Ever truly Yours

T R Malthus

MR. HAHN ON LIQUIDITY PREFERENCE

IN his article in the *ECONOMIC JOURNAL* of March 1955, Mr. Hahn interprets the liquidity preference theory of interest as follows: "the rate of interest changes if, and only if, the ratio in which assets are demanded is different from the ratio in which they are supplied."¹ I have no quarrel with this.²

He then applies this principle to a situation in which "investors" (*i.e.*, businesses undertaking real investment) are financing the purchase of capital goods. Since "bonds are never offered directly to producers in return for capital goods," "the only way investors can obtain their finance is by inducing some people to increase the ratio of bonds to money in their existing assets. The rate of interest will thus rise to the point at which it is just not worthwhile for investors to offer further inducements to holders of money to substitute bonds for the latter. . . . Once this transaction is complete, investors buy investment goods," which "means that the ratio of money to bonds held by other people increases. This leads to . . . a fall in the rate of interest. . . . At the end of the income period therefore everyone holds assets in the form they had planned to hold them, the rate of interest is the same as at the beginning of the period."³

I disagree with the final sentence in the foregoing quotation. During Mr. Hahn's single income period, Period One let us call it, investors have issued new bonds in return for $\mathcal{L}x$ in money, they have spent the $\mathcal{L}x$ on new capital goods and thus generated $\mathcal{L}x$ extra income, all of which in *Period One* is saved. But much of the $\mathcal{L}x$ thus saved in Period One will be dis-saved in Period Two, when the recipients of the $\mathcal{L}x$ of income in Period One will use much of it to buy consumption goods. Thus much of the $\mathcal{L}x$ saved in Period One will almost of necessity be held at the end of the period in the form of money, so that it can be spent in Period Two. Thus the $\mathcal{L}x$ of

¹ Mr. Hahn's article, p. 61.

² Indeed it is the basis of my treatment of interest rates in Chapter 22 of my *Wealth and Income*.

³ All quotations in this paragraph are from Mr. Hahn's article, p. 63.

bonds issued in Period One will find willing holders, even at the end of the period, only if the rate of interest is higher than at the beginning of the period.

Let us suppose that of any extra income received in any period, the recipients retain a proportion c (corresponding to the marginal propensity to consume) in money form until the next period, when they spend it on consumption, and utilise the remaining proportion $(1 - c)$ for buying bonds immediately. Then a stimulus of $\mathcal{L}x$ of real investment in Period One will *in due course* result in an extra $\mathcal{L}x$ of bond purchases out of income,¹ but these purchases will be spread over a large (theoretically infinite) number of periods, as follows:

	$\mathcal{L}$
Period One	$x(1-c)$
Period Two	$cx(1-c)$
Period Three	$c^2x(1-c)$
Period n	$c^n x(1-c)$
Total	x

Thus only in the long run does the extra supply of bonds issued to finance real investment in Period One generate a like increase in the demand for bonds, and hence only in the long run can the rate of interest fall to its original level. And even this conclusion is valid only on account of our extreme assumption that income receivers always buy bonds with whatever portion of any period's income is not destined to finance future consumption.

BRIAN TEW

University of Nottingham.

REJOINDER

OWING to a desire to keep the amount of mathematics in my paper to a minimum and the consequent reliance on verbal analysis, some of my arguments may not have been as precisely expressed as one would like. This must account for Professor Tew's Note.

Keynes conducted a comparative statics analysis. We know that the transition from one equilibrium to another takes time, and hence it is only "in the limit" that comparative statics statements are valid. I, however, assumed that unexpected changes in the *value* of assets would lead to changes in decisions only at the beginning of a subsequent period, while adjustments in the composition of assets takes place continuously. Hence, it is not true that "much of the $\mathcal{L}x$ saved in Period One will almost of necessity be held at the end of the period in the form of money, so that it can be spent in Period Two," since individuals only *decide* on spending more at the beginning of Period Two. It is in this way that I interpret the Keynesian analysis of

¹ The balance of bonds not immediately bought out of income must initially be bought out of capital: *i.e.*, by persuading wealth owners to switch out of money into bonds.

an effect of increased investment, via *changes in the level of income*, on the rate of interest. Of course, if the psychological assumptions are wrong, then so is the argument. That, however, is a question of fact and not of theory.

F. H. H.

UNDER-DEVELOPED, BACKWARD OR LOW INCOME?

OUT of regard for their feelings, countries which until the last war used to be called "backward" are now being called "under-developed." Mr. Hla Myint¹ protests against this change and points out that "backward" is effectively descriptive of certain problems met with in such countries. Nevertheless, if what is wanted is something more than a label, even if such a label is universally understood, "backward" is as little suited for a generic definition as "under-developed" and, unless the word is carefully limited and qualified, it is not much clearer or less ambiguous.

The countries and territories now loosely called "under-developed" can be found under every climate, with inhabitants of many races who are earning their living in various ways and who are organised in differing social, ethical, political and economic systems. On none of these counts is it possible to draw a natural, clear-cut dividing line between them and the "developed" countries: any difference between these two groups is one of degree and not of kind, one of "greater" and "less." A definition of either group must be relative, and the dividing line between them will have to be arbitrarily selected. It would be the more useful if this arbitrary and relative definition could at least have no doubtful implications.

The present meaning of "under-developed" has an historical bias: development seems to be understood as *from* some common level defined in terms of the Western industrial and agrarian revolution. The state of development (or of under-development) is given by comparing the point reached by the country under discussion on the common path of development thus defined and that reached by the "most-developed" countries, such as Britain, Canada or the United States. Though this is a perfectly legitimate historical approach, it is not only useless but can also be very confusing when the attention is turned from the past accomplishments to the future. What is of interest then is not how far the country has travelled as compared to the others, but how much farther it can go within a foreseeable future, and there is little reason to think that the maximum attainable within that foreseeable future is identical for all countries or that it necessarily depends on the point reached to-day.

There is an "absolute" sense in which under-development could be defined for one single country in isolation: it is the gap between the state of development it has reached and that which could be extrapolated, under

¹ "An Interpretation of Economic Backwardness," *Oxford Economic Papers*, New Series, Vol. 6, No. 2, June 1954.

various assumptions, into a future still within forecasting limits. (This gap could have a negative value in the case of over-development.) In this sense the United States of America in 1940, before its amazing war-time spurt, could rightly have been called badly under-developed. Arranging countries in order of the size of their development gaps would give us a series (ordinal or cardinal, according to the methods employed) in degrees of under-development, which could be quite useful in discussions on international policies for economic development, as it would give us an indication of each country's possibilities in terms of its own, and not of some other country's, attainable maximum development. There is little meaning in saying that an adult rabbit is "under-developed" because a baby elephant is so much bigger; nor is it much more meaningful to call the Sahara "under-developed" because Holland is a garden. If, according to our present knowledge and techniques, there seems to be little possibility of further development, then the territory concerned, even if it is the Sahara desert, must still be considered to be as "fully developed" as is economically feasible. It would, of course, be possible to hospitalise the Sahara, to transform it into a large welfare centre, where, with outside funds and resources, another Eden could be created, but, in a world faced with the problem of scarce resources, this could not be called "economic development." To use such a term meaningfully it must be restricted to circumstances in which normal or better than normal returns to invested resources can be expected.

The "degree of under-development" used in this sense could be defined in terms either of absolute or of relative estimated potential increases, whether in the total national product or in the product per head, over periods of varying lengths but still within the limits of economic forecasting: to use it beyond those limits would turn the attempt into a guessing game. "Under-development" restricted to this meaning could be a useful addition to the economic vocabulary. Used in its present, semi-historical, sense it only creates such artificial "paradoxes" as the preference of finance for what are loosely called "developed" countries, a preference which—to many people's surprise, it seems—makes it easier to find capital when it is wanted for investments in Canada or the United States of America than in Peru or Tanganyika, however many encouragements and safeguards might be devised in the case of the latter. The potentialities for development are, of course, much greater in the first. Nor can the fact that a certain increase in the national income of Tanganyika might double its income per head whereas the same increase in the United States of America would hardly be noticed provide more than a normative reason for a decision on the use of resources: the economic reasons will still have to be discussed on their own merits, in terms of comparative development potentials.

"Backward" seems to have been discarded for its unwanted associations, such as "backward children." It was, in any case, not a very happy effort if used without strict qualifications, as certain "backward" countries have not only created some of the most advanced civilisations known to mankind but also as, in certain fields of economic activity, they have sometimes gone much

farther than the "advanced" countries. Rice production, gardening and vegetable growing, irrigation, manuring and crop rotation, as well as artistic handicrafts have often reached their peak in "backward" countries; and in that most important (though often overlooked) economic field, of commerce, they have often more than held their own. Certain qualifying terms, such as "technological backwardness" or "backwardness of (specified) economic institutions," might help in bringing the word backwardness, in the senses indicated by Mr. Myint, into meaningful use in economics, though hardly as a general definition of the kind intended in the past.

"Under-developed" and "backward" have been forced to do two incompatible jobs: to describe a state of affairs common to a certain group of countries, and to explain the reasons for this state of affairs. As there is no one single reason, one and the same word could not fulfil both purposes. The best way of avoiding such pitfalls is to confine any general descriptive term to whatever is indubitably common in the facts to be described. The deep interest shown to-day in the economic problems of the so-called "under-developed" countries is due mainly to the prevailing concern with standards of living (the welfare approach) and to the fear of political plague spots. This seems to indicate a pragmatic approach; and it is "low incomes per head" which is the main problem in both cases, and is common to all the countries to-day called "under-developed." "Under-development," "backwardness," "misdirection of resources," "political instability," "rigidity of social institutions" and so on can all be used either to explain the reasons for the existence of low incomes or to suggest ways of increasing those incomes—usually both; but they are not restricted to the low-income countries, nor are they necessarily characteristic of such countries. There are many territories throughout the world which are low income, technically backward and over-developed. Countries can, furthermore, be backward from certain points of view and advanced from others, use certain resources efficiently and others wastefully, have political stability but also social and economic rigidity, and all these facts can be indiscriminately associated with high or with low incomes.

Whether high and low incomes are defined in terms of some standard-of-living unit, such as the Orient Unit, or, more simply and for general purposes of classification still satisfactorily, by taking some arbitrarily selected income per head as the dividing line is to some extent a matter of taste; the result will still be the least ambiguous way of allocating countries to groups which would be significant for the purpose of both theoretical and practical discussions.

B. M. NICULESCU

University College of the Gold Coast.

OBITUARY

SIDNEY JAMES BUTTRESS, 1876–1955

By the death of S. J. Buttress on June 16th, 1955, the Royal Economic Society has lost an Assistant Secretary of intense and devoted loyalty. Born one of ten children in comparatively humble circumstances, he, as well as his brother, made his way in the world by old-fashioned qualities of persistence and determination. He entered the office of King's College in 1899 and retired from it as chief clerk in 1940. As such as he was in the later years Lord Keynes' right-hand man, and it was natural that Keynes should ask him to help with the running of the Royal Economic Society in succession to Mr. E. J. Hicks in 1919. He remained Assistant Secretary until his death in his seventy-ninth year. During these years the membership of the Society rose from 900 to over 6,300, and its accumulated fund from £3,500 to just under £100,000. All the routine work of collecting subscriptions, keeping accounts, recovering tax and the rest fell throughout this period almost wholly on Buttress' shoulders, and in his stern individualistic way he was determined that it should be so. It is appropriate that he should have died still in harness, with the Royal Economic Society still dependent, as it always had been, on his energies.

Buttress must have been well known, at least by correspondence, to many thousands of members past and present of the Society, and increasingly, after his retirement from King's, he identified himself with the Society and its interests. Very much of the older generation, he had been Assistant Secretary before most of us read our first word of economics. And he never spared his criticisms of those of the younger generation who failed to live up to his own private ideals of what should be expected of a Fellow of the Society. He was shocked at our propensity to move, as the Fellows of an earlier generation had not, from place to place, and our failures to report our movements properly to the Assistant Secretary. He was contemptuous of those who joined the Society and allowed their membership to lapse again after a few years. For such reasons he was not always in his later years an easy colleague; the present Secretary was never left in any doubt (a doubt which he had never harboured) that he failed in Buttress' eyes to measure up to the stature of his predecessor. But these were all the qualities of Buttress' unfathomable loyalty to the Society; they were the qualities which made him what he was—a great and memorable and utterly irreplaceable survival of a generation that possessed qualities which we lack. The Society will never have another such Assistant Secretary, and those of us who knew him well have lost a true, stern and tested friend.

E. A. G. R.

CURRENT TOPICS

THE Annual General Meeting of the Royal Economic Society was held at the London School of Economics on Thursday, July 7. Professor L. C. Robbins was re-elected to the office of President. Professor Sir Alexander Gray and Professor R. H. Tawney were elected Vice-Presidents. Professor Sir Arnold Plant was elected Honorary Secretary in succession to Professor Robbins. Professor E. Devons, Professor G. L. S. Shackle, Professor J. H. B. Tew and Professor G. Walker were elected to fill vacancies on the Council. The formal business was followed by an address by the President on "The Teaching of Economics in Schools and Universities."

THE Secretary reported on the membership and finances as follows:

	1954.	1953.	1939.	1914.
New Fellows and Library Members elected	357	543	490	50
Fellows lost by death, resignation or default	297	289	496	33
Number of Fellows and Library Members on December 31	6356	6286	4572	694
Total Compounders included in above total	2129	2118	1155	159
Surplus or Deficit of Income over Expenditure, together with receipts from Compounders	£429	-£247	£329	£278

MR. W. B. REDDAWAY, Fellow of Clare College, Cambridge, has been appointed to succeed Professor J. R. N. Stone as Director of the Department of Applied Economics in the University of Cambridge.

WE regret to record the death of Professor G. Findlay Shirras, in his seventieth year. He was for seven years Director of Statistics with the Government of India, and held several academic and government posts in India. After he returned to England Professor Findlay Shirras was for a time Professor of Economics at University College, Exeter, and later Professor of Political Economy in the University of Dublin. After his retirement he went as visiting professor to many universities in the United States, and at the time of his death was on his way to address the Congress of the International Statistical Institute in Brazil.

THE following have been admitted to life fellowship of the Society:

Bolza, Dr. H. Eley, G. C. R. Franklin, N. N.

The following have been admitted to fellowship of the Society:

Agarwala, Dr. B. S.	Fernie, W. G. V.	Oyinlola, R. A. F.
Ajobo, E. A.	Fox, K. L.	Ozga, S. A.
Atumu, G.	Gilchrist, J. B. G.	Pocock, M. A.
Barratt, A. F.	Goonatilake, R. H. de A.	Reid, A. L.
Bayne, R. B.	Hamid, Dr. M. A.	St. George, P. R. S.
Bellworthy, J. J.	Horner, L. B.	Sargent, J. R.
Blyth, C. A.	Hui, C.-Y.	Saxena, K. C.
Bowen-Ashwin, R. J.	Inoue, T.	Sokunbi, D. O. B.
Coates, J. A.	Insoll, R. H.	Stetting, L.
Cyprian, A.	Kahn, Prof. A. E.	Sturmey, S. G.
Delany, V. J.	Khan, M. I.	Thung, Y. F.
Dixon, W. J.	Konig, R.	Wallach, M.
Etim, B. A.	La Ferla, F. M.	Wannan, Miss G. D. J.
Fakar, J. R.	Loureiro, R. E.	Williamson, E. L. R.
Farmer, R. F.	Malhotra, T. N.	Wood, F.
Fellner, Prof. W.	Newman, C.	Wood, R. L., Jr.

The following have been admitted to Library membership of the Society:

Antitrust Division, U.S. Dept. of Justice.
Brigham Young University.
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- No. 2, 1955. *For a More Rapid Development of Technique and Attainment of the 1955 Technology Plans*: J. KOPÍŃSKI. *Some Problems of Technical Progress in the Food Industry*: J. RAMOTOWSKI. *For Making Better Use of Synthetic Fibres*: T. JUŚKIEWICZ. *Ways to Utilise Waste Materials in Industry*: S. WIATROWSKI. *On Computing the Execution of the Gross Production Plan in Engineering*: L. ZAŁĘCZNY. *Scope for Increasing the Productivity of Forests and the Extent of Afforestation by the Creation of a Regional Forest Economy*: E. WIĘCKO. *Let Us Improve Co-operation of Foreign Trade Agencies with Producers*: H. LIPCZYŃSKI. *Experience in Supply Analysis in the Ministry of Shipping*: A. SZCZUKA. *A Contribution to the Discussion on the Financial Practice of Machine-Tractor Stations*: Z. PARAZIŃSKI and M. SUSZEK. *The Scope of Control over M.T.S.*: E. SIMBIEROWICZ. *What Hinders the Work of M.T.S.*: J. GŁÓWKA. *The Scientific Base of Planning the National Economy*: G. SOROKIN. *The Ploughing-up of Fallow Land in the People's Democracies*: J. W.
- No. 3, 1955. *Our Economic Tasks for 1955. Present Day Problems of Mechanisation in Coal-Mining*: I. BLAUTH. *The Situation Concerning Production Costs in the Building Materials Industry*: T. GRADOWSKI and J. SIWIEC. *Possibilities of Lowering Planned Costs in Freight Transport*: K. SWISTUN. *For a More Rapid Development of the Machine Tool Industry*: J. FRĄCKIEWICZ. *A More Rational Use of Reserves of Materials in Small Industry*: P. ŻELICKI. *State Farm Planning Should be Deeper and More Flexible*: S. TKACZOW. *The Problem of Internal Clearing in a Group of State Farms*: R. MANTEUFFEL and S. MADEJ. *Ways of Development for Maritime Transport in Polish Foreign Trade*: I. TARSKI.
- No. 4, 1955. *The Main Development Problems of Coal Mining in the Five-year Plan*: T. MUSZKIET. *On Reserves in the Exploitation of Resources in the Building Materials Industry*: T. BÓLKOWSKI. *On the Need for Defining Some of the Economic Terms in Economic Clearing in Building*: J. KOLIPIŃSKI. *The Maximum Economy of Coal—an Important Task of the Plan for 1955*: L. POSTUSIAK. *The Problems of Planning and Realising Costs in State Farms*: N. KUŹMIŃSKI. *The Correct Balance of Bread Grains and its Significance*: E. LENG. *On the Eve of the Bandung Conference*: J. WERNER. *Ten Years of Industrial Development in People's Poland*: A. KARPIŃSKI. *The Development of Departmental Research Institutes in the Ten Years of People's Poland*: J. HALWIG.
- No. 5, 1955. *The Improvement of Economic Work—the Key Problem of Planning*: M. RAKOWSKI. *Some Problems of Elaborating Annual Plans in Central Managements and Enterprises*: J. RAWLUK. *The Problem of Rationalising Railway Goods Transport*: S. MROCZEK. *Some Problems of Exploiting Productive Capacities in Ferrous Metallurgy*: J. ZALEWSKI and A. WOŁOWSKI. *Comparable and Unchanged Prices in Building*: J. STEPÍŃSKI. *The Quality of Production and Production Costs in the Artificial Fibres Industry*: M. ZAJĄC. *On the Ways of Mobilising Labour in the Struggle for Lowering Production Costs in the Chemical Industry*: T. WIKTOR. *Improve the Efficiency of Organisation and Lower the Costs of Subsidiary Production*: L. ZABKOWICZ. *Trends in the Management of Producer Co-operatives*: M. STREMSKI. *The Achievements of the People's Democracies in the Field of Public Health, Education and Culture*: J. WERNER. *Exacerbation of the Contradictions Between the Latin American Bourgeoisie and North American Imperialism*: I. SACHS.

Planovo Stopanstvo (Bulgarian text)

- No. 2, 1955. *For Further Successes in the Struggle for Higher Agricultural Production. The Needs of the National Economy for Wood Pulp and the Potential for Satisfying Them*: B. PETKOV and

KH. VUCHOVSKY. *Some Questions of Our House Building*: B. BOER and S. MILADINOV. *Work by the Cyclic Graph Method—the Basis for Raising Labour Productivity in Coal-mining*: B. MECHKOV. *Raising the Qualifications of Workers in Industry*: T. ARVAMOV. *On the Discussion in the U.S.S.R. of the Theory of Money Under Socialism*: D. TOSHEV. *Planning Finance*: A. DUGINOV. *The Economy of Turkey and the Situation of the Working Masses*: L. ENCHEV.

Izvestia Na Vishia Finansovo-Stopanski Institut (Bulgarian text)

- VOL. VII, No. 4. *Towards a Serious Study of the Economy of a Socialist Enterprise*: S. STANER and T. TOTEV. *For Better Control of Trade Enterprises*: V. PAVLOV. *The Computation of Costs in Packing Preserved Foods*: YU. DONCHEV. *The Organisation of Work in Local Insurance Offices*: M. PETROV. *Improving Technique and Strengthening Control by Means of the Acceptance-Cash System of Payment*: M. RUSENOV and L. RALCHEV. *The New Model Contract Between Machine-Tractor Stations and Collective Farms*: S. OBRETENOV.

Izvestia Na Ikonomicheskia Institut (Bulgarian text, French summaries)

- No. 1-2, 1954. *A Significant and Rapid Amelioration in the Material and Cultural Welfare of the Workers—the Chief Aim of the Second Five-year Plan. A Contribution to the Study of the Primitive Accumulation of Capital in Bulgaria*: ZH. NATAN. *The Basic Economic Law of Contemporary Capitalism and the Average Rate of Profit*: T. VLADIGEROV. *A Contribution to the Study of State Capitalism and the Titoist Defence of Capitalism*: E. KAMENOV. *Inflation as a Means of Realising Maximum Profits and the Most Recent American Defence of Inflation*: J. KUCHINSKY. *The Rationalisation of Labour (the Superiority of Socialist over Capitalist Rationalisation)*: I. YANULOV. *Problems of the Statistical Analysis of Rural Labour Productivity Under Socialism*: N. NAUMOV. *Bulgarian Foreign Trade on the Eve of and During the Second World War*: V. DYADKIN. *Bulgarian Fisheries*: YA. KABAYVANSKY. *The Problem of the Danube and Navigation Thereon*: D. KALINOV.
- No. 3-4, 1954. *Ten Years of Socialist Construction. The Sixth Congress of the Bulgarian Communist Party and the Future Development of the Rural Economy*: V. TODOROV. *The Powerful Upsurge of the Bulgarian Economy*: T. POLYAKOV. *Future Tasks of Bulgarian Domestic Trade*: D. TOSHEV. *Labour Remuneration in Retail Trade*: A. LYUTOV. *Retail Overheads in the Sofia "Narmag" and Possibilities for Reducing Them*: A. ZAKHARIEV. *Industrial Fluctuations in Capitalist Bulgaria*: L. BEROV. *The Fiscal Policy of Bulgaria and Its Aims Concerning Agriculture*: S. VASILIEV. *Rumania on the Road of Constant Progress*: P. NEICHEV. *Economic Problems in the Popular Democracies*: M. KAZANDZHIEV. *The Stabilisation of the Lev and State Loans Since 1944*: R. CHUBRIEV. *Vegetable and Fruit Deliveries to Sofia During 1948-52*: A. POPSTOYANOV. *Symptoms of Crisis in the U.S. Economy*: A. KHRISTOFOROV.

Probleme Economic (Rumanian text)

- No. 12, 1954. *For an Uninterrupted Rise in Industrial Labour Productivity. The Role of the Masses in Building Socialism in Rumania*: V. DINU. *The Scientific Bases of the Party's Policy in the Economic Sphere*: Z. BRÎNCU. *The Importance of Socialist Industrialisation in the National Economic Development of Rumania*: A. POPPER. *The Importance of Soviet Aid in Developing the Oil Industry*: D. NICOLESCU and N. POPESCU. *The People's Republic of Poland on the Road of Socialist Construction*: S. GIOGA. *The Organisation of State Planning in the Rumanian Economy*: V. RAUSSER. *Aspects of the Economic Crisis in the U.S.A.*: L. IONESCU.
- No. 1, 1955. *For a Systematic Reduction of Costs in Production. V. I. Lenin on the Laws of the Development of Capitalism in Agriculture*: M. DULEA. *The National Economic Balance—as a Tool of Socialist Planning*: S. STRUMILIN. *Extended Reproduction in the Socialist Sector of Agriculture*: O. PARPALĂ. *The Effects of New Technology on the Rise of Labour Productivity and the Reduction of Costs in Rumanian Industry*: L. MARCOVICI. *The People's Republic of China on the Road to Socialist Industrialisation*: F. DUCA. *Some Observations on the Methodology of Calculating Labour Productivity in Industry*: V. IONESCU.
- No. 2, 1955. *A New Stage in the Development of Socialist Trade. To Each According to his Work in the Socialist Sector of the National Economy*: I. MUNTEANU and P. COPPELOVICI. *Some Aspects of the Use of Economic Laws in the Sphere of Cost Accounting*: D. MARIN. *Some Problems in Constructing the National Economic Balance*: P. MOSKVIN. *The Tasks of Heavy Industry in Increasing the Production of Consumer Goods*: V. NICOLAE. *Lessons on the All-union Agricultural Exhibition in Moscow*: G. IONESCU-SISESTI. *The Nature of the Economic Law of Socialism*: GH. BADRUS. *The Colonial Toke of French Imperialism in North Africa*: T. ILESCU.
- No. 3, 1955. *The Conference of Leading Workers in Agriculture*: GH. GHEORGHIU-DEJ. *The Development of Heavy Industry, the Base of Economic Successes of the Countries of the Socialist Camp. Some Aspects of the Operation of the Fundamental Economic Law of Socialism*: B. No. 259.—VOL. LXV.

ZAHARESCU. *On Methods of Disclosing Internal Reserves of Working Time in Industrial Enterprises*: I. KECKÉS and E. KEREKES. *The Significance of the 1945 Agrarian Reform in the Development of Our Agriculture*: C. MURGESCU. *On Various Forms of Agricultural Co-operatives*: D. DUMITRIU. *The Distribution of Consumer Goods in Socialist Trade*: GH. FETEANU. *On the Disintegration of the United World Market and the Aggravation of Contradictions between Capital States*: I. ADAM. *Social Ownership of the Means of Production—the Basis of the Relations of Socialist Production*: GH. PLOIESTEANU. *The E.P.U. and the "Liberalisation" of West European Trade*: V. LUPU. No. 4, 1955. V. I. Lenin—the Coryphaeus of Economics. *On Lenin's "Preliminary Outline of a Thesis on National and Colonial Problems"*: V. VARGA. *The Role of Heavy Industry in the Construction of a Material Basis of Socialism in Rumania*: V. DIMITRU. *The Marxist Theory of Rent*: I. RACHMUTH. *The Reduction of Production Costs—an Important Task for Artisan Co-operatives*: L. CZIKO and I. CRISTU. *The Importance of the Contractual System in Increasing the Yield of Technical and Other Crops*: F. CONSTANTINESCU and A. STROE. *The Export of Capital from the U.S.A.—a Way of Seizing Raw Material Resources*: T. ŞATELES. *The National Income Under Capitalism*: Z. BRÎNCU. *The Progress of Heavy Industry in Czechoslovakia*: E. ANGHEL.

NEW BOOKS

British

The Accountability of Public Corporations. The Administrative Staff College, Course of Studies paper. Henley-on-Thames: The Administrative Staff College, 1955. 9". Pp. 88.

[This is one of a series of documents prepared by the Administrative Staff College to summarise information needed for the discussion of certain subjects. It describes the powers exercised by Ministers and by Parliament in respect of the various public corporations and discusses briefly the arguments that have been advanced for and against enlarging these powers.]

BELSHAW (C. S.). *In Search of Wealth*. A study of the emergence of commercial operations in the Melanesian society of South-eastern Papua. American Anthropological Association Memoir No. 80. Vancouver: University of British Columbia, 1955. 9". Pp. 84. \$2.

[The author's findings on the social organisation of commercial activities in the islands studied lead him to emphasise the unwisdom of assessing economic development and success in terms of western cultural values, which are themselves often not explicitly stated or even understood. He dissents from the view often put forward or implied that all the respects in which the values and traditions of economically backward countries differ from our own are necessarily an impediment to economic progress. Such a view often arises from too narrow a conception of what constitutes economic progress, and it may not be true even on a narrow definition. In particular the author believes that the close kinship ties that characterise the area he studied assist rather than obstruct the growth of commercial enterprise, at least at the present stage of development.]

BERLE (A. A.). *The Twentieth-century Capitalist Revolution*. London: Macmillan, 1955. 7½". Pp. 157. 8s. 6d.

[To be reviewed.]

BOBB (M.). *On Economic Theory and Socialism*. Collected Papers. London: Routledge & Kegan Paul, 1955. 9". Pp. v + 293. 21s.

[To be reviewed.]

FEDERATION OF BRITISH INDUSTRIES. *Restrictive Business Practices and the Public Interest*. London: Federation of British Industries, 1955. 8½". Pp. 16. 1s. 3d.

[The purpose of this publication is stated in its foreword to be to emphasise that it is unwise to try either to justify or to consider restrictive business practices in general terms. The text of the statement, however, consists almost entirely of a recital of the arguments in favour of the various types of restrictive practice. Many of these arguments have a good deal of force. But the one-sidedness of the case presented and the indiscriminate jostling together of good arguments and bad makes this rather a depressing document to emanate from so influential a source.]

FERGUS (A. F.). *Practical Branch Bank Lending*. London: Europa Publications, 1955. 8½". Pp. 251. 18s.

[This is an exposition of the principles and practice of bank lending written from the point of view of the branch manager. A large part of the book is taken up by discussions of the various kinds of security that a bank may be offered for an advance and the procedure to be followed to make sure the bank has an adequate claim over them.]

FINBERG (H. P. R.). *Roman and Saxon Withington*. A study in continuity. University College of Leicester, Department of English Local History, Occasional Paper No. 8. Leicester: University College of Leicester, 1955. 10". Pp. 40. 6s.

[The purpose of this interesting and well-argued essay is to use modern techniques of detailed local history to cast light on the old debate between Seebohm and his critics, chiefly Maitland and Vinogradoff, about the extent to which Romano-British agrarian institutions survived the Saxon conquest. Mr. Finberg's study relates to the village of Withington in Gloucestershire. The evidence that he finds militates fairly strongly against the thesis of Maitland that the Saxon invasion meant a complete break with the past and the establishment of an agrarian system in which free peasant proprietors were a principal element. Mr. Finberg emphasises that what is true of Gloucestershire is not necessarily true of other areas, but he suggests that some stronger evidence is needed than has been so far forthcoming to justify the hypothesis of complete discontinuity. "Is it really plausible to sweep away the servile population of the villa-estate and put in their place 'a large mass of free peasants,' only to finish up with a tenantry as servile as before?" The disappearance of pre-Anglo-Saxon place names has always been one of the chief arguments of Maitland and his school, and Mr. Finberg puts forward a possible alternative explanation for this.]

FOGARTY (M. P.). *Economic Control*. London: Routledge & Kegan Paul, 1955. 9". Pp. 324. 21s.

[To be reviewed.]

FRASER DARLING (F.) (Ed.). *West Highland Survey*. An essay in human ecology. London: Oxford University Press, 1955. 10". Pp. v + 438. 30s.

[To be reviewed.]

HADFIELD (C.). *The Canals of Southern England*. London: Phoenix House, 1955. 8½". Pp. 383. 36s.

[Mr. Hadfield's previous book, *British Canals*, was reviewed by Professor T. S. Ashton in the *Economic Journal* of June 1951, p. 409. The present sequel contains a detailed history of each of the canals and river navigations in the area south of the Thames, the Thames and Severn Canal, and the Gloucester and Berkeley Canal to Gloucester. Mr. Hadfield traces the history of these waterways from the earliest times up to the present day, but the greater part of his book is naturally devoted to the half-century between the great canal mania of the 1790s and the advent of the railways. His narrative is derived chiefly from the original records of the canals. It contains a wealth of information not merely for the enthusiast for local history but also for the student of British economic development. Mr. Hadfield does not recapitulate the conclusions of his previous book, and he leaves the reader to draw his own generalisations on many of the principal issues. Much can, however, be learnt from his pages about such aspects of transport history as entrepreneurship, supply of capital, types of goods carried and the contest between canals and railways.]

HOGGEN (L.). *Chance and Choice by Cardpack and Chessboard*. An introduction to probability in practice by visual aids. Volume II. London: Parish, 1955. 10½". Pp. 917. 70s.

[To be reviewed.]

HUMLUM (J.). *Atlas of Economic Geography*. London: Meiklejohn, 1955. 10½". Pp. 12 of text; Pp. 127 of maps. 15s.

[This is a new edition of an atlas that previously appeared in a different form incorporating both text and maps. In the present edition the text is to appear in a separate volume, not yet available in English. There are 127 principal maps, mostly of the world, showing production and trade in different commodities, and on each page the principal map is accompanied by supplementary maps showing similar particulars on a larger scale for Europe and for whatever other areas are especially important for the commodity in question.]

ILERSIC (A. R.). *Government Finance and Fiscal Policy in Post-war Britain*. London: Staples, 1955. 9". Pp. 278. 25s.

[To be reviewed.]

INTERNATIONAL ASSOCIATION FOR RESEARCH IN INCOME AND WEALTH. *Bibliography on Income and Wealth, Volume V, 1952*. Edited by Phyllis Deane. Cambridge: Bowes & Bowes, 1955. 10". Pp. 80. 37s. 6d.

[The present issue of this well known and extremely useful compilation appears considerably less than a year after its predecessor in the series. 574 items are listed, classified and indexed, and the contents of each are indicated in an accompanying note of ten lines or so.]

LAMONT (W. D.). *The Value Judgement*. Edinburgh: Edinburgh University Press, 1955. 9". Pp. xi + 335. 25s.

[To be reviewed.]

MANDELBAUM (K.). *The Industrialization of Backward Areas*. Second Edition. Oxford University Institute of Statistics, Monograph No. 2. Oxford: Basil Blackwell, 1955. 9". Pp. iii + 111. 15s.

[The first edition of this book was published in 1945, when the great flood of recent discussion of the problems of economic development had hardly begun. It is here reprinted without alteration. The author has, however, added an interesting long new preface, in which he considers certain issues that have been raised by recent contributions and their bearing on the model built up in his book.]

MENDÈS-FRANCE (P.) and ARDANT (G.). *Economics and Action*. London: Heinemann (Paris: UNESCO), 1955. 9". Pp. 222. 15s.

[To be reviewed.]

MOWAT (C. L.). *Britain between the Wars, 1918-1940*. London: Methuen, 1955. 9". Pp. v + 694. 30s.

[To be reviewed.]

NEWLYN (W. T.) and ROWAN (D. C.). *Money and Banking in British Colonial Africa*. A study of the monetary and banking systems of eight British African territories. Oxford Studies in African Affairs. London: Oxford University Press, 1954. 9". Pp. v + 301. 30s.

[To be reviewed.]

PEAR (T. H.). *English Social Differences*. London: Allen & Unwin, 1955. 9". Pp. 318. 18s.

[This fascinating survey of class and allied differences in England has already attracted a good deal of attention. Some critics have found fault with Professor Pear for what they conceived to be a lack of system in his book and for failing to draw any very clear or startling conclusions from the mass of assorted material that he presents. There is perhaps some force in these criticisms, but the author could very well reply that the complexity of English social stratification is one of its most important features: "brilliant" generalisations on a subject that exercises an irresistible attraction for the coiners of *bons mots* commonly achieve their effect at the expense of highly misleading over-simplification. Professor Pear's opening chapters contain a subtle discussion of the difference between the notions of class, stratum and status, and their application to British society. He has some cogent criticisms to make of recent transplantations to this country of the notion of "socio-economic status"—a concept that may be meaningful in the United States, but is of very dubious usefulness here. Most of the rest of the book is concerned with the social differences manifested in various aspects of British life: speech, food, clothes, education and some others. Although in this part of the book the thread of the argument is not always so easy to pick out, the author has a great many shrewd observations to make, and the material he has collected will provide food for unlimited amounts of discussion and speculation.]

PRAIS (S. J.) and HOUTHAKKER (H. S.). *The Analysis of Family Budgets*. With an application to two British Surveys conducted in 1937-9 and their detailed results. Department of Applied Economics, University of Cambridge, Monograph No. 4. London: Cambridge University Press, 1955. 10". Pp. xvii + 372. 50s.

[To be reviewed.]

ROTHSCHILD (K. W.). *The Theory of Wages*. Oxford: Basil Blackwell, 1954. 9". Pp. 178. 18s.

[To be reviewed.]

SHACKLE (G. L. S.). *Uncertainty in Economics and Other Reflections*. London: Cambridge University Press, 1955. 9". Pp. 267. 25s.

[To be reviewed.]

THOMPSON (C. H.) and WOODRUFF (H. W.). *Economic Development in Rhodesia and Nyasaland*. London: Dennis Dobson, 1955. 9". Pp. 205. 21s.

[This is a readable general account of economic conditions and prospects in the three territories of the Central African Federation. The authors are writing to an audience of "business people and to all whose interest in Central Africa has been quickened by the events of 1953" (p. 9). They provide their readers with a convenient summary of the material that lies in the drier details of many official reports.]

TOYNBEE (A. and V. M.) (Eds.). *Survey of International Affairs, 1939-46*. Hitler's Europe. London: Oxford University Press, for the Royal Institute of International Affairs, 1954. 10". Pp. v + 730. 63s.

[This volume in *The Survey of International Affairs 1938-46* deals with events in Germany, Italy, France and the other countries of Europe occupied or controlled by Germany at the various stages of the war. Rather more than 100 pages out of the total are occupied by discussion of economic affairs and policies. Most of this section is contributed by Patricia Harvey.]

VAN DER VALK (H. M. H. A.). *The Economic Future of Canada*. Toronto and London: McGraw Hill, 1955. 9". Pp. vii + 206. 35s. 6d.

[Despite its title, this book is devoted for the greater part of its length to a general description of the Canadian economy and the forces that have shaped its evolution. This description is extremely lucid and well arranged, though it is no part of the author's intention to probe very deeply into any of the aspects touched upon. It is encouraging in a book designed for the general reader to find the national income and the balance of payments discussed no less fully and competently than the physical environment of production and trade. Dr. van der Valk has a great love for Canada, and he is confident that the next half-century will see an expansion of the Canadian economy comparable in pace with the past expansion of the economy of the United States.]

Indian

GUPTA (M. L.). *Problems of Unemployment in India*. Jaipur: published by the author (c/o The University of Rajputana, Jaipur), 1955. 9½". Pp. 184.

[This study was accepted as a doctoral dissertation in The Netherlands School of Economics, Rotterdam. Its three chief parts consist of a factual survey of the various types of unemployment in India, an analysis of their causes and a discussion of policies to eliminate unemployment. The author finds that the root causes of the trouble are over-population and capital shortage, and his discussion therefore inevitably shades off into the general problems of Indian economic development.]

INCOME TAX RATES COMPARED. Bombay: Association of Indian Trade and Industry, 1955. 9½". Pp. 45.

[This contains a clear and systematic comparison of rates of taxation (including allowances, exemptions, etc.) on the incomes of individuals and corporations in India and a number of other countries. The structure of the Indian income tax is found to resemble that of the United Kingdom more closely than of any other country, at least for incomes about 20,000 rupees. The proportion of income paid in tax rises very steeply with rises in incomes, and at the top income levels the rate of taxation in India is second only to that in this country. This may be compared with such other economically backward countries as Egypt and Brazil, where the maximum rate of income tax is less than 50%. Taxes on the incomes of corporations are also severe in India judged by the standard of other countries. The authors argue that the urgent need for productive effort and capital accumulation in India makes these high rates of taxation inappropriate. They accordingly suggest certain respects in which relief might most usefully be granted. They do not, however, provide any very clear indication of possible alternative sources of revenue.]

American

AUBOIN (R.). *The Bank for International Settlements, 1930-1955. Essays in International Finance*, No. 22. Princeton, New Jersey: International Finance Section, Princeton University, 1955. 9". Pp. 38.

[The author of this essay has been for many years General Manager of the Bank for International Settlements. He describes the duties that the Bank has undertaken at various stages of its existence and assesses the contribution it has made and is capable of making in the future to the cause of international monetary co-operation and to the better understanding of problems of monetary policy.]

BLACK (J. D.) and the Seminar in Land-use and Conservation of Harvard University. *Farm and other Operating-unit Land-use Planning*. Cambridge, Mass.: Harvard University, 1955. 9". Pp. 119.

[This report deals with the problems of co-operation between the various agencies in the United States that are concerned with rural land-use and soil conservation, ranging from the advisory services available to individual farmers to such bodies as the TVA. After discussing general problems of land-use planning and describing the present activities of the different agencies, the author concludes by outlining the principles by which integration of effort might be secured.]

BURNS (A. F.). *The Frontiers of Economic Knowledge*. Princeton, New Jersey: Princeton University Press, for the National Bureau of Economic Research (London: Geoffrey Cumberlege), 1954. 9½". Pp. vii + 367. 40s.

[Collections of essays by distinguished economists have been appearing in increasing numbers recently, and few will be more welcome or require less apology than this by Wesley Mitchell's successor as Director of Research at the National Bureau. About half of the book is occupied by reprints of the essays which Mr. Burns has contributed to the National Bureau's annual reports. Most of the other eight articles included deal with some aspect of business-cycle research. Unity is given to the volume not merely by the central topic of the business cycle but also by the author's characteristically cautious yet incisive tone and approach—sometimes, perhaps, a little on the defensive, but invariably scholarly and almost always constructive.]

CARTTER (A. M.). *The Redistribution of Income in Postwar Britain. A study of the effects of the Central Government fiscal program in 1948-9*. New Haven, Connecticut: Yale University Press (London: Geoffrey Cumberlege), 1955. 9½". Pp. 242. 40s.

[To be reviewed.]

CHALMERS (H.). *World Trade Policies. The changing panorama, 1920-53, a series of contemporary periodic surveys*. Berkeley, California: University of California Press (London: Cambridge University Press), 1953. 9½". Pp. xxxvii + 546. 56s. 6d.

[Mr. Chalmers is a senior official of the United States Department of Commerce. For many years he has prepared annual reports on developments in the sphere of commercial policy, and these he here brings together into a single volume. Comparatively few alterations have been made from the original reports and the contemporary tone and tenses have been retained. The reports dealing with the earlier years are relatively brief, and are confined chiefly to policies pursued by countries other than the United States, so that about two-thirds of the book is devoted to the period since 1939.]

COWLES COMMISSION FOR RESEARCH IN ECONOMICS. *Report for the Period July 1, 1952-June 30, 1954*. Chicago: Cowles Commission, 1955. 9". Pp. 47.

[The general report is designed so as to make intelligible to readers without econometric training the economic significance of the Commission's various current research activities. This aim is skilfully achieved, and the result is an interesting document. The general report is followed by detailed particulars of staff publications.]

DEANE (H. A.). *The Political Ideas of Harold J. Laski*. New York: Columbia University Press (London: Geoffrey Cumberlege), 1955. 9". Pp. 370. 45s.

[This is a development of a doctoral dissertation of Columbia University. The author traces the development of Laski's thinking chronologically from his earliest publications in 1914 up till his death in 1950.]

DIAMOND (S.). *The Reputation of the American Businessman*. Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1955. 9½". Pp. 209. 32s.

[To be reviewed.]

FERBER (R.). *Factors Influencing Durable Goods Purchases*. Urbana, Illinois: Bureau of Economic and Business Research, University of Illinois, 1955. 9". Pp. 72. \$1.00.

[This is based on a comparatively small sample survey carried out in Decatur, Illinois, in which questions relating to planned and actual purchases of consumer durables were put to the same panel of consumers at intervals of about a month over a period of nearly a year. The interest of the report is partly the methodological one of showing what can be achieved by this "continuous consumer panel technique." The technique is shown to have considerable possibilities, but it has at the same time more danger of bias than an ordinary sample survey: the non-response rate is likely to be greater, since some consumers who are willing to co-operate at first become bored with repeated questioning, and any bias that may result from consumers' behaviour being influenced by their participation in the survey becomes cumulative. Professor Ferber analyses in some detail the extent of the bias due to each of these two sources. Many if not most of the conclusions drawn from the survey are much as one would expect: the larger the purchase, the more likely it is to have been planned in advance; credit is more used for larger purchases than for small ones; and so on. Rather more surprising is the finding that the frequency of purchases of durables costing less than \$25 appears not to vary with income. Interest also attaches to some of the findings about the proportion of planned purchases realised. These cast light on the practicability of forecasting future purchases on the basis of currently ascertained plans.]

FRANCE (R. R.). *Union Decisions in Collective Bargaining*. Princeton, New Jersey: Industrial Relations Section, Princeton University, 1955. 9½". Pp. 49. \$2.00.

[Interviews with the officers of a number of labour unions provided the basis for this study, which is chiefly concerned with the degree of centralisation of union decision-making in the sphere of collective bargaining. The first section of the paper deals with the reasons commonly expressed by union officers for preferring company-wide bargaining to single-plant bargaining and for not pursuing with any enthusiasm the objective of industry-wide bargaining. The next two sections are concerned with the relative parts played by local representatives, national representatives and the rank and file in arriving at union decisions. In the final section, Professor France discusses what difference the degree of centralisation makes to industrial relations as a whole. In certain respects at least it appears that the answer is not very much. The union representatives interviewed did, however, express strong views on what they felt to be insincere professions by the top management of certain corporations that decision-making on labour relations had been delegated to plant managers and so was no longer in their hands.]

GOLDSMITH (R. W.). *A Study of Saving in the United States. Volume I: Introduction, Tables of Annual Estimates of Saving, 1897 to 1949. Volume II: Nature and Derivation of Annual Estimates of Saving, 1897 to 1949*. Princeton, New Jersey: Princeton University Press (London: Geoffrey Cumberlege), 1955. 10". Vol. I: Pp. vii + 1138; Vol. II: Pp. vii + 632. 240s.

[To be reviewed.]

GORDON (M. S.). *Employment Expansion and Population Growth. The California experience, 1900-1950*. Berkeley, California: University of California Press, 1954 (London: Cambridge University Press, 1955). 9½". Pp. 192. 26s.

[The central theme of this monograph is the special problems of employment and unemployment that arise in a region subject to rapid growth in population by migration. The author has some interesting suggestions on the mutual causal interaction of population growth and expansion of employment. She analyses trends in employment in California, particularly in the various branches of manufacturing industry, and compares the levels of incomes, wages and unemployment in California and the United States as a whole in the different parts of the period studied. Her work is thus related both to the extensive studies on labour mobility that have recently been carried out in the United States and to the study of fluctuations and "secondary secular movements." The latter, which correspond roughly to the building cycle, have been prominent in the Californian experience.]

HARRIS (S. E.). *John Maynard Keynes, Economist and Policy Maker*. New York and London: Scribners, 1955. 8½". Pp. 234. 15s.

[To be reviewed.]

HEATH (M. S.). *Constructive Liberalism. The role of the state in economic development in Georgia to 1860.* Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1955. 9½". Pp. 448. 60s.

[This is the fourth volume to be published in the series sponsored by the Committee on Research in Economic History dealing with the role of State governments in the economy between the period of the American Revolution and the Civil War. The series has broken a good deal of new ground. Attacking the problem at the State, rather than at the Federal, level, the authors of these monographs have provided us at last with a corpus of exact and particular data concerning the very positive and specific part played by government in economic policy during the formative period of American growth. The volume here noted preserves the high standard of the earlier volumes, although perhaps its length and detail make it somewhat less useful for the general reader. The story is not fundamentally different in character from that in Massachusetts and Pennsylvania, the two earlier seaboard studies. In each case there is a conflict between *laissez-faire* and a pseudo-mercantilist habit of government intervention in the economy. But whereas in the two earlier cases a strong paternalism is gradually eroded away by the assumptions of *laissez-faire*, in Georgia, which remained throughout the period overwhelmingly an agrarian State, the paternalism of the Trustees, who founded the Colony as an experiment in welfare, is followed by an alternation between *laissez-faire* and what the author calls "constructive liberalism"—an alternation which seems to bear little relation to the business cycle and which, he hints, may have an autonomous social causation. By "constructive liberalism" he means the use of the instruments of the State, not to buttress special privilege, but in order the better to release the productive energies of private men. The main part of the book is concerned with showing how land, banking and railway policies were directed towards this end. In particular, the building by the State of strategic railways, one of them during the "Great Depression" of 1837-45, is shown to be an example of almost Schumpeterian innovation with remarkably healthy effects for private enterprise as a whole within the State.]

HECKSCHER (E. F.). *An Economic History of Sweden.* Translated by G. Ohlin. Cambridge, Mass.: Harvard University Press, 1954 (London: Geoffrey Cumberlege, 1955). 8½". Pp. xiii + 308. 40s.

[To be reviewed.]

HICKMAN (B. G.). *The Korean War and United States Economic Activity, 1950-1952.* National Bureau of Economic Research, Occasional Paper No. 49. New York: National Bureau of Economic Research, 1955. 9". Pp. 61. 75c.

[This is part of a larger comparative study of business fluctuations in peace-time and war-time. Accordingly extensive comparisons are made between the course of events in the United States in 1949-52 and 1939-42. The contrasts between the two periods arose partly because unemployment was so much higher at the beginning of the Second World War than it was in 1950 and partly because of the different behaviour of consumers. The peculiar feature of the economic impact of the Korean war on the American economy was that it was possible to increase military expenditure after the early stages without undue inflationary consequences, because despite the rise in incomes consumers' expenditure actually declined after mid-1951 from the high level that had been reached during the period of heavy buying in anticipation of shortages immediately after the outbreak of hostilities.]

ISERMAN (T. R.). *Three Taft-Hartley Issues. I. Secondary Boycotts; II. "Mandatory" Injunctions; III. Replaced Strikers' Votes.* National Economic Problems, No. 456. New York: American Enterprise Association, 1955. 8½". Pp. 32. \$1.00.

REILLY (G. D.). *States Rights and the Law of Labor Relations.* National Economic Problems, No. 457. New York: American Enterprise Association, 1955. 8½". Pp. 35. \$1.00.

[These two pamphlets are concerned with certain controversial issues in current American labour legislation. The authors describe the present state of the law, and suggest some amendments that would clarify the intentions of Congress and close loop-holes which prevent them from being carried into effect.]

JOHNSON (J. L.). *Income in Kentucky. County distributions by amount, by type and by size.* Lexington, Kentucky: University of Kentucky Press, 1955. 9½". Pp. 310. \$4.50.

JOHNSON (J. L.). *The Income of Kentucky Residents by County 1953.* Lexington, Kentucky: University of Kentucky Press, 1955. 8½". Pp. 18.

[Following the procedures developed by the Conference on the Measurement of County Income, total incomes for the 120 counties of Kentucky in 1950 are estimated for this study by distributing the various components of State incomes in accordance with what seemed to be the most suitable allocators. Most of the book is concerned with a description of the allocation procedures and adjustments involved in this process, and the economic analysis of the results tends to be slight or of primarily local interest. There is considerable statistical detail, however, and the student of regional variations in economic growth will find some interesting material on local variations in average incomes or in patterns of income distribution.]

KENDRICK (M. SLADE) assisted by WEHLE (M.). *A Century and a Half of Federal Expenditures.* National Bureau of Economic Research, Occasional Paper 48 (Revised). New York: National Bureau of Economic Research, 1955. 9". Pp. 102. \$1.25.

[Expenditure by the federal government has shown an upward trend since the beginning of the nineteenth century, whether measured absolutely or per head or as a proportion of national income. This rise has occurred in a series of steps: in every war in the period, federal expenditure naturally rose, and although it fell after the end of the war, on each occasion it fell less than the whole way back to its pre-war level. This was due largely to payments connected with the war, chiefly debt interest and pensions. Purely civil expenditure has risen at a more regular pace, though with a very great acceleration in the 1930s, this decade being the only time, apart from a brief spell in the 1850s, when civil expenditure has exceeded expenditure connected with war. In addition to analysis of these and other general trends, the author provides interesting information on some of the factors underlying the growth in military expenditure.]

LANZILLOTTI (R. F.). *The Hard-surface Floor-covering Industry. A case study of market structure and competition in oligopoly.* Pullman, Washington: State College of Washington Press, 1955. 9½". Pp. vii + 204. \$4.00.

[The industry that is the subject of this monograph is an oligopoly which has been a good deal affected in recent years by the development of new types of floor covering in competition with linoleum and felt-based products. A prominent part in the development of these new products has been played by existing large firms whose chief interests are in lines other than floor-coverings. Professor Lanzillotti describes the structure of the industry and its competitive behaviour over the last thirty years and appraises its performance in relation to the concept of "workable competition." An important feature of the industry is that the chief firms produce a wide range of products. The author finds that for this reason, as well as for certain others, the most usual theoretical models of price-leadership do not fit this industry very well, though the phenomenon of price-leadership is undoubtedly present in some degree.]

LAUTERBACH (A.). *Man, Motives and Money. Psychological Frontiers of Economics.* Ithaca, New York: Cornell University Press, 1954 (London: Geoffrey Cumberlege, 1955). 9½". Pp. v + 366. 40s.

[Reviewed in this issue.]

LÖSCH (A.). *The Economics of Location.* Translated from the second revised edition by W. H. WOGLOM with the assistance of W. F. STOLPER. New Haven, Connecticut: Yale University Press, 1954 (London: Geoffrey Cumberlege, 1955). 9½". Pp. vii + 520. 60s.

[To be reviewed.]

PARNES (H. S.). *Research on Labor Mobility. An appraisal of research findings in the United States.* Social Science Research Council, Bulletin No. 65. New York: Social Science Research Council, 1954. 9". Pp. v + 205. \$1.75.

[This interesting and lucid conspectus of research so far done in the United States into labour mobility is likely to be useful not merely as an outline for the student but also as the means of facilitating further work. After an admirably clear chapter on concepts and methods, the author divides his account under three main heads: the extent and character of mobility; its determinants; and the relation of the findings summarised to theoretical assumptions and doctrines about labour allocation. Mobility is understood in the sense relevant to labour supply. No attempt is made to include in the survey work on mobility between social classes or on long-run changes in the occupational distribution of the population.]

The Political Economy of American Foreign Policy, Its Concepts, Strategy and Limits, Report of a study group sponsored by the Woodrow Wilson Foundation and the National Planning Association, under the Chairmanship of W. Y. ELLIOTT. New York: Henry Holt, 1955. 8". Pp. 414. \$6.00.

[This report is divided into two parts. The first, entitled *Diagnosis*, contains a far-ranging and well-informed general survey of the present state and prospects of the economies of Western Europe, Japan and the underdeveloped countries, with special but not exclusive reference to their external relations. The second part—*Prescription*—discusses problems of American foreign economic policy in the light of the description and analysis contained in the first part of the book. The general standpoint adopted may be broadly described as that of the liberal wing of American business opinion. The title given to the report was chosen in order to emphasise the impossibility of separating economic objectives from broader political and diplomatic ones in American foreign policy. This theme is emphasised throughout the report.]

RECK (D.). *Government Purchasing and Competition*. Berkeley, California: University of California Press, 1954 (London: Cambridge University Press, 1955). 9½". Pp. 215. 30s.

[This systematic study of government buying policy in various types of market is designed to cast light on the buying problems of other large organisations as well. The author's assessment of government buying policy in the United States is on the whole not unfavourable. One notable finding concerns the success that has attended the use by the federal government of the sealed-bid system in its full rigour. When used by private buyers, this system is most often modified in some respects—for example by seeking offers from a limited number of suppliers only. The experience of the federal government suggests that these modifications may prevent full advantage being taken of competition between suppliers.]

Short-term Economic Forecasting. *Studies in Income and Wealth*, Volume 17, by the Conference on Research in Income and Wealth. Princeton, New Jersey: Princeton University Press, for the National Bureau of Economic Research (London: Geoffrey Cumberlege), 1955. 9½". Pp. 506. 60s.

[To be reviewed.]

SMITHIES (A.). *The Budgetary Process in the United States*. A research study for the Committee for Economic Development. New York and London: McGraw Hill, 1955. 9½". Pp. vii + 486. \$6.50.

[To be reviewed.]

STANKIEWICZ (W. J.) and MONTIAS (J. M.). *Institutional Changes in the Postwar Economy of Poland*. New York: Mid-European Studies Center, 1955. 9". Pp. 125. \$1.00.

[The authors describe the nature and timing of the changes that have taken place in economic organisation in Poland since the war. They discuss the management of state enterprises, the financial system, price and wage policy, and the approach adopted to general problems of planning. They argue that many of the policies that have been followed can be understood only as the result of compromises between partially inconsistent political and economic objectives. Some of the institutional changes that have been brought about appear quite clearly to have militated against economic efficiency, even if economic efficiency is defined on the basis of the priorities laid down by the communist authorities. The authors do not attempt to conceal their hostility to the regime, but their essay is a well-documented and thoughtful one, written in a temperate tone.]

WILCOX (C.). *Public Policies Toward Business*. Homewood, Illinois: Richard D. Irwin, 1955. 9½". Pp. ix + 898. \$6.50.

[To be reviewed.]

WILLIAMS (J. D.). *The Compleat Strategyst*. Being a primer on the theory of games of strategy. A RAND Corporation research study. New York and London: McGraw Hill, 1954. 9½". Pp. vii + 234. 38s.

[To be reviewed.]

WINDMULLER (J. P.). *American Labor and the International Labor Movement, 1940-1953*. Ithaca, New York: Institute of International Industrial and Labor Relations, Cornell University, 1954. 9". Pp. x + 243. \$3.00.

[This monograph is an expanded version of a Cornell University doctoral dissertation. Its subject is the relation between the two American labour organisations and international trade union federations—the World Federation of Trade Unions and, since the cleavage in the latter, the International Confederation of Free Trade Unions.]

French

MARCHAL (J.). *Deux Essais sur le Marxisme*. Paris: Librairie de Médecis, 1955. 7½". Pp. 261. 750 frs.

[To be reviewed.]

Belgian

INTERNATIONAL ECONOMIC ASSOCIATION. *Economic Progress*. Papers and proceedings of a conference held in September 1953, edited by L. H. Dupriez with the assistance of D. C. Hague. Louvain: Institut de Recherches Economiques et Sociales, 1955. 9½". Pp. 574. 43s.

[To be reviewed.]

German

HAMPEL (G.). *Die Bedeutung der Sozialpolitik für die Europäische Integration*. Kiel: Institut für Weltwirtschaft an der Universität Kiel, 1955. 9½". Pp. 169. DM. 13.

[This is a survey of the social-security provisions of the twelve Western European countries (excluding Spain) with some remarks on their possible integration into an international system.]

MIETH (W.). *Das Akzelerationsprinzip*. Berlin: Duncker & Humblot, 1955. 9". Pp. 118. DM. 8.80.

[This booklet gives an elementary account of the acceleration principle of investment.]

STAMER (H.). *Die wirtschaftlichen Auswirkungen der ländlichen Siedlung*. Untersuchungen über Produktivität und Rentabilität der Agrarreform in Schleswig-Holstein. Kiel: Institut für Weltwirtschaft an der Universität Kiel, 1955. 9½". Pp. 151. DM. 12.

[This is an extensive empirical study of the economics of farming in Schleswig-Holstein based on the experience of over a hundred farms established for varying periods of times. The productivity of labour, etc., is compared between large and small farms, and old and new farms. A general conclusion drawn by the author from these studies is that economic considerations alone are not sufficient to induce more people to live by the land.]

Swiss

MENICONI (F.). *Theorie des Einkommens*. Zurich: Polygraphischer, 1954. 9". Pp. 328. Fr. 19.60.

[Despite its rather general title—*The Theory of Income*—this book deals with only a narrow sector of this field; namely, some formal aspects of the meaning and measurement of income within the framework of a double-entry accounting system.]

FRITSCH (B.). *Die Geld- und Kredittheorie von Karl Marx*. Eine Darstellung und kritische Würdigung. Zurich: Polygraphischer, 1954. 9". Pp. 183. Fr. 16.65.

[Dr. Fritsch has worked hard—and, on the whole, successfully—to separate Marx's economic theory of money and credit from the philosophical and political views that go with it; he presents here a good account of the former.]

Dutch

TINBERGEN (J.). *International Economic Integration*. Second, completely revised, edition of *International Economic Co-operation*. Amsterdam: Elsevier (London: Cleaver-Hume Press), 1954. 8½". Pp. 191.

[Professor Tinbergen's *International Economic Co-operation* was reviewed in the *ECONOMIC JOURNAL* of September 1946, p. 459, by G. D. A. MacDougall. The present version has been thoroughly rewritten to keep abreast with developments in thinking as well as in events. The alteration in the title may perhaps be taken to reflect a strengthening in the internationalist convictions of the author that characterised the former version of the book.]

Egyptian

WARRINER (D.). *Land Reform and Economic Development*. National Bank of Egypt Fiftieth Anniversary Commemoration Lectures. Cairo: National Bank of Egypt, 1955. 9½". Pp. 42.

[This is an extremely stimulating and interesting set of lectures. The central theme is the relation between land reform (in the sense of breaking up large estates, whether let to tenants or farmed directly), which is generally agreed to be desirable in backward countries on social grounds, and economic progress, as measured chiefly by the volume of agricultural and industrial production. The lesson of history is ambiguous, since countries have differed greatly in the extent and nature of changes in agrarian institutions that have accompanied industrialisation. But many of the economic arguments that have been brought against land reform are erroneous. The existence of large estates creates no presumption that they foster agricultural efficiency, since large estates in backward countries are not usually the result of any sort of evolutionary competitive process, and economies of scale are as a rule non-existent or at least not exploited. Analogies to countries like Great Britain are misleading, since the whole relationship between landlord and tenant (or landlord and labourer) is quite different in countries where there are virtually no opportunities for non-agricultural employment of labour and only restricted opportunities for investing money save in land. Where land is redistributed, however, some degree of guidance, at least, to the new proprietors is essential if productivity is to be raised or even prevented from falling. The author draws a contrast between the communist solution to this problem—collectivisation—and the American system based on very extensive advice and other assistance to farmers from the state (in the shape, in the United States, of the Department of Agriculture). Miss Warriner illustrates these and other points in her lectures from her impressive knowledge of peasant farming in Europe, Asia and Latin America. It is to be hoped that her contribution may lead economists to pay more attention to problems of land tenure that they have too often dismissed as institutional and outside their scope.]

Official

BRITISH

HALL (H. D.). *North American Supply*. History of the Second World War, United Kingdom Civil Series, edited by Sir Keith Hancock. London: H.M. Stationery Office and Longmans, 1955. 10". Pp. xi + 559. 35s.

[To be reviewed.]

The National Income and Social Accounts of Northern Rhodesia, 1945–1953. Salisbury, Southern Rhodesia: Central African Statistical Office, 1954. 13". Pp. 70.

[This second official report in its series presents a system of accounts set up in accordance with the principles suggested by the United Nations. The estimates continue to be restricted to the European sector of the economy although there is a reliable estimate of the wages and salaries paid to Africans working in the European sector and a very rough estimate (margin of error assessed at 25%) of other African cash incomes. African subsistence incomes are represented by the addition of a nominal unvarying figure for each year of a period during which the consumer prices index increased five-fold.]

INTERNATIONAL

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT. *The Economic Development of Ceylon*. Report of a mission organised by the Bank at the request of the Government of Ceylon. Baltimore: Johns Hopkins University Press (London: Geoffrey Cumberlege), 1953. Pp. v + 829. 60s.

[This is the report of a mission which visited Ceylon, at the request of the Government of the country, at the end of 1951. The mission was headed by Sir Sydney Caine, and it has presented its report in two parts. The first "reviews the basic problems of Ceylon's economy" and puts forward outline proposals for a development programme; the second discusses in greater detail the problems of specific fields of developments, such as foreign trade, banking and public finance, agriculture, peasant colonisation and industrialisation. The primary aim of the mission was to advise the Ceylon Government; and its practical recommendations are conveniently summarised in Chapter 7, at the end of Part I of the report. But the report is also a valuable source of factual information, as much for repeatedly drawing attention to the need for research into basic data (such as water resources, surface and underground) as for the known data which it presents. It also provides useful examples for those interested in the general problem of underdeveloped economies. Ceylon is, it is true, hardly typical of these, if only because of its relatively high living

standards and capital resources *per capita* (in each case measured by Asian yardsticks), because of its exemplary political stability, and because of the great importance of commerce in its economy. But it has the characteristic features of a dual economy, of extreme dependence on the export of a few primary commodities, of a small internal market, and of a recent runaway increase in population. There are one or two contradictions of recommendations; for example, the expert on co-operatives wants "a gradual transfer of the least well-endowed peasants to colonization areas" (p. 204), whereas his colleague writing specifically on colonisation believes that "the present policy of drawing colonists almost exclusively from the landless class may be mistaken" (p. 391). This last statement is typical, moreover, of the second major deficiency, which is an insufficient appreciation of the nature and attitudes of the society with which the report is dealing; this relative neglect of the human factor contrasts with an excellent and usually correct grasp of the physical factors affecting economic development. It is true that there are sound appraisals of such phenomena as attitudes to investment (p. 106) and to education (p. 769); but the example quoted is typical of a number which reveal a failure to appreciate that one is dealing with an Asian society with values of its own; so that, for example, the desire for land is as much a social as an economic phenomenon, and to deny land to the landless would not only be to fly in the face of popular feeling but to draw down disaster on a popularly-elected Government. The mission, in fact, seems to shirk a fundamental issue which faces Ceylon and many Asian countries to-day: the achievement of a new synthesis which shall at the same time preserve as far as possible what is good and rewarding in the old values and produce a society which is viable under changed economic, demographic and political conditions.]

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT. *The Economic Development of Nigeria*. Report of a mission organised by the Bank at the request of the Governments of Nigeria and the United Kingdom. Baltimore, Maryland: Johns Hopkins Press (London: Geoffrey Cumberlege), 1955. 9½". Pp. 686. 60s.

[To be reviewed.]

INTERNATIONAL LABOUR OFFICE. *Administrative Practice of Social Insurance*. Geneva: International Labour Office, 1955. 9½". Pp. 86. 6s.

[This describes the various administrative procedures that are used for registering insured persons and employers, collecting contributions, checking qualifications for benefits and keeping records and statistics. The emphasis is on a comparative statement of methods adopted for carrying out each of these parts of a social-insurance programme, and no attempt is made to give a systematic account of practice in individual countries.]

ORGANISATION FOR EUROPEAN ECONOMIC CO-OPERATION. *Industrial Censuses in the United States*. Technical Assistance Mission, No. 77. Paris: O.E.E.C., 1955. 9½". Pp. 143. 10s.

[This is the report of a mission undertaken by twenty-two statisticians from O.E.E.C. countries, who visited the United States in 1951 to study industrial censuses in that country. It describes the uses of industrial census data in the United States and the federal government's programme for the collection and publication of industrial statistics. Certain particular problems of organisation and census practice are also discussed. One of the chief purposes of the mission was to cast light on problems of census taking in O.E.E.C. countries, and the report accordingly contains a number of suggestions and recommendations based on American experience.]

ORGANISATION FOR EUROPEAN ECONOMIC CO-OPERATION. *The Measurement of Agricultural Production and Food Consumption*. Paris: O.E.E.C., 1955. 9½". Pp. 24. 3s.

[The purpose of this paper is to classify the different types of indices of agricultural production and food consumption that are in use and to indicate by means of a series of analytical tables the statistical data necessary for the construction of each. It is hoped that it will serve to promote greater comparability between the indices prepared in different countries.]

ORGANISATION FOR EUROPEAN ECONOMIC CO-OPERATION. *Sixth Report. From Recovery towards Economic Strength*. Paris: O.E.E.C., 1955. 9½". Pp. 258. 6s.

[This is a general survey of recent economic developments in the O.E.E.C. countries and their current problems. Particular attention is given to productivity and to external trade and payments. As compared with the annual economic surveys that are produced by other agencies, that of the O.E.E.C. gives rather more emphasis to questions of present and future policy.]

UNITED NATIONS. *Demographic Yearbook 1954*. New York: United Nations Statistical Office, 1955. 11½". Pp. 729. 45s.

[The principle on which this year book is compiled is that each issue should give particularly full information on one class of demographic statistics. This year special tables are presented on natality. Certain other new features are also introduced, making the volume the stoutest in the series to date. A bibliography is included to bring up to date that published in the previous issue.]

UNITED NATIONS. *Foreign Capital in Latin America*. New York: United Nations, 1955. 11". Pp. 164. 12s. 6d.

[The greater part of this report is occupied by studies of the part played by foreign capital in each of the countries of Latin America taken individually. The first and more general part contains an informative historical chapter on the growth of foreign investment in Latin America and a survey of governmental policies towards foreign capital.]

UNITED NATIONS. *Review of International Commodity Problems, 1954*. Prepared by the Interim Co-ordinating Committee for International Commodity Arrangements. New York: United Nations, 1955. 11". Pp. 42. 3s.

[This report describes recent inter-governmental action regarding commodities for which formal or other arrangements for international co-operation exist. Appendices deal more generally with the world situation in respect of the four commodities wheat, sugar, tin and coffee. The present report is complementary to the *Survey of Primary Commodity Markets* prepared by the Commission on International Commodity Trade, a new agency of the United Nations which now carries out some of the functions formerly discharged by the Committee.]

UNITED NATIONS. *A Study of the Iron and Steel Industry in Latin America*. Volume I: Report on the meeting of the Expert Working Group held at Bogotá. Sponsored by the Secretariat of the Economic Commission for Latin America and the Technical Assistance Administration. New York: United Nations, 1955. 11". Pp. 123. 9s.

[The scope of this comprehensive survey is partly technical and partly economic. Chapters are included on the factors affecting the consumption of iron and steel in Latin America and the cost of production, and special treatment is given to the influence of locational factors and of the size of the market. The arrangement is by topics rather than countries, but extensive statistical and other particulars on the position of the industry in the several countries of the region are given throughout the text. Volume II will contain the working papers submitted by the individual experts at the meeting, together with a summary of the discussions of them.]

UNITED NATIONS. *Survey of World Iron Ore Resources*. Occurrence, Appraisal and Use. Report of a Committee of Experts appointed by the Secretary-General. New York: United Nations, 1955. 11". Pp. 345. 25s.

[This contains a general report of some forty pages, followed by a series of technical papers contributed by individual experts. These papers include special regional surveys which occupy about half the volume.]

THE ECONOMIC JOURNAL

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THE TEACHING OF ECONOMICS IN SCHOOLS AND UNIVERSITIES¹

I

LADIES and Gentlemen, I do not think that the subject which I have chosen for this presidential address is a subject to which any of us would do well to devote very much attention. Our first business as economists is to study economics; our first business as teachers is to teach it. Given the brevity of human life and the multiplicity of worth-while things to do, any lengthy sacrifice of time to the discussion of mere organisation and method is probably ill-spent: it may indeed become a vicious habit. "He who can does; he who cannot, teaches." The Shavian aphorism is presumably capable of application to teaching itself; and although, like most pronouncements from that quarter, it needs to be taken with a very large pinch of salt, it does indicate a real danger.

Nevertheless, having recognised that the danger exists, I think that we must recognise, too, that there is also a problem. Both in schools and in universities in this country, economics is now studied on a very wide scale. Large numbers of students take final degrees in economics. Large sums of public money are involved. There is, therefore, something to be said for asking from time to time whether all this is on a sound basis, whether the objectives are well-conceived, and the means adopted well-adapted. And in a period of rapid growth, such as we have experienced since the war, perhaps such an inquiry is all the more incumbent. Are the arrangements, which have served us well in the past with a smaller educational population, equally likely to serve us well now that that population has so greatly increased? Or do we need some change?

These, at any rate, are the questions which I want to put this evening. I shall first say a few words about the position in schools. Then I shall go on to a general appraisal of honours degrees in the post-war situation. This will be followed by observations on economics teaching, first for a general and then for an honours degree. Finally, I shall have something to say about the appropriate length of course. All this will be very informal. I shall be thinking aloud about the problems which worry me most as a teacher. I make no pretension to present a systematic survey.

¹ Presidential Address delivered to the Royal Economic Society on July 7, 1955.
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II

I turn first, then, to the teaching of economics in schools. This is not a subject on which I can claim to speak with direct experience. I have never taught economics in a school. But, for many years, in one way or another I have been mixed up with the business of examining the results of such teaching, and I have spent many anxious hours meditating on the responsibilities of the Board of Studies in Economics in the University of London for the syllabuses prescribed for school examinations in this subject.

Ladies and Gentlemen, I should be lacking in candour if I did not admit to you at once that my inmost feeling on this matter is one of regret. Fight against it as I may, I cannot resist the wish that the whole business of teaching economics in schools had never begun. I say this with great reluctance; for I know that in doing so I shall give pain to many devoted teachers—some of them my own pupils—for whom and for whose labours I have nothing but admiration and respect. But, in the last analysis, it is principles which are involved, not persons: and we get nowhere if we are diplomatic about principles.

My reasons for this attitude are twofold. First, I cannot get away from the feeling that economics is essentially a subject for grown-ups—at any rate if it is taught as anything like a theoretical system. No simple proposition in economics is likely to be true, unless it is understood as being subject to a whole complex of assumptions not likely to be read into it, save by those who have a sufficient knowledge both of the system of propositions as a whole and of the world of reality to which they have reference. Is it sensible to expect children to possess such knowledge? And if they do not, do we not run the risk of inculcating bad intellectual habits by trying to teach an economics so simplified as to be suitable for their understanding?

Now it may be that there are ways round this difficulty—I shall be saying something about that in a minute. But I do not think that anyone who has given even the most cursory inspection to examination scripts in economics written by schoolchildren can deny that the risk is very real. There are, of course, exceptions: good teachers can make almost any subject worth while, and there are many good teachers in this field. But, in the main, I venture to say that the impression which must be produced on any unbiased mind must be one of considerable disquiet. I do not say that it is impossible to mark properly—that it is impossible to distinguish good answers from bad and the results of good teaching from the results of bad teaching. But I do say that, in the majority of cases, you get a greater sense of immaturity of touch, of unreality of contents than you are likely to get in any of the more straightforward school subjects. I cannot believe that if you are marking papers in chemistry or physics, in languages or geography, you ever have to tolerate such insufficiency as you have to tolerate here. But—and this is my main trouble—this seems to be inherent in the nature of things. In teaching physics or languages you can begin with the simple things and leave the more difficult until later on. But in economics

at this stage you have to water down difficult things in order to make any beginning at all.

These considerations are reinforced if we think of the text-books which are written for studies at this level. Again, please do not misunderstand me. I do not say that there are no good books of this kind, quite the contrary; I can think of some which are of outstanding quality. But if it is asked wherein their goodness consists, does not the answer usually tend to run in terms of the skill with which their authors have side-tracked difficult points and formulated their generalisations without begging awkward questions? The *tour de force* consists not so much in what is said, as in what is not said. Now while this may make very good reading for the sophisticated and perhaps harmless reading of the unsophisticated, is it really the right basis for the teaching of children in schools?

This leads me to my second ground for regret. Even if I were more confident than I am of the intrinsic suitability of general economics as a subject for schoolchildren I should still feel that there were many other subjects which were more suitable and whose claims were more urgent. I can perhaps best put my point in the form of a question to fellow teachers in university faculties. Supposing that we had to choose between candidates having a good training in the basic school subjects but no economics, and candidates having some economics but a less satisfactory grasp of the basic subjects, which would we rather have? Surely there can be no doubt about the answer. We know that we can teach economics from the beginnings at the university stage. But we can seldom make good deficiencies in basic training.

It may be argued, however, that the two things are not incompatible, that the dilemma is unreal, that we can have students who are at once properly trained in the basic subjects and who have also broken the ice of economic studies at school. Well, I have no desire to be dogmatic; and I have certainly no desire to suggest that such conjunctions do not sometimes occur. But it must be said that there are quite substantial grounds for doubting the excellence of the basic training nowadays. Perhaps we are more unfortunate than we used to be in faculties of economics; perhaps we attract a larger proportion of weaker students—a larger proportion who have come just to escape Latin and Mathematics. But it is certainly a fact that in respect of ability to write clear English and to follow simple algebraic and geometrical demonstrations there has been a distinct falling off since the war. I do not think this is a case of the middle-aged professor seeing the past in a roseate hue; the loudest complaints come from younger teachers. I would not argue that this is actually due to the teaching of economics in schools; there are obviously many more important influences at work. I would argue, however, that until it has been put right there is a strong argument against the extension of the curriculum to border-line subjects. I would argue too that the tendency which is so obvious in present educational practice at the school level to multiply the so-called “interesting” subjects may have very unfortunate consequences.

But I do not wish to be wholly negative. Whatever may be our private sentiments in this connection, the teaching of economics in schools is not likely to be abolished or even substantially curtailed. Here we are, faced with a going concern; and the practical problem is not whether it should be liquidated, but rather whether it cannot be improved. Are there any ways of introducing schoolchildren to the study of economic questions liable to the risks I have indicated?

I think that there may be. I see no way out so long as it is thought necessary to teach economic theory of the more formal sort. But if this could be frankly abandoned and the economic instruction confined to more or less descriptive explanation of everyday events and institutions with a certain amount of relevant history thrown in, I can believe that many of the objections I have set forth would largely cease to apply. I should still privately believe that the time could be better spent strengthening the foundations of the hard basic subjects. But as an introduction to citizenship and as a general broadening of the mind, a series of hours devoted to teaching the students how to read the newspapers intelligently could not do much harm and might do some good. Something more on the lines of what used to be called civics—that seems to me to be the proper direction of reform. Perhaps I should add that, quite as much as elementary theoretical instruction would have to be carried out by teachers who had proper university qualifications in economics.

The trouble about this is that it does not lend itself to easy examination. How are we to lay down an examination syllabus to test the results of instruction which, if it is to fulfil its proper function, must be essentially inconclusive, designed to stimulate and inform discursively rather than to provide a system of thought which can be tested by hypothetical examples? There can be no doubt that the difficulties are very great; and since, in the modern age, the leaving examinations are so important, there can be no doubt that these difficulties are a severe obstacle to change. Nevertheless I cannot believe that the problem is insoluble; and I should hope that, by frank and friendly consultation with those who have to do the business of teaching, it should not be out of the question for the great examining universities to work out syllabuses and modes of examining which would permit change in the right direction. There are indeed signs that this may happen.

III

I now turn to a subject with which I am better acquainted, the teaching of economics in universities.

Now I will not be so complacent as to suggest that the dangers which I conceive to be attendant on the teaching of economics in schools suddenly cease when the young people come up to the universities. I am sure that the dangers are still very real. I suspect that, in the ideal state, economics would be taken as a second degree or after some short experience of practical life; and I think that this is a strong argument for advising students who wish to take this subject to do their military service first: certainly there

a marked difference between teaching social studies to boys fresh from school and to those who have had two years in the forces, just as there is a marked difference between teaching day students with no knowledge of the world and evening students coming in from business. Still, I think experience shows that, if we are careful, we can teach economics for a first degree to boys and girls fresh from school without manufacturing too large a proportion of prizes and with a fair hope of imparting useful techniques.

Nevertheless, if we are honest with ourselves, I think we must acknowledge that all is not well. I should be prepared to argue that a good honours degree in economics in certain English universities is as good an evidence of ability and training as is to be had almost anywhere in the world. But I am very far from believing that there is the same ground for satisfaction with the performance at the other end of the scale. A first or an upper second and perhaps a certain proportion of lower seconds mean something definite in the way of technical qualifications. But although, of course, there are always exceptions, in the main a poor lower second or a pass mean very little. As my colleagues know, I am not a fierce marker; and I do not believe in drastic change in traditional standards. But I confess I should be very sorry for any outside body of professional or business people to inspect the performances which qualify for degrees at the lower end of the scale; and I should like to make it clear that I speak with some experience of examining in several of our great centres of study and see no reason to distinguish between them in this respect. I think it must be admitted that the standard is poor. You have only to think of the answers being read aloud.

The fact is, I suspect, that in contrast to some subjects, in which an indifferent performance still implies some minimum of technical equipment, economics as a technical qualification is not much use unless at a high level of competence. This seems to follow from the nature of the subject. It follows too, I think, from our knowledge of the market. In my experience, at least, there has seldom been any difficulty in finding jobs as *economists* for firsts and good seconds. This was true even in the depths of the depression; and to-day they are snapped up almost before the ink on the class list is dry. But for the rest, I doubt whether the record of the appointments boards would show that the alleged professional qualification has very much relation to the jobs in which the candidates concerned eventually settle down. Modern employers know that really well-qualified economists have something specific to contribute, and they are quite willing to make special efforts to get them. But I do not think that they make much distinction between economics and other degrees at the lower end of the scale; and, speaking for myself, I would not say that they were wrong.

Reflecting on these circumstances, in recent years I have often found myself wondering whether the tradition of the honours schools in this country is really very well adapted to meet all the requirements of university education now that it has become accessible to such a greatly increased proportion of the population. Speaking broadly, I suppose that it would be

generally admitted that teaching for honours is very well done in English universities: I doubt whether anywhere in the world, except perhaps Scandinavia, a first degree with high honours means more. But are we sure that this system is the best, or even a good, system for the students who are not capable of high honours? Experience since the war, in the examinations I am acquainted with, shows that the increase of numbers has not been accompanied by anything like a proportionate increase of students with capacity for high honours. Are we doing our best for the remainder by forcing them to adapt themselves to the Procrustean requirements of a system which was designed essentially for the training not of large numbers of citizens, but rather of a comparatively small intellectual *élite*?

Different answers, I dare say, would be forthcoming in different faculties. But so far as economics is concerned, I am pretty sure what my own answer would be. I do not think that the techniques and the disciplines which we quite rightly require of the true honours candidate are really suitable for those who have not these abilities; and I suspect that being forced to study them does substantial harm to a substantial proportion of students. What good does it do the student, who is capable only of a poor lower second, to spend long days and laborious nights poring over the arcana of utility theory or the geometry of the analysis of the firm? Is it not as if we were to compel candidates with indifferent eyesight to spend their time staring at objects outside their focus? And if this is so, are not the psychological results likely to be bad? Is not the student in this position likely to become either rebellious or depressed and to leave the university in many ways less well fitted for the battle of life than if he had never been there?

I do not think that we can evade our responsibilities in this respect by saying that it is all part of a beneficial process ensuring the survival of the fittest. This seems to me to show an intolerably restricted and perverse set of values. A man is not necessarily a worse citizen if he is not at home in manipulating indifference curves, production opportunity slopes and the like. The greater part of the important work of the world is done by those to whom refinements of this sort will always be a mystery. Are we to say, therefore, that no one should come to a university who is not capable of high honours in the English sense? I should hope not; the example of the United States shows what a benefit it is for large numbers of the citizens to have had a general university training. But if we are not prepared to exclude the less academically gifted, it is up to us to devise modes of training which make better use of their time than the acrobatics of the honours schools.

In this connection I believe we suffer much from the discredit which in the modern age has come to attach to the idea of the pass or the general degree. This discredit is due partly to the abuse of such degrees at universities, where they were the refuge of those who were up for pleasure rather than education. It is due, partly also, to the very natural desire of heads of departments to have a large honours school. In my own day I have watched the honours system sweeping all before it in many universities, just at a time

when the desirability of its general prevalence was beginning to be very questionable. It is certainly arguable that, outside pure technology, general degrees covering a wider field of knowledge at a less intensive level are much better for many undergraduates than honours degrees involving extreme specialisation. For a very substantial proportion of the university population there is a strong case for the view that degrees of the kind taken under the old Scottish system and almost universally prevalent in Canada and the United States are much to be preferred.

What, then, are we to do? If we were starting *ab initio* there would be a strong case for modelling our system on trans-atlantic lines, regarding first degrees as being principally further general education and reserving specialisation for second degrees in special graduate schools. Secluded dons whose insular complacency was consolidated years ago by the gleeful reading of Abraham Flexner on some of the crudities of the rapidly evolving systems in the United States may feel that this is all wrong, and that we have absolutely nothing to learn from what goes on over there. This, of course, is just silly. English educationalists ignore at their peril the results already achieved under this system, especially in the graduate schools; in another quarter of a century if we do not improve our own arrangements, we may find ourselves seriously behind all along the line. But, be that as it may, I submit that there would be enormous advantage in an educational system planned so that all students capable of benefiting from a university education at all should all take first degrees involving a fairly wide spread of subjects suitably grouped, and only after that providing for intensive specialisation in graduate schools for those who have already proved their worth.

But, of course, we are not beginning *ab initio*, and we are not going to do anything so drastic. Moreover, things being what they are, I would not in the least advocate throwing the baby out with the bath water, and destroying a tradition—the tradition of our honours schools—of which we are justly proud. We have to work out our salvation in our own way, and I am sure that way will continue to give importance in first degrees to the teaching for honours schools. My own inclination would favour a solution in two stages: for the first two years all students should take courses of appropriately grouped subjects on what we may call a general level; then there should be a bifurcation, those who had proved their capacity, going forward to honours specialisation, others continuing for their final year with further general courses. I believe that this would have at least three advantages: it would preserve what is best in the tradition of the honours schools for those capable of honours; it would provide a foundation of general education which at present the honours student often very sadly lacks; and it would rehabilitate the general degree in a way in which, since it was linked with the first stage of the honours schools, would leave no doubt of its good academic standing. I do not say that this is the only solution. But for the purposes of this address it will be convenient to assume that something of this sort takes place.

In what follows, therefore, I shall discuss two distinct sets of problems: the problems of the general degree and the problems of the honours school.

IV

I turn next, then, to economics as a constituent of what I have called a general, as distinct from a specialised, honours degree.

Here the first point I have to make may be put in the form of a slogan: "Down to earth and cut out the indifference curves." I hope you will not infer from this that I wish to speak disparagingly of theory. On the contrary, now as ever, I think well of it and wish it a central place in the honours course. But when we are teaching students who are not going to pursue economics as a life study or as a profession, but who rather are seeking the elements of an all-round education which will teach them to think and help them to understand the world, I think we can overdo the emphasis on theoretical refinement; and I am pretty sure that nowadays this is very often done. Clearly, we are out to teach a certain basic minimum of general principle: it would be a great mistake to conceive the appropriate economics course at this stage to be nothing but descriptive. But what is needed is not refinement of analysis of the kind suitable for the theory paper in final honours, but rather thorough understanding of the great elementary platitudes of the subject—supply and demand theory rather than what may be called the metaphysics of the theory of value—combined with descriptions of the real world which permit exercises in the applications of these platitudes and provide some general feeling of the background of institutions amid which economic relations develop. At this stage it is much more important for a man to know, for instance, what the stock market is and how stock-exchange fluctuations affect the raising of funds by firms, than to be expert in distinguishing the significance of the difference between measurable and immeasurable utility or the four different kinds of cost curve.

In this connection, I sometimes doubt whether teachers have been altogether helped by recent text-books. I can think of several text-books which are an excellent introduction to theory for the honours course. But I am much more at a loss when I think of the requirements of the type of course which I have at present in mind. In my student days this need was superbly met by works such as Taussig's—works which set forth the broad principles of the subject on an adult plane of exposition and on a scale sufficient to do justice to the subject, but avoiding the higher technicalities. Economics has moved on since then; and modern thought would require considerable reformulation of important sections in such books—particularly those relating to national income and employment. But I cannot think of good substitutes. I know of one or two most excellent introductions for the first year—Dr. Benham's, for instance. But works which deal with the subject at the length and with the weight of argument and illustration of Taussig or Pierson are still, I think, to be written. Till then we have to carry on by reference to a miscellany of works, each approach-

ing special parts of the subject from its own special point of view. Doubtless this has some advantages in fostering width of reading and capacity for selection. But I doubt if these outweigh the disadvantages of the absence of a unified follow-through. We burden students unduly, if at this stage we require them to compile their own Principles of Economics.

So much for the central course in principles. This will doubtless be accompanied by more specialised descriptive courses dealing with contemporary problems and contemporary economic developments, about which I have nothing special to say. But what of the other subjects? What are suitable companions for economics in the type of degree I am contemplating?

It should go without saying, I hope, that the closest of these should be economic history. Indeed, it is difficult to draw the line between economic history, which is the descriptive economics of the past, and descriptive economics, which is the economic history of the present. I am sure that the more economics and economic history get mixed up, the better for both kinds of teaching. I know that fifty years ago economic history was not very well done and was often written by men who had a positive antipathy for economics. But a great deal has happened since then. To-day there is no obstacle to regarding economic history as an essential complement to economics at every stage.

But even when it is combined with economic history I do not think that economics in this wide sense is a good liberal education in itself or a sufficient training for the understanding of the world around us. The economic aspects of society are important. But they are not the only important aspects; and studies which are exclusively focused in this direction are apt to be not merely one-sided but also positively misleading. For a balanced approach to the study of society they need to be accompanied by systematic training in at least two other spheres.

First comes politics with its two divisions: political organisation and the history of political thought—in my judgment each equally important. Political organisation is surely almost indispensable even to an understanding of economic problems: how, for instance, can we teach public finance to people who have no general understanding of the machinery of government? But the history of political thought is not less indispensable: how can we properly appreciate the social movements, even of our own time, if we have no acquaintance with the broad perspective of thought concerning political obligation and the nature of social justice?

Secondly, comes history in its more general sense as distinct from economic history. In this context, this serves two functions: it provides a general accompaniment to economic history; and it provides background for the study of politics. Of course, there can be no question of detailed history in the specialist sense in degrees of this kind; and I know that many modern historians, lacking the spacious conceptions of their predecessors, are reluctant to consent to teach anything else. Nevertheless, more generalised teaching is clearly possible; and, properly conceived, can be well

adapted to the requirements of a general degree in social studies. What ever may be urged to the contrary, to acquaint students with the broad perspective of European and Modern American History it is really not necessary to teach them the ultimate uses of the historical microscope.

V

And now at last I am free to turn to the problem of honours teaching—that is to say, the problem of teaching economics, not merely as part of a general education but also as a professional qualification. This, of course, is the sphere which most of us find most congenial. Here are no problems of tempering the wind to shorn lambs. Here is a stage at which no difficulties need be concealed, no hesitations left unexpressed. Given the field to be covered, we can teach without inhibition.

Nevertheless, even here there are problems. What is the field to be covered? What are the requirements which need to be fulfilled before we can say of the training we give, that it is a training for professional economists? And when we have settled the constituent subjects, what length of course do we need?

Let me say at once that I assume as an essential prerequisite, the grounding in associated social studies which I have already discussed in connection with the general degree. I regard honours specialisation which does not have this background as seriously defective, even having regard to the most strictly professional requirements. I will not say that a man who takes honours in economics knowing nothing of politics or history is no good to anybody. We know that some of the most famous schools have tolerated this degree of specialisation; and I should be sorry to be thought to be passing general condemnation on their many distinguished *alumni*. But I do say that he is not nearly so qualified to be useful—or sensible—as he would be if he had a wider basis. There was a long period in the history of the London degree when it was possible to get a first in Economics (Analytical and Descriptive) without having heard (officially) of Plato's Republic, the American Constitution or even the French Revolution—and a great many students did. Thinking of the men and women whose education was thus warped, I often feel a certain sense of personal guilt for having put up with it so long without protest.

But assuming that this danger has been circumnavigated either by the provision of a Part I, as I have suggested, or by the requirement of a proper complement of subsidiary subjects, there still remain problems of scope and length, and it is these to which I wish to devote the final parts of this address. I say nothing here about specialisation *within* the honours field: I think general considerations suggest that there is scope for specialisation in finance, in industry and in regional and inter-regional studies; and experience shows that this may be fruitfully practised. I restrict myself to problems of a more general nature.

First, a question of scope: how up to date should we be? How near to

the frontiers of recent discovery do we expect the student to go at this stage? How much do we expect him to know of the controversies in the very last numbers of the journals?

This is a problem to which I do not think a very cut-and-dried answer is possible or even desirable. Obviously in periods of rapid advance, when perhaps our own opinions are changing, it would be wrong, even when teaching for a first degree, to conceal from students doubts and hesitations which affect the status of important propositions. Moreover, when new suggestions have been made and seem tolerably convincing there is a certain educational value in encouraging the student to participate in the process of testing them. I count it an important requirement of proper honours teaching that it should convey the impression of being concerned with a subject which is open ended.

Nevertheless, if a subject is to be open at the ends, it must at least have some sides; and I submit that preoccupation with contemporary controversy to the neglect of foundations is educationally very bad. Economics is a serious subject. It is a subject which in many ways has demonstrated its practical utility. It is really much more important that the honours student should be thoroughly grounded in the main principles than that he should be absolutely informed of the *dernier cri* of the most recent fashion. In training students in this most difficult branch of knowledge we must not forget the dreadful example of the man in the fable who could see the fly on the barn door but who could not see the barn door itself.

It is in this connection that I would specially commend the history of economic thought as an essential element in the honours course. By this, of course, I do not mean highly detailed study of the kind with which the work of men such as Jacob Viner has made us familiar. Valuable as it is, that is a subject for the graduate school. I mean rather the broad study of tendencies as revealed in well-known works—the writers represented in Monroe's excellent collection and the main works of the great eighteenth- and nineteenth-century writers, Smith, Ricardo, J. S. Mill, Marx, Jevons and Marshall. It is an ideal educational subject—with excellent texts and commentaries. I cannot think of a better way of conveying the sense of open-endedness than the study of the vicissitudes of thought in the past. Nor can I think of a better way of acquiring, so to speak, a sense of the three-dimensionality of the subject than by working through, in the appropriate historical settings, alternative attempts at solution of recurrent typical problems. It is, moreover, a good inoculation against charlatanism. It is difficult to believe that anyone who has had a proper training in the history of thought would be guilty of the claims which have so frequently lent amusement to the literature, especially of the last twenty-five years.

But what about mathematical economics? To what extent should proficiency in this branch be a compulsory requirement of honours?

In my judgment, this is inadvisable. But let me guard against misunderstanding. I have no objection to mathematical methods, and it is one of my complaints against education in the schools that so many students

arrive in the economics faculties, who tremble and grow grey with fear if a simple diagram or formula is put upon the blackboard. The question whether it is sometimes useful to put economic propositions in mathematical form has been long ago settled; it is no longer intellectually interesting. We take it for granted nowadays that, in the treatment of some parts of the subject, an occasional resort to simple mathematics is quite a normal thing.

But to say this is one thing; to say that a separate division of the subject entitled mathematical economics should be compulsory on all students taking honours economics is another. To such a proposal I should see very great objection. I should regard it as intolerably restrictive. It is probably true that not eighty per cent of contemporary professional economists could survive an ordeal of this nature; and although this is doubtless a very deplorable state of affairs, it does seem to indicate that it is possible to do work of value in some parts of the field without being expert in this respect. I think that mathematical economics is a division of the subject which should be fostered; it deserves a place in the programme of a properly articulated department. But at this stage, at any rate, where examinations are concerned, that place is the place of an option—as it is in the London degree—not a part of the syllabus compulsory on all candidates.

In contrast to this, I would say that the opposite status should be given to a paper in economic statistics. In my judgment, an honours degree in economics should not be awarded to any candidate without a certain minimum degree of competence in this subject. By this I do not mean expert knowledge of advanced statistical method—which is a professional qualification in itself. I mean rather a thorough knowledge of sources, coupled with proved ability in tabulation and the more elementary methods of analysis—the subject matter, if you like, of Professor Allen's *Statistics for Economists*. It is clear that it is impossible to go very far in any direction without this kind of competence. It is also clear that it is an absolute prerequisite of the kind of practical work which our honours graduates are expected to do later on. It is perhaps the chief technical qualification which the outside world has the right to demand of any applicant for a job who comes bearing our certificate of competence.

Finally, in this connection, what of the applied side—that perennial anxiety of the conscientious teacher. I am afraid I have no open sesame here: I think it is much the hardest part of our job as teachers to convey to students correct perspectives as regards the contemporary scene and a proper sense of what is relevant in handling applied problems. I will only say that while I think some lecturing is indispensable, I fancy that this is the part of the field where, by itself, it is least adequate. In my experience, the only way in which the student can acquire adequate knowledge and correct technique is by continual written exercises in the presentation of statistics and the analysis of the raw material of the subject, evidence before royal commissions and government inquiries, company reports, ministerial pronouncements and so on and so forth. I count a man unqualified as an

economist who, given access to the necessary material, is not able to present, in clear, unambiguous English, a memorandum capable of serving as the basis of discussion at a Civil Service working party or at the meetings of a company board. Having regard to the lamentable neglect nowadays in schools of the all-important art of *précis* writing, this is not an aptitude which can be acquired without quite extensive practice.

VI

But this brings me to the last consideration which I wish to lay before you—a consideration relating to the length of course necessary to become a properly qualified economist. I want to submit that the three years now usually taken for first degrees are insufficient for an honours course as I have depicted it. Four years, rather than three, are the appropriate period.

I have not reached this conclusion without considerable reluctance. For, obviously, there are strong practical reasons militating against action based upon it. But from my point of view the evidence in experience has been conclusive. Thirty-five years ago when I was a student the honours course in London was one of wide scope: it included the other ingredients whose claims I have urged on your attention. Then, towards the end of the twenties, this was changed; the weight of the ancillary subjects was thought to be inimical to proper concentration on the honours subject, and the degree was remodelled so as to permit of much greater specialism. Twenty years of that convinced us that that degree of specialism had all the disadvantages I have mentioned already; and five years ago we changed again so as to permit a greater width of coverage: our Part I now covers economics, politics and history in equal proportions. But, alas, the result is still unsatisfactory. Part I takes two years, and the further year is not enough for a really thorough honours training. I will not say that on balance the change is bad: I do not think that this is so. The defects of premature specialisation are gone—we no longer run the risk of producing educational monsters—and students who get firsts or good seconds will certainly hold their own with the products of most other centres. But the better is the enemy of the good. Part II, the honours training, is too much of a scramble: it is impossible to be sufficiently thorough. The students are only beginning to acquire the expert touch when they have to prepare for the final examinations. They do not have enough time to sit back and meditate on the field as a whole.

Thus it seems that so long as we are confined to a three-year honours degree we are faced with two disagreeable alternatives. Either we have adequate specialisation but not enough grounding in auxiliary social studies—in which case we run the risk of producing lop-sidedness and defective judgment. Or we have adequate grounding but not enough specialisation—in which case we are not giving an adequate professional training. I see no escape from this dilemma within the limits of the time available. The only remedy is to take longer. Three years is too little. The solution is a four-year degree.

Why cannot this be? Various arguments are put forward. But I do not find any of them very convincing.

It is said, in the first place, that three years ought to be sufficient, that there is something wrong with our conceptions if one cannot get a satisfactory honours degree within that time limit.

To which, I answer, why? What is there in the nature of things which makes it inevitable that this particular discipline can be taught in just three years and no more? We should not dream of arguing thus about degree in medicine; we are much too anxious to be properly advised when we are sick. Yet it is arguable that to learn the anatomy and physiology of economic society involves quite as much as to learn the anatomy and physiology of the human body. Moreover, it is just not true that four years is so exceptional in university tradition. It is not at all unusual abroad. And even nearer home, at Oxford, in the study of the classical humanities, it used to be nothing unusual to take two years for Honour Mods. and two years for Greats. I am sure that the course I have suggested is quite as exacting as that.

Secondly, it is argued that the change is out of the question because of the burden already imposed on the students' time by the claims of military service.

Admittedly, the burden is considerable; and the resistance to change which is thereby created is very great. But does this make any difference to our conception of the time necessary to train doctors? And if we are sincerely convinced that an extra year is necessary for the proper training of economists, ought we to take our own profession any less seriously?

Thirdly, it is said that the additional expense will be prohibitive.

Here I submit that the case is unproven. Most university students nowadays receive some subventions from the state or from local authorities. We have yet to learn that such subventions would not be prolonged for an additional year, if responsible educational opinion urged that it were necessary. Indeed, such limited inquiries as I have been able to make are not conducive to extreme pessimism.

Finally, it is said that the proposal with its distinction between the four-year honours and the three-year general degree would be contrary to the egalitarian spirit, that it is wrong to make any distinction between students who are capable of benefiting from a longer course and those who are not so capable.

This seems to me to misconceive the proposal. No one is suggesting that there shall not be equal opportunity: the idea of a Part I which is common for all students is designed for just this purpose. All that is suggested is that a course of study longer than is necessary for a general degree is necessary to make a properly qualified economist. If this is true—and of course, the whole argument depends upon that—then, if we want to turn out people with this kind of professional qualification, the extra time is surely justified: 'he who wills the end, wills the means.' The fact that some students do not qualify for admission for this kind of training should surely not lead

us to undertrain those who do. If the egalitarian spirit denies that, so much the worse for the egalitarian spirit.

The alternative, of course, would be to go right over to the American system. Let all first degrees be general degrees and then train for professional qualification in the graduate school. As I have argued earlier, there would be much to be said for this, if we were starting entirely from scratch. But given the present organisation and habits of English universities in general, it would clearly be much more disturbing of existing arrangements than the less ambitious change which I have been trying to advocate.

All this, however, is still very controversial. The debate is in its early stages, and opinion is as yet unformed. If the view be accepted that the main needs of our honours degrees in the modern age have been greater width and greater length, it is probably a fair summary of the present position to say that whereas the struggle for greater width is more than half over, the struggle for greater length has only just begun.

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INTERACTIONS OF CYCLES AND TRENDS

I

Most of the recent writers on cycles and trends do one of three things: some argue that cycle and trend are so intertwined as to be indistinguishable; some indicate that a trend can be introduced into, or derived from, a model of the trade cycle, so that a trade-cycle theory can be used to "explain" the trend as well; while others maintain that information about the trend is essential to a satisfactory explanation of economic fluctuations. Schumpeter was the leading exponent of the first view, but his position has recently been reiterated by younger economists who have tackled the problem afresh, including Goodwin and Merlin.¹ Tinbergen and Kalecki are among those who derive their trend from the same system of analysis which they use to explain economic fluctuations. For Tinbergen, indeed, the trend seems to be little more than a statistical residue. Dynamics is merely a matter of dated variables, and if cycles are not explosive, long-run development is not affected by them.² Similarly, Kalecki derives his trend from the same fundamental set of equations which he uses to explain economic fluctuations. Certain variables, which were held constant for business-cycle analysis, are made subject to long-run changes to produce a trend. Kalecki, however, does conclude that long-run development is not inherent in the capitalist economy; specific "development factors," of which innovations are most important, are required to sustain growth, especially in view of the drag imposed by rentiers' savings.³

Professor Hicks is the most notable representative of the third group. The theory of trend is an essential underpinning for his theory of economic fluctuations. In expressing his debt to Harrod he says that "it was not until I read Mr. Harrod's book that I realized what it was that I had overlooked. Then everything began to fall into place." He speaks of "the necessity of approaching the business cycle as a problem of an expanding economy." Dr. Hicks, however, does not spell out the highly interesting implications of his own theory of fluctuations for the theory of economic development in turn.⁴

Mr. Kaldor's position regarding cycles and trends is somewhat ambiguous. He begins his article on the subject by insisting that it is possible to conceive, on the basis of Keynesian theory, economic fluctuations without economic growth. At the conclusion of his article, however, he says that "it is the strength and duration of booms which shape the trend rate of

¹ R. M. Goodwin, "The Problem of Trend and Cycle," *Yorkshire Bulletin*, Vol. 5, No. 2, August 1953, pp. 89, 90; Sydney B. Merlin, *The Theory of Fluctuations in Contemporary Economic Thought* (New York, 1940), especially p. 153.

² Jan Tinbergen and J. J. Polak, *The Dynamics of Business Cycles* (Chicago, 1950), especially pp. 10-11, 82, 103 and 112-35.

³ M. Kalecki, *The Theory of Economic Dynamics* (London, 1954), Part 6.

⁴ J. R. Hicks, *A Contribution to the Theory of the Trade Cycle* (Oxford, 1950), especially pp. 6-10.

growth," and—a more accurate statement of his own findings—"the same forces therefore which produce violent booms and slumps will also tend to produce a high trend rate of progress; though the connection between the two is far too complex to be reducible [at present] to a simple mechanical model." Moreover, in his final paragraph he writes, "Schumpeter's hero, the 'innovating entrepreneur,' whom we dismissed so summarily and rather contemptuously at the beginning, is found, after all, to have an honorable place, or even a key role, in the drama—even though we prefer to endow him with a rather more variegated character."¹ Thus Kaldor seems to end on the side of those who contend that economic growth and the economic fluctuations observed in the real world have a common cause.

In my view, none of these analyses exhausts the interactions of cycles and trends. The relationship is a two-way one. One can conceive of economic growth without fluctuations, and of economic fluctuation without economic growth. The essential causal factors of fluctuations and growth can, and should, be analysed separately. At the same time, actual fluctuations will be markedly influenced by the growth factors, and the actual trend will be very much affected by economic fluctuations.

For the purposes of the present article, I shall begin with the hypothesis of an autonomous trend, based on autonomous investment. I shall inquire briefly as to whether autonomous investment could conceivably produce a smooth curve of economic growth, without significant fluctuations. I shall analyse more fully the effects of the autonomous trend on the amplitude and duration of economic fluctuations, in terms of the Hicks model of the trade cycle. I shall demonstrate the effects of the changing pattern of economic fluctuations on the actual, historical trend of income and employment. Finally, I shall apply the analysis to two cases: the "great depression" in the United States and stagnation in underdeveloped areas.

II

The following symbols are used:

- I_A Autonomous investment (gross)
- I_A^R Autonomous investment in real terms (at constant prices)
- O_p "Potential" output. (Gross national product at full employment with constant prices)
- O_A Gross national product (at constant prices) produced by autonomous investment alone
- O_h Actual "historical" or statistical trend of output. (Actual gross national product at constant prices)
- Y_h Actual (historical) gross national income
- L Labour force (population)
- K Stock of known resources
- Q Stock of capital

¹ N. Kaldor, "The Relation of Economic Growth and Cyclical Fluctuations," *Economic Journal*, March 1954, pp. 53-71.
No. 260.—VOL. LXV.

- T Level of technique. [If f is the production function, $O_p = T \cdot f(L, K, Q)$]
 t Time
 $\dot{L}$ dL/dt
 $\dot{K}$ dK/dt
 $\dot{T}$ dT/dt
 S Savings
 k Any positive constant
 M Super-multiplier

We shall assume that there is an autonomous long-run investment function:

$$I_A = \phi(\dot{L}, \dot{K}, \dot{T}) - \psi(Q). \quad (1)$$

By "autonomous" is meant that this category of investment is dependent only on long-run rates of population growth, resource discovery and technological change, and to a lesser degree on the long-run rate of capital accumulation, but is not affected by current short-run changes in the rate of output, level of profits or the like. "Induced investment," on the other hand, is a function of the level and change in output, whether directly or through profits. Autonomous investment is thus considered causally independent of short-run fluctuations, and not as a mere statistical residue derived by "eliminating" cycles.

Since we are conducting our analysis in terms of gross investment, the long-run growth of the stock of capital, Q , will have a two fold effect: it will in itself increase the need for replacement; and in the long run, as in the short, capital accumulation will in itself act as a drag on the flow of new investment decisions. The first effect will probably be small, especially if, as Professor Hansen maintains, innovations are increasingly capital saving. The second effect may be more substantial, although small relative to the impact of the "growth factors." The net effect will almost certainly be negative, and may be significant. At this stage, however, we shall assume that the two effects offset each other, so that $\psi(Q)$ can be ignored in a first approximation.

For the time being, we shall also assume $S = S(O_h)$. In other words, we shall treat the trend of savings as a series of short-run positions, unaffected by separate long-run causal factors. This treatment is an abstraction, but it is a useful simplification. Trends in the propensity to save, arising from such factors as the increasing ability to think in terms of and provide for a remote future, stressed by Harrod, can be introduced at a later stage of the analysis.

For lack of information about the trend of technological progress, we shall assume that $dT/dt = k > 0$, so that $d^2T/dt^2 = 0$. This formal simplifying assumption may not be an unrealistic one. Lacking adequate measures of technological progress, it is virtually impossible to say whether the rate of technological progress, in the relevant sense of a factor governing autonomous investment, is higher to-day than it was in the nineteenth

century, and whether it was higher in the nineteenth century than in the eighteenth. However, changes in the rate of technological progress can also be easily introduced into the analysis where and when appropriate.

We shall also assume that population growth and discovery of new resources follow a normal growth curve. In more precise terms, $\dot{L}$ and $\dot{K} > 0$; d^2L/dt^2 and d^2K/dt^2 are first > 0 and then < 0 . Judging from available information, these assumptions are realistic enough.

On these assumptions,

$$dI_A/dt = \frac{\partial \phi}{\partial \dot{L}} \cdot \frac{d^2L}{dt^2} + \frac{\partial \phi}{\partial \dot{K}} \cdot \frac{d^2K}{dt^2}.$$

Accordingly, I_A will itself follow a normal growth curve, unless $d\phi/d\dot{L}$ and $d\phi/d\dot{K}$ move in an offsetting manner, so as to produce steady growth, a slim possibility that we shall ignore.

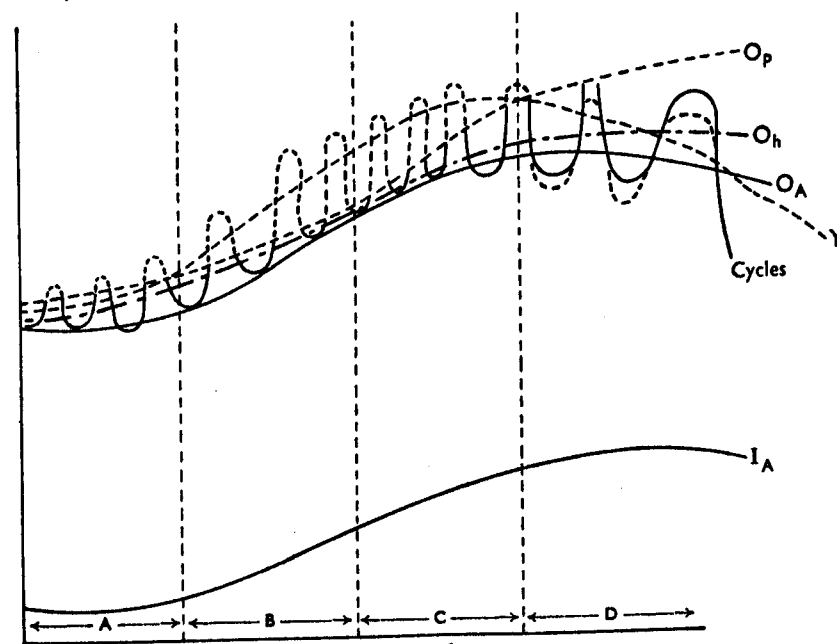


FIG. 1

Now let $O_A = M \cdot I_A^R$. In this context M is the super-multiplier; but unless the rate of increase in autonomous investment produces rates of growth that inevitably call the accelerator into action, the super-multiplier will approximate the simple Keynesian multiplier. The super-multiplier comes into play only in periods of relatively rapid growth, when fluctuations would arise anyhow. This point will be discussed further below. For the moment, however, we shall assume that the relevant multiplier is constant. Consequently, the trend of total output O_A will also follow a smooth growth curve, as in Fig. 1.

According to the analysis presented in an earlier article,¹ the curve O_A

¹ B. Higgins, "The Theory of Increasing Underemployment," *Economic Journal*, June 1950.

of actual "historical" output would tend to follow the curve of O_p , of real income at full employment without inflation, until dI_A^R/dt begins to fall significantly, as a result of the falling rate of population growth and resource discovery, ($\dot{L}$ and $\dot{K}$), after which a gap will appear, and $d/dt(O_p - O_A) > 0$. In money terms, $(Y_A - O_p)$ may be positive and even growing up to the inflection point in O_p ; that is, there may be a chronic inflationary gap. Whether the actual trend will be consistently above the trend of full employment at constant prices, in this range, would depend partly on the parameters S and ϕ in the above equation.

In view of the power of the accelerator, once brought into play, it may be asked whether smooth development along such a growth curve (as distinct from *steady* growth) is conceivable at all. This question is different, it should be noted, from asking whether it is likely; about the latter question there can be little doubt. However, in order to distinguish between the causal effects of growth factors as such and the causal role of economic fluctuation, it is, in my opinion, both possible and useful to conceive of growth along a smooth curve. There are three sets of conditions which might produce smooth growth. First, it would be possible to assume simply that the system is moving along O_A , and that changes in dO_A/dt are too small to bring the accelerator into action, unless "shocks" occur greater than those introduced by growth factors alone. Second, one could simply assume that government stock-piling or counter-speculation is undertaken, so as to prevent sharp changes in dO_A/dt , and thus to eliminate the cycle, leaving the growth factors alone to influence economic development. Any situation that could be produced by policy has analytical significance. Third, we might regard the trend $O_p - O_A$ merely as an indication of the magnitude of price-cost adjustments that are necessary for continuous full employment without inflation. With any one of these three assumptions, the trend of output, based on autonomous investment alone, has a clear significance and is a useful analytical tool.

It is therefore possible to distinguish at least six concepts of trend; all of which can differ from each other: O_A , the trend of gross national product, at constant prices, produced by "autonomous" investment alone; Y_A , the trend of national income produced by autonomous investment, [$O_A - Y_A$] reflecting any trend in prices; O_p , the trend of gross national product at full employment and constant prices; Y_p , gross national income at full employment, but allowing for price trends; O_h , the actual historical, or statistical trend, which will be some sort of average position of actual national real income over the course of cycles of various kinds; and Y_h , the analogous statistical trend of national income, including price changes.

For the purpose of determining what policies are best designed to maintain full employment without inflation, it is useful to distinguish between Y_h and the statistical or historical trend as it would have been without government interference of any kind, which we might denote by Y_f , the "free" historical trend. Up to 1940, it is hard to say what the sign of $(Y_h - Y_f)$ would be; in most countries, and for the most part, it appears that govern-

ment action has accentuated both booms and depressions, while accelerating growth through development works and subsidies to private investment of a developmental nature. In advanced countries this effect has probably been weaker since 1913 than it was during the eighteenth and nineteenth centuries. Since 1940, because of the continuing high level of government spending, there can be little doubt that $(Y_h - Y_f)$ is positive, especially in the United States.

The question may be raised as to whether $O_A = O_p$. Suppose growth were a slow, and slowly changing, affair, based on long-run factors alone, so that the accelerator never came into action. Would there not be price-cost adjustments that would bring full employment? Hicks' whole analysis implies that $O_A < O_p$; it takes induced investment to raise income to full-employment levels. Considering how rare a phenomenon full employment is, if one considers all countries, I am inclined to agree with Hicks. I do not wish to reopen here the debate on price flexibility and employment; my own views on the subject have been expressed elsewhere.¹ But even in advanced countries, full employment has occurred only during wars and at the peak of the booms, while in underdeveloped countries mass unemployment is the rule. It seems to take an unusually favourable combination of growth and cyclical forces, including government policy, to produce full employment for any length of time. Until faced with strong evidence to the contrary, therefore, I shall accept Hicks' view that $O_p > O_A$.

We can now distinguish four phases of economic growth (see Fig. 1):

- A, where dO_A/dt is low, and $d^2O_A/dt^2 > 0$.
- B, where dO_A/dt is high, and $d^2O_A/dt^2 > 0$.
- C, where dO_A/dt is high, and $d^2O_A/dt^2 < 0$.
- D, where dO_A/dt is low, and $d^2O_A/dt^2 < 0$.

Now let us introduce a cycle of the Hicks type, generated by any shock—say a war scare—which lasts only one period. Clearly, the nature of this cycle will vary, according to the phase of economic growth. Six separate causal factors in the cycle will be influenced by the rate of economic growth.

1. The slope of the "ceiling" (O_p). The Hicksian boom comes to an end because of the decline in the rate of growth of output involved in the shift from expansion based on his "super-multiplier" to a rate of growth determined by the slope of his "ceiling," which in my terminology is "the trend of potential output," or national income at full employment and constant prices. Now the potential trend, as well as the autonomous trend, will, of course, taper off when the rate of growth in population (labour force) and supply of known natural resources tapers off; if the rate of technological progress is constant, there is no reason why it should taper off earlier, and if the marginal propensity to save is also constant, there is nothing to prevent a deceleration of the rise in O_p , if the supply of labour and of natural resources grows less quickly. Thus at about the same time as the gap between potential and historical trends occurs, booms will weaken. While the "ceiling"

¹ B. Higgins, "The Optimum Wage Rate," *Review of Economics and Statistics*, May 1949.

is rising rapidly, the shift from expansion based on the super-multiplier to "creeping along the ceiling" does not involve a sharp fall in the rate of expansion, and with lags of significant length the boom can go on for some time. But when the "ceiling" is flattening out, the drop in the rate of expansion when the ceiling is hit becomes greater and greater, and the boom cannot last long after the ceiling is hit. Since there are really a number of "ceilings" in different industries, a slow rate of growth in full employment income might mean that downturns would occur even before full employment is reached in all industries, particularly if there is some immobility of factors of production. Thus the effect of the changing rate of growth on cycles will be such that booms will be of short but increasing duration in phase A, of moderate to long and increasing duration in phase B, of long to moderate but decreasing duration in phase C, and of short and decreasing duration in phase D.

There is an aggravating effect of the trend on the slope of the ceiling, which is more indirect. "Full employment" is in reality not a point but a zone, and the extent to which it will pay to expand the effective labour force, by double or triple shifts, postponing retirement, attracting housewives into employment and the like, will depend partly on the size of the capital stock. If the "trend" factors are such as to call forth vigorous booms, the stock of capital will tend to grow rapidly in the early stages of the upswing. This accumulation of capital will in itself make the slope of the "ceiling" steeper, postponing the downturn. Thus if a slackening of growth factors tends to weaken booms (for reasons given below), there will be an *additional* tendency for the ceiling to flatten, because of the slower rate of capital accumulation—which will shorten booms further—and so on. This cumulative effect will be partly, but only partly, offset by the accompanying alleviation of the "drag" imposed on new investment decisions by capital accumulation. Unfortunately, the unfavourable drag on investment decisions depends mainly on the *level* of Q , which grows so long as there is any net investment. The favourable effect through making the ceiling steeper depends mainly on the rate of increase in Q in the early phases of the upswing. If the capital accumulation in the early upswing is reduced through a weakening of growth factors, but is still positive, the net effect of the consequent flattening of the ceiling, on the one hand, and the slower *rate of increase* in the "drag" of capital accumulation on new investment decisions, is bound to be unfavourable. The effect on the slope of the ceiling will also depend partly on the composition of new investment. For example, additions to the stock of housing will increase the slope of the ceiling less than new manufacturing plant.

2. The slope of the "floor." The upturn in the Hicks model comes from the shift in direction of movement in hitting the "floor," which is essentially the equilibrium rate of growth, based on the "autonomous" investment alone. If this equilibrium rate of growth is rapid, the upturn will come very soon after the floor is hit. If the rate of growth is slow, the depression can last a long time. Thus, so far as this factor is concerned, depressions will be

long but shortening in phase A, of moderate to short and diminishing length in phase B, of short to moderate but increasing length in phase C, and long and lengthening in phase D.

3. The change in g , the equilibrium of growth. It will be recalled that in Hicks' model the "middle point" for the accelerator coefficient, above which cycles become explosive, is $(1 + g)^2$, where g is the equilibrium rate of growth. Obviously, the lower g , the lower is the middle point. With a given value of the accelerator (above unity), a declining g means that the accelerator is farther and farther above the middle point, and accordingly cycles would become more and more violent. Since in real terms, or employment terms, amplitude can increase in the downward direction only, a declining equilibrium rate of growth would mean more rapid downswings. Of course the "floor" is reached sooner if the downswing is more rapid, but when the effects of the downswings on expectations and Marrama's "rationality factor" (which Hicks ignores) are taken into account, it seems likely that the more violent downswing will mean that the "transformation" of the accelerator in the downswing will last for some time after the floor is reached. That is, it will take a longer period of sustained increase in output to start induced investment and launch an upswing. When the effect of the decline in g on the position and slope of the "floor" is also taken into account, it seems clear that the net effect will be more violent downswings and longer depressions; the combined effect will increase the average unemployment during depression, pulling down the historical, statistical trend.

Even if Hicks is wrong and the accelerator of the real world is below the middle point, a decline in g would cause increasing underemployment, in the form of a growing gap between the potential and historical trends. For the closer is the accelerator to the middle point, the slower is the rate of damping of cycles induced by "erratic shocks"; as the middle point drops, unless the accelerator drops too or shocks become weaker (and there is no obvious reason why either of these things should happen), the average amplitude of cycles induced by erratic shocks will increase—which in real terms means increasing in the downward direction.

Thus in phase A fluctuations will tend to be extreme to moderate—in *percentage* terms—but diminishing; during phase B their amplitude will be moderate to small, and diminishing; during phase C their amplitude will be small to moderate but increasing; and in phase D their amplitude will be large and increasing, in both percentage and absolute terms. Since in real terms booms are limited by the full-employment ceiling, this means that during phase D, the booms are shortened, while the amplitude of the downswing is increased.

4. The changes in the stock of capital. The stock of capital will start very small, and grow continuously except in deep depression. An industrially mature nation will have a large stock of capital, and consequently a low marginal productivity of capital (apart from technological progress). Now Hicks' "floor" to the downswing is determined partly by minimal autonomous investment, and partly by the maximum amount of net disinvestment.

Obviously, the more capital an economy has, the more disinvestment is possible, and the lower the floor to the cycle can be. This relationship provides another reason for supposing that in an economy where total output is growing at an increasing rate, the historical (statistical) trend (in real terms) will be close to the potential trend (in real terms). In such an economy the stock of capital is usually small; while in an economy where output is rising at a decreasing rate, and the stock of capital is large, the historical trend will fall farther and farther below the potential trend.

In other words, the "downward displacement" of the floor grows, at least until downswings become very violent and depressions very long.

5. For completeness, we should introduce the possibility of a long-run rise in the marginal propensity to save. This might weaken upswings by reducing the multiplier. However, by diminishing the degree of change in rate of growth when the full-employment ceiling is hit, an increasing marginal propensity to save may prolong the boom, so long as the accelerator is high. Thus the effect of this factor is uncertain. Regular cycles require a constant multiplier. If the marginal propensity to save rises with national income in the long-run—as seems likely—the upswings will be weakened. The downswings will be less affected, because of the operation of the "Modigliani factor" and of Hicks' "transformation" of the accelerator. According to the Modigliani principle, the marginal propensity to save is reduced in the downswing, the degree to which savings are squeezed out in the downswing depending on the extent of the fall in national income from the previous peak. The lower the peak, the less saving is squeezed out, and the less the downswing is damped. Also, according to Hicks' principle of "transformation," the floor to the downswing is set by the rate at which capital can be consumed, which does not depend on the multiplier at all. Thus the long-run tendency for the multiplier to fall, as very high levels of national income are reached in advance countries, will weaken booms without shortening depressions or checking downswings.

6. The accelerator itself might rise as the production structure becomes more complex, and business-men become more cycle-conscious. If so, this factor in itself will tend to accelerate and shorten booms as the economy grows. However, this factor operates in the opposite direction from the trend in the multiplier, and consequently the super-multiplier may not change markedly in the course of economic growth. We can justifiably, therefore, concentrate on the first four of the six factors influenced by economic growth.

The results of our analysis thus far are summarised in Fig. 1. We began with a curve of autonomous economic development (O_A), based on autonomous investment (I_A), which follows a growth curve because population growth and discovery of resources follow growth curves, while the other major determinant of autonomous investment, technological progress, proceeds at a steady rate. We then introduced a cycle of the Hicks type. We showed that in phase A fluctuations will have considerable amplitude, measured in *percentage* of national income. The historical trend, O_h , will lie

below the potential trend, O_p , but will gradually approach it. Because of the long, deep depressions, the historical trend of national income, Y_h , will also lie below the historical trend of real income, O_h . However, the gap will not be large.

Since in this phase of development both investment and savings are small, any event which brought a substantial increase in investment would tend to produce an explosive boom. With such a small base, any substantial investment means a high percentage increase in investment, while the increase in income (dY/dt) will still be small for some time, so that the increase in savings (dS/dt) will also be small. In this sense, and only in this sense, there will be a "chronic inflationary gap"; given any phenomenon calling forth a significant amount of investment, an inflationary boom will tend to set in.

Towards the end of this phase, as booms are strengthened and depressions weakened by the appearance of a significant rate of economic growth, the curve of historical national income (Y_h) may cross the curve of national real income (O_h). Thus the curve of Y_h will be below O_p in the earliest stages of economic growth, and towards the end of the first phase may rise above it.

In phase B, up to the inflection point, booms get longer and stronger, and depressions shorter and weaker. By definition, the statistical or historical trend, O_h , must lie below the trend of national income at full employment without inflation, O_p ; but towards the end of the second phase these two curves will be very close together, because of the combination of inflationary booms, and a "chronic inflationary gap" in the *trend* sense as well, arising from the increasing rate of growth, the curve Y_h will lie above the curve O_p . *Fortiori*, therefore, Y_h will lie above O_h .

In phase C the booms will be long and strong, but shortening and weakening. The depressions will be short and shallow at first, but will deepen and lengthen as time goes by. Thus the curve O_h will fall farther and farther below O_p , both from the effect of long-run trend factors on the two curves and also as a result of the changing pattern of economic fluctuations. For the same reason, Y_h will eventually fall below O_p as well.

In this phase the depressions will be more serious than in phase A, although the rate of growth may be the same. The large volume of capital that has been accumulated permits a bigger "downward displacement" of the floor, and imposes a greater "drag" on new investment decisions. Depressions may also be deeper, and booms weaker as a result of a lower multiplier (higher marginal propensity to save). Also, the rate of growth is low but accelerating in phase A, and is slow and decelerating in phase D.

Thus the impact of the trend on the pattern of economic fluctuations aggravates the inflationary and deflationary gaps arising from trend factors alone. In the neighbourhood of the inflection point, in the late B and early C phases, a chronic inflationary gap will appear, through the impact of long-run factors, quite apart from the cycle. The expansion of growth factors is high, calling for high levels of investment, while national income is not yet very high, so that savings tend to lag behind. This *chronic* inflationary gap

is widened by *cycles* with strong, long booms and short, shallow depressions. The inflationary gap ($Y_h - O_p$) may be substantial.

In phase D, on the other hand—the “mature economy”—there is a chronic and growing deflationary gap, as a result of trend factors alone. Income and savings are high, but the rate of growth, and autonomous investment, are low. These factors, if not offset, would in themselves create a growing gap between actual and potential national income. However, this gap is accentuated by the effect on the pattern of cycles of the slackening rate of growth; the upswings become more “disappointing,” to use Schumpeter’s term, while depressions become more devastating. Given a cycle of the Hicks type, “increasing underemployment” will occur in phase D, quite apart from the growing gap between the *trend* of investment and the *trend* of *ex ante* savings. Indeed, so long as *either* the ceiling or the floor follows the normal growth curve, the Hansen thesis will be substantiated, through the effect of the declining rate of growth on cyclical behaviour alone. Given the combined effects of flattening ceiling and floor, capital accumulation and rising national income, on the *cycle*, as well as the gap produced by the *trend* factors alone, increasing underemployment in phase D is inevitable, unless appropriate policies are pursued.

III

Let us now apply this analysis to the great depression of the 1930s in the United States. The critics of the Hansen “stagnation” thesis make two main points: first, they contend that growth can be maintained by technological progress alone; second, they point out that population growth declined, and frontier expansion ended, well before 1929. I shall show that the timing of these factors, far from destroying the Hansen thesis, actually fortifies it.

In Fig. 2 I_L shows investment based on the actual trend of population growth. It will approximate a normal growth curve, with a peak in 1925. (We shall for the moment ignore the post-Second World War increase in population growth.) Curve I_K shows investment based on rate of resource discovery. No statistics of discovery of new natural resources exist, but the Bureau of the Census does publish figures of the centroid of population. The westward movement of this centroid is a fair indication of the rate at which the “frontier” was opened up in the United States, and this in turn approximated closely the rate of resource discovery in the relevant sense. As Professor Hansen has rightly insisted, the influence of movement to new territory is not only a matter of discovering and opening up new agricultural land and new mineral resources; it is also a matter of “frontier spirit.” This curve also approximates closely a normal “growth” curve, with its peak about 1880.

Adding these two curves together, we get a curve of autonomous investment which, depending on the relative strength of $\partial\phi/d\bar{L}$ and $\partial\phi/d\bar{K}$, will reach its peak somewhere between 1880 and 1925, and probably about 1910.

The curve of O_A , representing the real income produced by autonomous investment and the super-multiplier, will reach a peak at about the same time. If technological progress proceeds at a constant rate, and if the super-multiplier does not change, the peak of O_A will, of course, coincide with the peak of I_A . Because of the offsetting effects of economic growth on multiplier and accelerator, no marked trend in the super-multiplier need be expected. As for the rate of technological progress, we have assumed that it is constant. Considering how rapid technological progress was during the eighteenth and nineteenth centuries, it seems unlikely that the *rate* of technological improvement could have continued to rise steadily since. There is also some evidence that innovation is increasingly capital-saving. Thus there is good reason to suppose that the autonomous investment arising from technological progress also tapered off in recent decades. However, we do not need this argument to make our case, and accordingly we shall assume that I_A is a straight line. In the absence of evidence to the contrary, we could also assume that the net effect of any increase in replacement needs, and of the “drag” imposed by capital accumulation, is to reduce the flow of investment decisions; but this assumption, also, is not necessary to prove our hypothesis.

Now let us consider Hansen’s argument that the presence of “stagnation” (or “increasing under-employment,” as I prefer to term it) since, say, 1910 was part of the reason for the peculiar depth and duration of the “great depression” of the 1930s. The *trend* of savings was undoubtedly upwards throughout the whole period under consideration, following the upward trend of national income. In particular, the trend of savings out of the full-employment income was upwards following the trend in full-employment income. In this connection, it is important to note that the relevant savings trend is the trend of *ex ante* savings at full employment, and figures of *ex post* savings, which are, of course, identical with *ex post* investment, are quite irrelevant. Since autonomous investment began to fall after, say 1910, while *ex ante* savings continued to rise, “stagnation,” or increasing under-employment, as a *trend* factor must have begun at about that time.

But if “stagnation” began in, say, 1910, why didn’t it show up before 1930? I would argue that it *did* show up; the boom of the 1920s succeeded in establishing full employment only in the best months of 1929. The relationship between the trend and the cyclical movement is illustrated in Fig. 2. The downswing of 1913–14 was quite sharp; my own guess is that the “great depression” might have started then, if the First World War had not come along, which not only brought temporary prosperity, but built up a backlog of replacement demand, and accelerated the automobile, aircraft and chemical Kondratieffs. The backlog of housing demand was particularly important, although it tapered off with the decline in population growth after 1925. But because of the underlying gap between the *trend* of investment and the *trend* of *ex ante* savings at full employment, these strong, expansionary, cyclical factors failed to create inflationary conditions; prices sagged and full employment was reached only at the peak. Only with the weakening

of the *cyclical* factors towards the end of 1929 did "stagnation" reveal itself. Thus the historical course of national income between 1910 and 1940 was perfectly consistent with Hansen's thesis, as reinterpreted here. The lag between the onset of "stagnation," perhaps prior to the First World War and its becoming effective as a factor governing the cycle, far from being a disproof of the Hansen thesis, is, in the light of the above analysis, one of its most persuasive empirical bulwarks.

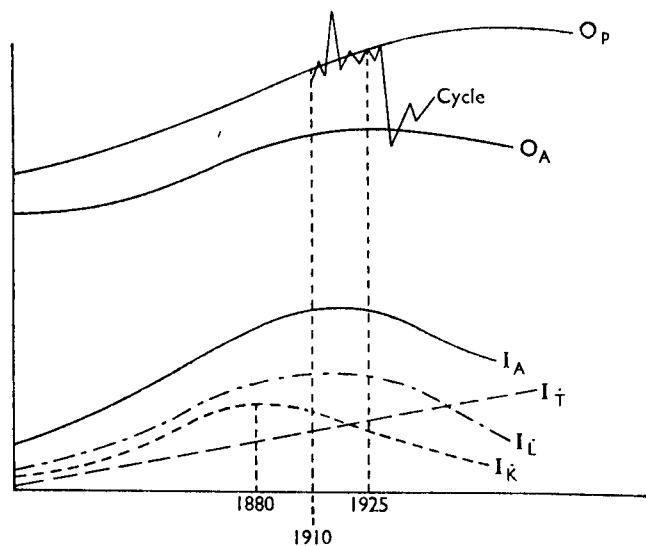


FIG. 2

A sharp break in trend could in itself cause a downswing, through the decline in the rate of increase in output that it entails. Of course, a sharp break in trend is unlikely; but if the effects of the changing trend are delayed the result may be the same. And it appears that this sequence of events actually occurred. The inflection point in both the potential and the autonomous trends probably came between 1910 and 1920; but the effects of the change in trend were delayed by the war and the secondary post-war boom. By 1930 the drop in the potential and autonomous rates of growth was probably substantial; an unusually deep and long depression was to be expected.

As for the "disappointing Juglar," there are several reasons for expecting a weak boom after so long and so deep a depression. One is Hicks' "transformation of the accelerator" (see especially p. 106 of his essay). A second is the increased effect of Marrama's "rationality factor."¹ In a depression as deep and as long as that of the 1930s, especially one with its peculiar configuration, with a brief recovery in 1934 and 1937, the "wait-and-see"

¹ V. Marrama, "Short Notes on a Model of the Trade Cycle," *The Review of Economic Studies* Vol. XIV (I), pp. 34-40.

attitude common to long depressions would become still more deeply entrenched. Finally, the accumulation of debt during the depression resulted in a high marginal propensity to save in the upswing, and consequently a lower multiplier.

There were, of course, other factors involved in the "great depression" besides those analysed here. The financial crisis of 1931-33, which was partly the result of purely institutional weaknesses, the psychological impact of the breakdown of the gold standard, "technological stagnation" in the United Kingdom, and the still greater degree of "maturity" on the continent of Europe, where population growth and resource discovery had virtually disappeared in some countries, accentuated the depth of the world depression, which, of course, had some impact on the United States. Nevertheless, it appears that the interaction of cycle and trend, with the factors stressed by Hansen given pride of place in explaining the trend, and with a theory of fluctuations along Hicksian lines, provides a neat explanation of the "great depression."

The post-Second World War experience, far from being a contradiction of the Hansen thesis, as some critics have maintained, provides further corroboration of it. We are again at a fairly high cyclical level, perhaps again a conjuncture of Juglar and Kondratieff upswings (although I would not expect the Kondratieff to be very strong, since there seem to be no new industries that are heavily capital-absorbing) bolstered by a very high rate of government expenditures. Indeed, despite levels of government spending far in excess of the deflationary gaps predicted by the most "pessimistic" of the "pessimists," the post-war period has shown *deflationary* tendencies, interrupted by the inflationary spurt after the abolition of price controls, and by the Korean War. Levels of government spending much higher than were suggested by Professor Hansen, myself and others of "stagnationist" bent did not prevent serious unemployment from appearing in 1949, and again in 1953 and 1954. With government cash payments still running at a rate of about \$90 billion per year, as compared to a gross national income in 1933 of \$56 billion, the bogey to-day is again unemployment, not inflation.

The relatively high levels of employment since the war can be easily explained in terms of our analysis. First, the rate of population growth has been temporarily accelerated. Second, following Dr. Hicks, we might add government investment, including investment in military equipment, to "autonomous investment," as investment not a positive function of the level and rate of increase in output. The higher rates of population growth and government investment could well change the curve of autonomous investment from convex to concave upwards; for the time being, the American economy has reverted to phase B. Vigorous booms and mild depressions are to be expected. But there is no reason to suppose that the current rate in population growth represents a break in trend; it is more likely to be a temporary reaction to delayed family formation during the great depression and the war, combined with general prosperity. If the rate of population growth tapers off again in future, and if at the same time "peace breaks out,"

the maintenance of full employment and "steady growth" will require more vigorous policy measures than anything yet imagined. In general, these measures must consist either of large-scale redistribution of income from savers to spenders, or of a growing rate of government spending. If there are limits to the first type of policy—as I suspect—and government spending must grow, would not development of underdeveloped areas be an admirable way for Americans to help themselves by helping others?

IV

Let us now compare the conditions in phase A of our model with conditions actually existing in underdeveloped areas. We are here on less firm ground, since our knowledge of economic behaviour in underdeveloped areas is even less complete than it is for advanced countries.

Clearly, a trade-cycle model of the Hicks type will be applicable only to the monetary sector of underdeveloped areas, and will apply only to fluctuations generated from the demand side. My own impression is that the monetary sector covers the larger share of income and employment in most underdeveloped areas. From what I have seen of these countries, there are very few people entirely outside the market or money economy, whose output and spending is completely unaffected by the flow of money income. Moreover, while endogenous fluctuations of private investment are small, in many of these countries fluctuations in exports are sizeable. The impact of fluctuations in exports is much the same as fluctuations in private investment. The fluctuations in exports, and the consequent fluctuations in the income generated by them, appear to be substantial (in *percentage* terms) in a good many of the underdeveloped countries. There are at least three reasons why the *absolute* amplitude of fluctuations in underdeveloped countries would be expected to be lower than in advanced ones: the absolute size of the *multiplicand* is smaller; the stock of capital (and consequently the possible downward displacement of the accelerator) is smaller; and the structure of production being less complex, the accelerator itself may be smaller.

Models of the Hicks type obviously do not apply to cycles generated from the supply side, such as those resulting from weather cycles. Cycles in arid countries can be much greater in amplitude, so far as employment and unemployment is concerned, than the fluctuations common to advanced countries. Employment can vary from full employment in the peak season of a high rainfall year to 80% unemployment in the off-season of a drought year. This sort of fluctuation needs a different kind of analysis, and the discarded theories of Jevons and Moore may be worth re-examining in this connection.

With respect to the trend, the model may need a number of modifications to deal satisfactorily with underdeveloped areas. The equation for autonomous investment given above is taken over from my earlier article on "The Theory of Increasing Underemployment,"¹ which was specifically designed

¹ ECONOMIC JOURNAL, June 1950 (*op. cit.*).

to provide a rigorous statement of the Hansen thesis with regard to mature economies. In this article I considered it safe to ignore the effects of any downward *trend* in interest rates on both savings and investment, partly because "with interest rates as low as they already are, further declines will encounter more and more resistance." However, in underdeveloped countries, where effective interest rates are sometimes extremely high, a downward trend in interest rates is by no means inconceivable. I doubt whether falling interest rates would influence savings very much; but it is possible that falling interest rates would provide additional impetus to investment.

Second, in the above model we have ignored any impact on savings of a declining rate of time-preference. As Harrod has pointed out, increasing levels of education and foresight may result in greater interest in providing for the future, so that the propensity to save may increase as time goes by.

Third, there may be an upward trend in the super-multiplier. Once industrialisation begins and new consumer goods begin to appear on the markets of underdeveloped countries, at prices which put them within the range of the rising incomes of masses of the people, the "demonstration effect," or "spirit of emulation," may become stronger and multiplier effects greater. I am inclined to discount this factor, for some of the underdeveloped countries at least, because the "demonstration effect," and the marginal propensity to consume—particularly the marginal propensity to consume semi-luxury goods which are now imported—already seems very high.

Fourth, $\partial\phi/\partial t$ may be significant in phase A for some of the now underdeveloped countries. With improvements in objective and subjective security, and greater political stability, the reaction of investors to a *given* rate of technological progress or resource discovery may become stronger.

My own hunch, however, is that none of these modifications would be quantitatively significant. Much more important is the sharp contrast in the effects of population growth, under conditions in which population is kept continuously below optimum because development starts with a low population base, as it did in the now advanced countries, and its effects where development starts with population far above optimum. Where increases in population bring increases in *per capita* output, merely because labour is a relatively scarce factor, population growth has a favourable effect on investment in a number of ways. The increase in scale of the economy, and growth of the market, not only provides increasing demand for housing, transport facilities, public utilities and the like, but permits the use of better and already known techniques. (The selection of better techniques from among those that are already known should be not confused with technological progress, viz., the introduction of superior but hitherto unknown techniques.) It also means that optimal proportions can be maintained between labour and other factors of production, particularly capital, as capital accumulates. However, where populations are already above optimum levels, where lack of savings rather than lack of effective demand limits investment, and where an addition to the labour supply would lower *per*

capita output and income even if the additional workers were fully employed, population growth is a drag on economic development. It may prevent an increase in *per capita* income from taking place, or even lower *per capita* income, thus aggravating the difficulty of saving (and investing) enough to generate expansion.

Two other points regarding the impact of population growth in underdeveloped countries have been covered in another paper,¹ and can only be referred to here. The first of these is what I have called "the population multiplier." The essential argument is that if the initial increase in *per capita* income through industrialisation calls forth a certain increase in population which can find employment only in agriculture, so that the increased agricultural population resulting from an increase in industrial investment is constant, industrialisation will not raise the ratio of industrial to total population. The other point requires a lengthy and somewhat intricate analysis to demonstrate, but is intuitively acceptable.² If the ratio of labour supply to capital supply is very high; if the economy is divided into a capital-intensive sector (industry, plantation agriculture) with relatively fixed technical coefficients, and a labour-intensive sector with variable coefficients (agriculture); then structural unemployment of labour is almost certain to appear and cannot always be removed by wage-price adjustments alone. This redundancy of labour is itself a drag on further growth, since it mitigates against new investment in capital-intensive projects. Under these conditions, population growth is more likely to add to disguised unemployment than to output. For these reasons, when we come to an analysis of present underdeveloped areas, it seems necessary to delete the $\dot{L}$ from our autonomous investment function. Our simplified investment equation would then look like this:

$$I_A = \phi(\dot{K}, \dot{T})$$

In general, $\phi/dK \cdot d^2K/dt^2$ will be lower in the present underdeveloped countries than it was in the advanced countries during the eighteenth and nineteenth centuries. There is little reason to suppose that the rate of discovery of new resources will rise significantly as compared with the last century. Few of the underdeveloped countries present the opportunity of moving from the now occupied areas to land still richer in agricultural and mineral resources, an opportunity that existed in the New World between, say, 1750 and 1890.

Moreover, for reasons already mentioned, there seems little reason for $\dot{T}$ to rise, except through the planned introduction into the backward sector of underdeveloped economies of techniques that are already well known in advanced countries. It is here that the greatest potential for growth lies in underdeveloped countries, and during the "catching up period" the rate of growth may indeed be considerably accelerated, given appropriate policies.

¹ B. Higgins, "The 'Dualistic Theory' of Underdeveloped Areas," *Ekonomi dan Keuangan Indonesia*, February 1955.

² The analysis is presented at length in an article by Richard Eckhaus, to be published in the *American Economic Review* for September 1955.

in both underdeveloped and advanced countries. But for economic, sociological and political reasons, *without* such a policy $\dot{T}$ is likely to remain low.

Under these conditions, with $\dot{L}$ having a zero or negative influence, with $\dot{T}$ and $\dot{K}$ both low, and with the level of income also low, both savings and investment will be at a very low level, and the rate of expansion will be small. Under these conditions it is not strictly true that there is a *chronic* inflationary gap. Indeed, an argument could be made to the effect that these conditions will produce rather a *chronic deflationary* gap.¹

It is true, however, that under these conditions any factor that brings a sudden increase in investment, in exports or in government expenditures generates inflationary expansion. With the introduction of a publicly-financed development programme, or a sudden increase in the rate of technological progress or of resource discovery, or translation of growing population into growing effective demand, an inflationary gap will immediately appear.

The same argument could be expressed in terms of the Harrod or Domar conditions for steady growth. In Harrod's terminology, any increase in the strength of the growth factors would mean that the "natural rate of growth," G_n (which in our terminology is dO_p/dt), will exceed the "warranted rate of growth," G_w . Moreover, the actual rate of growth, G , will exceed G_w , and therefore the actual stock of capital, C , will be less than the required stock of capital, C_r , leading to further investment, a bigger excess of G over G_w , and chronic inflation. In terms of Domar's equation, ($dI/I = \lambda\delta$, where I is investment, $\lambda = dS/dY$ in our terminology, and $\delta = dO_p/dI$) an increase in growth factors means that $\partial I/I$ is greater than $\lambda\delta$ so that chronic inflation appears.

One other interesting corollary arises from use of the Harrod equation. Since underdeveloped countries have substantial rates of population growth, with no accompanying increase in effective demand, it means, in Harrod's terms, that G_n is greater than G_w . If G_w is greater than or equal to G , so that C is greater than or equal to C_r , growing chronic unemployment must result.

In passing, we might note that the model also fits the British or American economies during their periods of vigorous growth. Between, say, 1840 and

¹ Let us write $Y_1 - Y_0 = I_1 - S_1$
 $= I_1(\dot{L}, \dot{T}, \dot{K}, O/Q) - S_1(L, K, T, Q)$
 $O_1 - O_0 = O(L, K, T, Q)_1 - O(L, K, T, Q)_0$
 $P_1 - P_0 = Y_1/O_1 - Y_0/O_0$

phase A, $\dot{L}$ is fairly high, but $I/\dot{L} < 0$

$\dot{T}$ is low

$\dot{K}$ is low

O/Q is negligible

L is high

K is fairly high (in some countries)

T is low

Q is low

Thus, I_1 is low. S_1 may be fairly high, given unequal distribution of income. $O_1 - O_0$ is low, but > 0 . Thus $Y_1/O_1 - Y_0/O_0$ may be < 0 .

1913, cycles in output and employment were mild, and took place around an historical trend that stayed close to the full employment trend.¹

V. SUMMARY AND CONCLUSIONS

The above analysis is very far from being an exhaustive exposition of possible inter-relations between cycles and trends. It is not difficult, however, to discern from this analysis the directions in which it could be complicated or varied. I have experimented with some of the more obvious variations and complications, and I have not found that they alter fundamentally the conclusions already reached.

First, a model which relies on the Hicks theory of cycles is subject to any imperfections inherent in that theory; and the impact of the trend on the pattern of cycles is less apparent when other cycle theories are used. In Kalecki's theory, for example, the full-employment ceiling is less strategic; expansion can continue "through" the ceiling in an inflationary boom in which profits continue to rise at an increasing rate. There is no modern theory, however, in which investment is not dependent in some way on the rate of overall expansion of the economy, whether expressed in terms of income, sales, profits or output. There is, accordingly, no theory in which cyclical patterns are wholly independent of the underlying trend. Moreover, my choice of the Hicks model to demonstrate my argument was not dictated solely by its convenience for my purpose. *Employment* must depend on the rate of *physical* expansion; and the rate of *physical* expansion must be affected by the slopes of Hicks' ceiling and floor.

Second, it would be possible to treat autonomous and induced investment together, lumping all factors influencing total investment together in one equation, e.g., $I = I_i(\dot{O}) + I_A(\dot{L}, \dot{K}, \dot{T}) - \psi(Q)$, where I_i is induced investment. However, the rate of increase in output will itself depend on growth factors, except that the current increase in output will depend on the expansion of population and resources in actual *employment*, and the rate at which improved techniques are actually *applied*, and not on the rate at which these factors become *known* and *available*. Let us lump together the expansion of growth factors *available* ($\dot{L}, \dot{K}, \dot{T}$) as G , and the rate at which they are actually utilised as G' . Then our equation becomes: $I = I_i(G', Q) + I_A(G) - \psi(Q)$. Clearly, G' reaches a ceiling at full employment, and total investment must fall at that point unless long-run growth accelerates sufficiently, or unless expansion takes place continuously along the full-employment ceiling, as in a "steady-growth" model. Such a formulation has some attractions in terms of neatness, but does not alter the conclusions.

Third, account should be taken of the possibility that the growth factors themselves may show a cyclical pattern, with changes in rates big enough to bring the accelerator into play. Personally, I doubt whether cycles in population growth would take place apart from major "shocks," such as

¹ The British "great depression" of 1825-45 was a special affair, best described in short compass as a "secondary post-war depression." The "great depression" of the 1870s and 1880s was no depression at all; output expanded almost continuously throughout the period.

wars; but resource discovery and technological progress may come in waves. However, this possibility introduces no serious new problems. The curves in Fig. 1 would then relate to a long wave, or "Kondratieff" cycle, and the pattern of the Juglar will depend on the phase of the Kondratieff. In this case, however, we need another concept of "trend"—a movement over periods longer than the Kondratieff. Why should this trend be a rising one? The *trend* of potential output, O_p , will be upwards so long as the *trend* of $d/dt\{T \cdot f(L, K, Q)\} > 0$. If successive booms are launched so that full employment is reached periodically, the *peaks* will be higher and higher. Whether or not this will happen will depend on the whole complex of very long-run trend, Kondratieff, and Juglar. There is room for much more work here.

However, none of these complications seems to destroy the major conclusions already reached:

1. There is a two-way relationship between cycles and trends, the one amplifying the other. An underlying rapid growth brings vigorous and prolonged booms, short and shallow depressions, so that the *actual* trend of real income stays close to the potential trend of real income at full employment—and vice versa.

2. If population increase and resource discovery follow growth curves, while technological progress is, more or less, constant, the economy will pass through four phases of economic development:

(a) Where autonomous growth is small but increasing. In this phase there will be a substantial gap between the autonomous and potential trends of real income, first growing and then diminishing. Booms will be weak but strengthening, depression severe but ameliorating. The cyclical factor will widen the gap between potential and historical trends of income at the beginning of the phase, narrow it towards the end. There may be a downward price trend as well during the early part of this phase.

(b) Where autonomous growth is rapid and increasing. The gap between income produced by autonomous investment alone and potential income will narrow. Booms will be long and vigorous, depressions sharp and shallow. Thus the trend of historical real income will approximate the trend of potential real income. The price trend will be upwards; there may be a "chronic inflationary gap."

(c) Where autonomous growth is rapid but decreasing. Income produced by autonomous investment will fall farther and farther below potential real income. Booms will weaken, depressions deepen and lengthen. The historical trend of real income will also, therefore, fall farther below the trend of full-employment income.

(d) Where autonomous growth is small and diminishing. Real income produced by autonomous investment will fall far below the full-employment level. Booms will be weak and short, depressions long and deep. Because of the greater "downward displacement" of the

floor, depressions will be longer and deeper in this phase than with the same autonomous rate of growth in phase A. In the absence of appropriate government action, the trend of historical real income will fall far and increasingly below the full-employment level. Prices will also show a downward trend.

3. This kind of interaction between cycle and trend helps to explain the peculiar depth and duration of the "great depression" of the 1930s in the United States. Resource discovery (frontier development) reached its peak around 1880, population growth in 1925. The delayed effect of the slackening of growth, due to the First World War and its aftermath, only intensified its impact.

4. The model for phase A, with some modification (especially as regards population growth), appears to fit general conditions in many underdeveloped areas to-day. Where cycles are generated from the supply side, the model does not fit. But where fluctuations are generated by variations in exports, and modifications are made to take care of special institutional factors, the model is not inconsistent with observed fluctuations.

In sum, the model seems to suggest a fruitful approach to a generalised theory of economic development, which would take account of both cyclical and trend factors.

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STABILITY AND GROWTH¹

"The length of the unit period is of secondary importance: the shorter it is, the greater the number of periods involved, but the smaller the growth factor."—A. Kervyn in *The Review of Economic Studies*, 1954-55, Vol. XXII (1), No. 57, p. 65.

1. INTRODUCTION

THE static determination of national output usually assumes all investment to be autonomous: a constant volume of investment expenditure, irrespective of the level of national output, is added vertically to the consumption function resulting in an aggregate demand curve whose slope is the marginal propensity to consume. Since the latter is less than one, the aggregate demand curve will run above a 45° line for outputs less than equilibrium output, below it for outputs in excess of equilibrium output. Thus, in technical parlance, the national output equilibrium is a stable one.

Modern dynamic models of the Harrod-Domar type have relaxed the assumption of autonomous investment. An equilibrium proportionate rate of growth is found, but the equilibrium path is unstable. On p. 86 of *Towards A Dynamic Economics* Harrod assures us that "this kind of instability has nothing to do with the effect of lags, and strikes me as more fundamental." No dissenters from this view are known to the present writer. The purpose of this paper is to show that while the length of the time unit is certainly of no importance for the equilibrium path *per se*, it is of the utmost importance for the consequences of deviations from that path, and thus for stability.

2. THE EQUILIBRIUM RATE OF GROWTH

First, let us sketch the simplest possible version of the current theory of growth. Our model has five variables in it, *i.e.*,

- C = real consumption demand,
- g = the proportionate rate of growth of net real national output,
- I = net real investment demand,
- S = real capital stock,
- Y = net real national output.

In any growth model the variables will have to be dated, and we shall use the parenthesis (t) to indicate that a flow variable refers to the period t , and that a stock variable refers to the *end* of period t . To determine our five variables we must write down five equations. The easiest equations are the definitional ones, and there are two such equations.

¹ To Marianne Ferber (Illinois), Milton Friedman (Chicago), Robert A. Gordon (California) and Franco Modigliani (Carnegie), who have read an earlier draft of the present paper, the writer expresses his sincere thanks.

The first definitional equation defines the rate of growth of net real national output:

$$(1) \quad Y(t) = (1 + g)Y(t-1)$$

The second definitional equation defines net real investment. Current net real investment, of course, is the net increase of real capital stock over the current period:

$$(2) \quad I(t) = S(t) - S(t-1)$$

Next, let us turn to the behaviour equations of which there are two, *i.e.*, one which governs consumption demand, and one which governs invest-

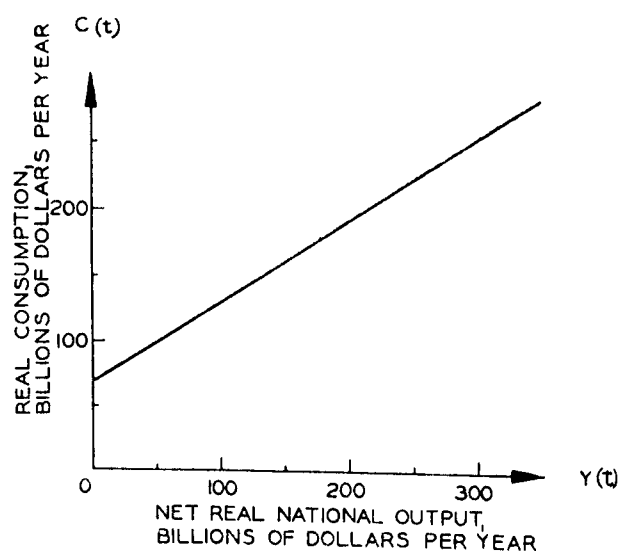


FIG. 1

ment demand. The former says that current consumption demand is a function of current net real national output:

$$(3a) \quad C(t) = A(t) + aY(t)$$

where A and a are parameters. $A(t)$ is the autonomous term of the consumption function, and it is reasonable to assume that the value of this term is rising over time at the same proportionate rate of growth as equilibrium net real national output:

$$(3b) \quad A(t) = (1 + g)A(t-1)$$

In the consumption function, the parameter a is the marginal propensity to consume. The entire function is shown in Fig. 1. The aggregation problem involved is not too serious, since households do not buy from one another.

Business firms, however, do buy from one another, and our second behaviour equation, the investment demand equation, should therefore be

developed a little more carefully.¹ To play safe let us start at the sector level, and let there be as many sectors as there are products, each sector producing only one product. Thus no sector produces the plant and equipment inputs used by itself, all such inputs are purchased from other sectors. Let the physical output of sector j be Y_j . Let sector j use the product of sector i as capital stock, and let S_{ij} be the physical capital stock of goods produced by sector i and held by sector j . Let I_{ij} be the net increase in physical capital stock of goods produced by sector i and demanded by sector j . Let b_{ij} be the capital coefficient of sector j with respect to sector i . Now let sector j always try to establish a physical capital stock at the end of the current period which is in direct proportion to its current physical output. Then $S_{ij}(t) = b_{ij}Y_j(t)$, and $S_{ij}(t-1) = b_{ij}Y_j(t-1)$. Deduct the latter equation from the former and get

$$(4a) \quad I_{ij}(t) = b_{ij}[Y_j(t) - Y_j(t-1)]$$

which determines current physical net investment demand by sector j from sector i as a function of the change of sector j 's current physical output.

Now for the aggregation. Multiply all physical outputs and all physical capital stocks by their respective money values deflated for price changes. Add all outputs thus multiplied on the one hand, and all capital stock thus multiplied on the other, divide the latter by the former and get the aggregate capital coefficient. If all the inter-sector physical capital coefficients remain constant, if all the deflated money values remain constant and if the relative importance of sectors remains constant, then the aggregate capital coefficient also remains constant. If it does, then we can draw Fig. 2 showing the aggregate function $S(t) = bY(t)$. Also we have $S(t-1) = bY(t-1)$; deduct the latter from the former and get the aggregate investment demand function:

$$(4b) \quad I(t) = b[Y(t) - Y(t-1)]$$

which determines current aggregate net real investment demand as a function of the change of current net real national output.² Thus current aggregate net real investment demand is in direct proportion to the excess of *current* net real national output over and above *last* period's net real national output. Graphically, for the current period the investment demand function is a straight line whose slope is the capital coefficient b , rising from the point of the output axis that indicates *last* period's net real national output. This is shown in Fig. 3.

Having now finished our definitional equations as well as our behaviour equations, we shall write down our equilibrium condition. For the system

¹ We are doing this mainly because an investment demand function like ours has very recently been severely criticised by Warren L. Smith, "Professor Gurley on Fiscal Policy in a Growing Economy," *The Journal of Political Economy*, Vol. LXII, No. 5 (October 1954), pp. 440-1. Smith failed to distinguish between investment demand and investment output and therefore erroneously accused Gurley of ignoring the output lag.

² If this distinction between investment demand and investment output is borne in mind, no circular reasoning is involved somewhat along these lines: current investment output, which is part of aggregate output, is a function of current aggregate output and thus partly a function of itself!

to be in equilibrium there must be no unintentional accumulation or depletion of inventory. This requires that aggregate demand, which is equal to

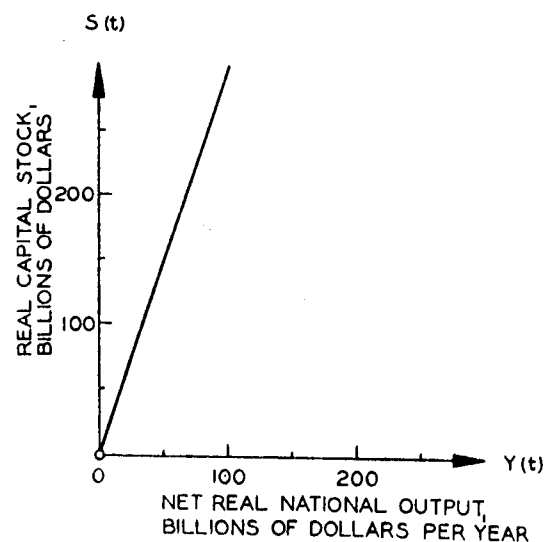


FIG. 2

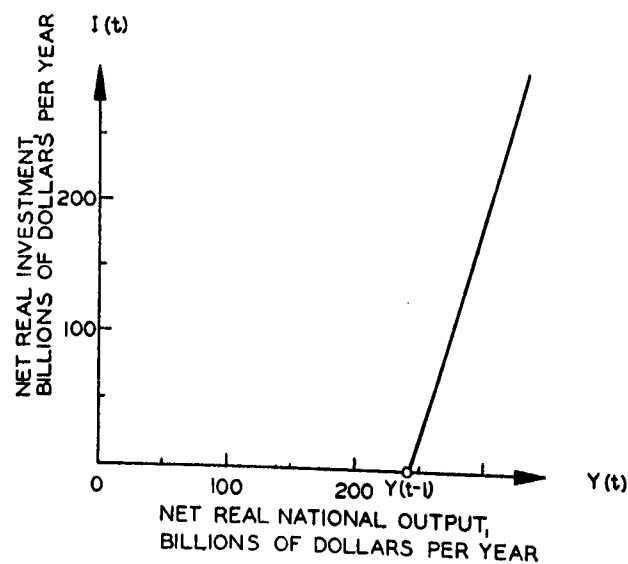


FIG. 3

the sum of consumption demand and investment demand, must be exactly equal to current net national output:

$$(5) \quad Y(t) = C(t) + I(t)$$

To solve graphically for current equilibrium output all we have to do now is to consolidate the consumption function and the investment function. Fig. 4 shows the consolidation, familiar from the text-book treatment of autonomous investment. Fig. 3's investment function has been superimposed vertically upon Fig. 1's consumption function, giving us the aggregate

demand function CDE in Fig. 4. In the familiar manner intersect aggregate demand CDE by a 45° line through zero expressing the equilibrium condition (5), and get the equilibrium current output $Y_0(t)$ in Fig. 4.

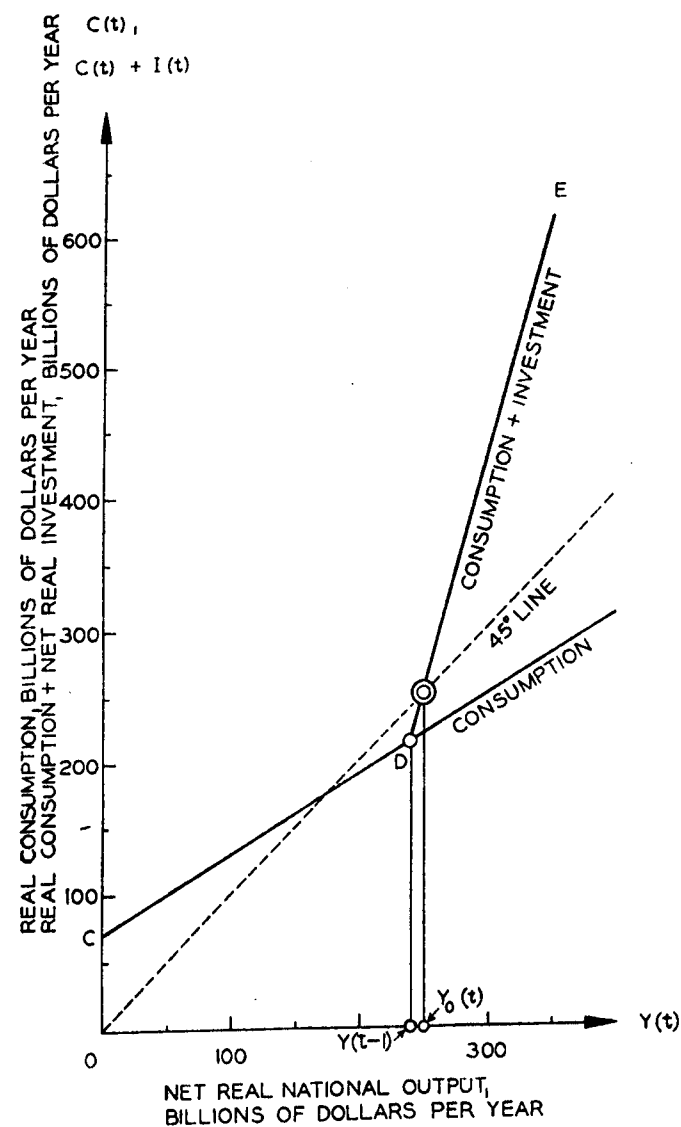


FIG. 4

Much more succinctly, the solution could, of course, be stated in algebraic terms. By inserting (3a) and (4b) into (5) and by using last period's net real national output as well as the autonomous term $A(t)$ of the consumption function for parameters, we can solve our system for current equilibrium net real national output. We get the following first-degree difference equation:

$$(I) \quad Y(t) = \frac{A(t) - bY(t-1)}{1 - a - b}$$

This difference equation determines current equilibrium output in terms of past equilibrium output, and thus traces the path of equilibrium output over time. Rather than solving for the equilibrium path, we might wish to solve for the equilibrium rate of growth *per se*. In so doing it will be convenient to begin by dividing equation (3b) by equation (1) and denoting the result y :

$$(3c) \quad \frac{A(t)}{Y(t)} = \frac{A(t-1)}{Y(t-1)} = \dots = y$$

where y is a new parameter expressing the ratio between the autonomous terms of the consumption function on the one hand, and equilibrium net real national output on the other. It appears from equation (3c) that the value of this parameter remains constant over time. We can now solve our system for the equilibrium rate of growth and get:

$$(II) \quad g = \frac{1 - a - y}{a + b + y - 1}$$

Here we have the equilibrium rate of growth as determined by the parameters of our consumption and investment functions. The familiar conclusions about the respectability of thriftiness in a growth model can be drawn. If *ceteris paribus* the value of y , the ratio between the autonomous term of the consumption function and equilibrium net real national output, were reduced, the value of g , the proportionate equilibrium rate of growth, would rise. If *ceteris paribus* the value of a , the marginal propensity to consume, were reduced, the same thing would happen. Finally, the economy would also have a higher equilibrium rate of growth if *ceteris paribus* the value of b , the capital coefficient, were lower.

The meaning of (II) is this. A system passing through successive stages of equilibrium will be growing steadily at the proportionate rate of growth determined by equation (II). For if business firms plan output to rise by this growth rate, adjust their investment plans accordingly and carry out their output and investment plans, then aggregate demand will exactly exhaust net national output, and no unintentional accumulation or depletion of inventory will occur. From this the business-man will conclude that his growth plans were right, and he will see no reason why he should revise his idea of a growth rate as determined by (II).

3. THE STABILITY OF THE EQUILIBRIUM RATE OF GROWTH

But what happens if the business-man suddenly starts planning for a growth rate different from the one determined by equation (II)? Suppose, for example, that up to now the system has been in equilibrium but that business firms now plan output to rise by a growth rate *higher* than the one determined by (II). Going back to Fig. 4, this means that while $Y(t-1)$ was period $t-1$'s equilibrium output, business-men do not now plan for output $Y_0(t)$ but for an output higher than that. In Fig. 4, for any output larger than $Y_0(t)$ the sum of consumption demand and investment demand

will exceed that output. Because of the high value of the slope of the aggregate demand curve $C(t) + I(t)$ used in Fig. 4, the aggregate demand curve now runs above the 45° line. But this means that inventories are depleted, and the business-man is likely to suspect that he did not expand his output enough. Therefore, he may well try to catch up in the subsequent period by planning for an even higher rate of growth.

Conversely, if the business-man suddenly starts planning output to rise by a growth rate *lower* than the one determined by equation (II). For outputs slightly lower than $Y_0(t)$ the sum of consumption demand and investment demand is less than that output. Again because of the high value of the slope of the aggregate demand curve used in Fig. 4, the aggregate demand curve now runs below the 45° line. This means that inventory piles up, and the business-man is likely to suspect that he has expanded his output too far. In the subsequent period he may well try to remedy this situation by planning for an even lower rate of growth.

To summarise: Once the system deviates from equilibrium it releases forces pulling it even farther away from equilibrium. In this sense it is unstable. What makes it unstable is the high value of the slope of the aggregate demand curve $C(t) + I(t)$ used in Fig. 4. In that diagram the marginal propensity to consume net national output is set equal to 0.6, while the capital coefficient is set equal to 3. Thus the slope of the aggregate demand curve beyond output $Y(t-1)$ is equal to 3.6.

4. THE CAPITAL COEFFICIENT AND THE LENGTH OF THE TIME UNIT

At this point it becomes crucial that while the propensity to consume is a ratio between two flows, the capital coefficient is a ratio between a stock and a flow. If the length of the time unit used is changed, this does not affect the value of the propensity to consume, for the values of the numerator as well as the denominator are both in direct proportion to that length. But if the length of the time unit is changed, the numerator of the capital coefficient will not change, because it is a stock. The denominator will change, because it is a flow whose value is in direct proportion to the length of the time unit. Consequently, the value of the capital coefficient is in inverse proportion to the length of the time unit. For example, Kuznets¹ has found the ratio between the dollar value of fixed (viz., structures and durable equipment) capital and the dollar value of *annual* net national product to be close to 3. Thus on an annual basis the capital coefficient is 3, but on a quarterly basis it would obviously be 12, and on a decade-basis it would be 0.3.

5. RESULT

We have said that what made the equilibrium illustrated in Fig. 4 unstable is the high value of the slope of the aggregate demand curve. Fig. 4 was

¹ Simon Kuznets, "Long-term Changes in the National Income of the United States of America since 1870," *Income and Wealth of the United States*, edited by Simon Kuznets (Cambridge, England: Bowes & Bowes, 1952), Table 25, p. 127.

based on a capital coefficient equal to 3. If any realism is desired, this implies that the length of the time unit used is around one year. The time unit used is a business-planning period, and we said that business firms were assumed to try to establish a real capital stock at the end of the current period which was in direct proportion to current net real national output. So if the year is the time unit, the capital coefficient is equal to 3. But although little is known about the length of business-planning periods, we would suspect that the year is much too short for this purpose. Business hardly tries to adjust its stock of structures and durable equipment to its annual rate of output. So let us try a longer time unit. For example, what if we take the *decade* rather than the year as our time unit? Figs. 5 through 7

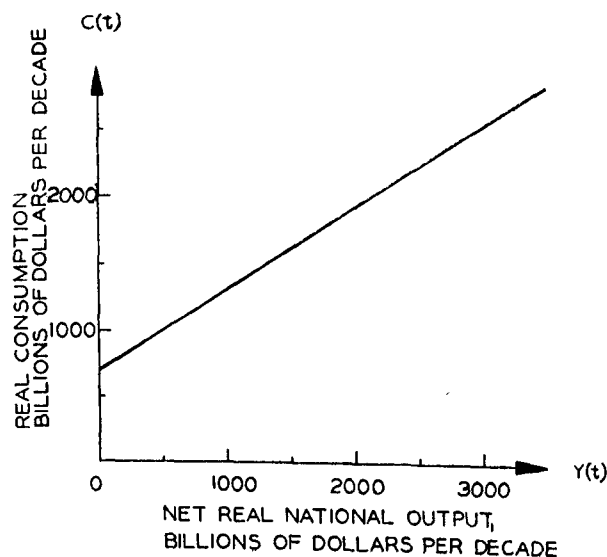


FIG. 5

show the consequences of this alteration. First, in the consumption function, shown in Fig. 5, one now has billions of dollars per decade rather than billions of dollars per year on both axes, and consequently there is no change in the slope of the consumption function. Second, in the capital stock-output function, shown in Fig. 6, one now has billions of dollars per decade on the output axis *but still just billions of dollars on the capital-stock axis*. Consequently, on a decade basis the capital coefficient is only slightly above one-tenth of its value on an annual basis, so we are now using a capital coefficient slightly above 0.3, or more precisely equal to 0.3556,¹ as shown in Fig. 6. The

¹ Not 0.3, mainly because of our habit of letting a stock variable refer to the *end* of the period. On an annual basis call the capital coefficient b_1 , on a decade basis call it b_{10} . Find the value of end-of-period capital stock over the entire output of ten preceding years. Since output is growing at the annual rate g , we have:

$$b_{10} = b_1 \frac{1}{1 + (1+g)^{-1} + (1+g)^{-2} + \dots + (1+g)^{-9}}$$

If $a = 0.6$, $b_1 = 3.0$ and $y = 0.2846$, then according to (II) $g = 0.04$ and $b_{10} = 0.3556$.

investment function, as developed in equation (4b) but not shown separately, will have the same slope.

At this point the mathematical reader will have no difficulty. He will realise that in equation (4b) the variable on the left-hand side, $I(t)$, has the dimension dollars per unit of time, but the variable on the right-hand side, $Y(t) - Y(t-1)$, has the dimension dollars per unit of time *per unit of time*. Thus lengthening the time unit tenfold will lengthen the value of the former variable approximately tenfold but lengthen the value of the latter variable approximately hundredfold. To compensate for this, the parameter b will have to be reduced to approximately one-tenth of its former value.

The non-mathematical reader may need help in the form of a numerical

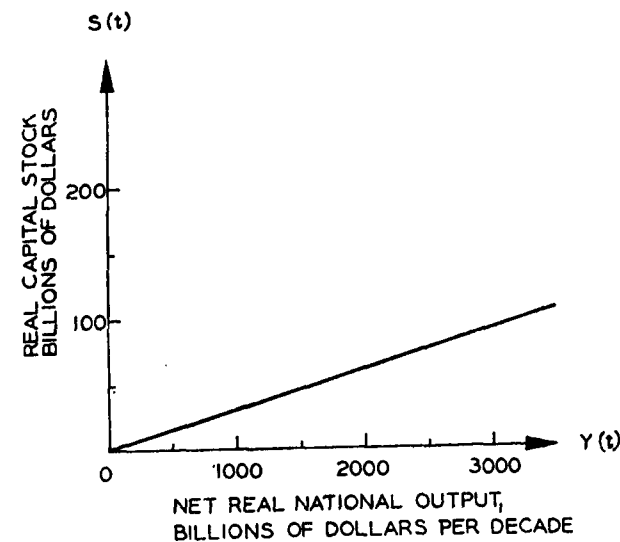


FIG. 6

example. In a given year let net real national output be \$100 billion. Let the annual capital coefficient be 3. Thus the required capital stock is \$300 billion. Let the economy grow by 4% per annum. Next year's net real national output is then \$104 billion, and required capital stock is \$312 billion. Required investment is then \$12 billion per annum, and output has increased by \$4 billion per annum per annum. The ratio between the two, which is the slope of the annual investment function, is 3.

Now let us look at the same economy on a decade basis. In a given decade, let output be \$1,000 billion. As explained in the footnote on p. 622, on a decade basis the capital coefficient is 0.3556, and the required capital stock is consequently \$355.6 billion. Now something which grows at 4% compounded annually will grow at 48% per decade. Next decade's output, then, is \$1,480 billion, and required capital stock is \$526.288 billion. Required investment is then \$170.688 per decade. Output has increased by \$480 per decade per decade. The ratio between them, which is the slope of the decade investment function, is 0.3556.

It is true, then, that the decade investment function has a slope which is approximately one-tenth of the slope of the annual investment function. And as a result of all this, the aggregate demand curve, shown in Fig. 7, now has a much lower slope over the relevant range, *i.e.*, slightly above 0.9 or more precisely 0.9556. Thus at outputs higher than the equilibrium output

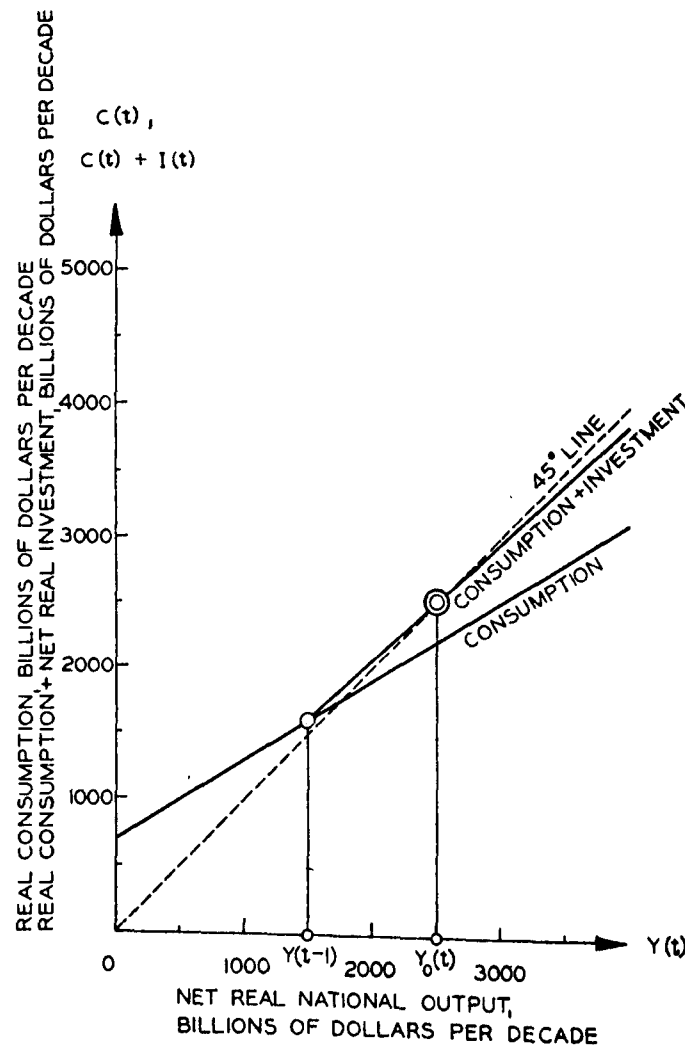


FIG. 7

the aggregate demand curve now runs below the 45° line. And at outputs slightly lower than the equilibrium output the aggregate demand curve now runs above the 45° line. Thus the equilibrium is now a stable one.

It might well seem baffling that anything as seemingly nominal as the length of the time unit used in the model could have much to do with something as real as the stability of a growing economy. But the length of the time unit is not nominal, after all. Ultimately the time unit is a planning

period, and if the induced-investment planning period is rather short, say one year, then the capital coefficient is rather high, say 3. Then if for any reason business firms plan current output to exceed current equilibrium output by \$1 per year, they will immediately plan, carry out and complete, *before the year is over*, three extra dollars' worth of investment in equipment and fixed plant in order to maintain the rigidly fixed capital coefficient we are using. Furthermore, if the marginal propensity to consume net national output is 0.6, consumers will spend 0.6 extra dollars' worth annually on consumption. Thus every dollar's worth of deviation from annual equilibrium output will generate \$3.6 worth of deviation (in the same direction) from annual equilibrium demand. As we have seen, this effect is a highly de-stabilising one.

If, on the other hand, the induced-investment planning period is rather long, say a decade, the capital coefficient is much smaller, *i.e.*, slightly above 0.3. This in itself, the reader should be warned, has no effect whatsoever upon the equilibrium path. If on an annual basis $a = 0.6$, $b = 3.0$ and $\gamma = 0.2846$, then solution (II) will render the value $g = 0.04$ per annum. On a decade basis, a and γ are still the same but b changes from 3.0 to 0.3556 (as explained in the footnote on p. 622). So on a decade basis, solution (II) will render the value $g = 0.48$ per decade. This is as it should be, anything that grows smoothly at 4% per annum is known to grow by 48% per decade. But while the shift from an annual to a decade basis does not affect the equilibrium path *per se*, it does affect the consequences of deviations from that path. If firms plan current output to exceed current equilibrium output by \$1 per year, which is equivalent to \$10 per decade, then they will plan, carry out and complete, *before the decade is over*, 3.556 extra dollars' worth of investment in equipment and fixed plant. For the same capital stock handles ten times as much output per decade as it handles per year! Furthermore, if the marginal propensity to consume net national output is 0.6, consumers will spend six extra dollars' worth per decade on consumption. Thus every ten dollars' worth of deviation from decade equilibrium output will generate only 9.556 dollars' worth of deviation (in the same direction) from decade equilibrium demand. This is clearly a stabilising effect. Entrepreneurial growth expectations that are inconsistent with the equilibrium rate of growth, as defined by (II), may well tend to correct themselves automatically.

6. CONCLUSION

The instability of a growth model of the Harrod-Domar type can be made to shade over into stability by simply lengthening the time unit on which investment planning is based and thus continuously weakening the induced character of investment. Since unstable equilibria are rather uninteresting, the notion of an equilibrium rate of growth thus assumes new importance.

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University of Illinois.

SEQUENCE ANALYSIS AND THE THEORY OF THE RATE OF INTEREST¹

FOR nearly twenty years now three apparently contradictory theories of the rate of interest have been propounded, and the protagonists and defenders of each theory have never, it would seem, been able to find any common ground for agreement. In the March issue of this JOURNAL Mr. Hahn² has subjected the contending claims to a searching analysis in an attempt to reconcile the various theories. His conclusions, however, are far from satisfying as he shows that the various theories do not all lead to the same results:³ and although he attributes this to a stock-flow confusion, it is not really apparent that the discrepancies result from this. The aim of this article is not essentially to show that the analyses of the three main theories, viz., liquidity preference, loanable funds and savings-investment, can be reconciled, but, rather, to construct a more comprehensive comparative-statics model with a dynamic lag to explain a theory of the rate of interest. It will then be shown that the three theories are only particular cases of this more general model.

In the first place, a static lagless model for any given *single period of time* must be constructed.⁴ The model presented here is based essentially on that of Professor Hicks.⁵ A modified Keynesian model can be simply represented by a system of five equations

$$i = L(Y, M) \quad K = k(i) \quad S = s(Y) \quad S = K \quad Y = E + K \quad (1)$$

where i is the rate of interest; M is the quantity of money; Y is total income; K is the *demand for investible funds*; S is the *supply of investible funds*; and E is the expenditure on consumption goods.

The last four variables are best regarded as value magnitudes (*i.e.*, as the products of price and quantity) and not in real terms. This gives a more general approach, although it is not essentially Keynesian. Secondly, it is important to notice that these last four variables, Y , K , S and E , represent magnitudes for a period of time and can, therefore, be regarded as *flows*, while M is the *stock* of money in existence during the period. i is the rate of interest ruling during the period.

The first equation, which can be termed the money rate of interest function, tells us that the rate of interest for any period is determined by the

¹ I am indebted to Sir Dennis Robertson and to Mr. M. Gaskin of Glasgow University for the very helpful criticisms which they have given me in my efforts to develop the ideas contained in this article. I myself, of course, am entirely responsible for any errors which may yet be found in it.

² F. H. Hahn, "The Rate of Interest and General Equilibrium Analysis," *ECONOMIC JOURNAL*, LXV, 1955, pp. 52-66.

³ See *ibid.*, p. 64.

⁴ It is important to notice that there is no need to assume any kind of *equilibrium*.

⁵ J. R. Hicks, "Mr. Keynes and the 'Classics': a Suggested Interpretation," *Econometrica*, V, 1937, pp. 147-59.

level of income and the quantity of money in the same period: L_Y is positive and L_M negative. Professor Hicks¹ (and Dr. Lange,² as well as other writers) writes this equation as $M = L(Y, i)$. It seems more reasonable, however, to write i expressly as the dependent variable; the quantity of money then appears more logically as an independent datum of the system.

The second equation gives the demand for investible funds, *i.e.*, the demand for funds by entrepreneurs to undertake the construction of *new* investment goods.³ k' is, of course, negative. Nobody can deny that depreciation and re-investment are also influenced by the rate of interest, but interest charges on these items are invariably reckoned as part of the costs of production excluding interest payments, and the funds meeting them, when averaged over the whole economy, can be thought to flow continuously from sales proceeds and not from the supply of investible funds.⁴ The significance of the presence of investment, then, is that the economy is usually expanding. The third equation gives the supply of investible funds,⁵ *i.e.*, it gives the schedule of the funds which are given by lenders to those who wish to undertake new investment. s' , the marginal propensity to supply investible funds, is, of course, positive. This equation is usually regarded as the multiplier equation,⁶ but in a lagged sequence analysis, as will be seen in a moment,⁸ this way of looking at the matter is not altogether valid. The fourth equation states that for any period, be the system in equilibrium or not, the supply of investible funds equals the demand for investible funds—an obvious truism. The second and third equations, then, can be simply regarded as the ordinary supply and demand equations relating quantity demanded and applied to price: and, just as in an ordinary commodity market, where quantity supplied equals quantity demanded, the supply of investible funds for any period equals the demand for investible funds in the *same* period. Even although the supply equals the demand, we are *not* estopped from using functional relationships in evaluating the relevant magnitudes.⁷

¹ Cf. J. R. Hicks, *Value and Capital* (Oxford, 1950), p. 153.

² See O. Lange, "The Rate of Interest and the Optimum Propensity to Consume," *Economica*, S. V, 1938, p. 14.

³ Cf. Professor Domar's definition of investment in an expanding economy: E. D. Domar, *Capital Expansion, Rate of Growth and Employment*, *Econometrica*, XIV, 1946, p. 138.

⁴ There is, of course, a great deal to be said for trying to distinguish between depreciation and new investment charges. If a newer type of machine replaces an older type when its life is finished, (part of) the cost of the new machine to be regarded as new investment? Cf. I. Svernilson, *Growth and Stagnation in the European Economy* (Geneva, 1954), pp. 20-39. The difficulty is real and important but must be ignored here.

⁵ I have deliberately used the term "supply of investible funds" in place of the ordinary term "saving." The reason for this peculiarity will be explained later: see *infra*, p. 637.

⁶ Cf. J. R. Hicks, *loc. cit.*, p. 152, footnote 4. Cf. also R. F. Harrod, "Keynes and the Traditional theory," *Econometrica*, V, 1937, p. 77: "[the multiplier] is merely a disguised form of the ordinary supply schedule for free capital, but with the level of income treated as a variable."

⁷ See *infra*, p. 628.

⁸ Cf. J. M. Keynes, "Alternative Theories of the Rate of Interest," *ECONOMIC JOURNAL*, XLVII, 1937, p. 249: "aggregate saving and investment, in the senses in which I have defined them, are necessarily equal in the same way in which the aggregate purchases of anything on the market are equal to the aggregate sales. But this does not mean that 'buying' and 'selling' are identical terms, and that the laws of supply and demand are meaningless."

The fifth equation, the income identity, states that the sum of the expenditure on consumption goods and on investment goods in any one period, whether the system is or is not in equilibrium, equals the income of the same period. We thus have five unknowns, E , K , S , Y and i , one given datum, M , and five independent equations. The system is, therefore, determinate.

Instead, however, of using the fifth equation (the income identity) to determine E , the expenditure on consumption goods, the more usual consumption function equation

$$E = c(Y) \quad (2)$$

could have been used. But the income identity must always hold, so that equation (2) cannot be regarded as an *independent* equation. Consequently, c' , the marginal propensity to consume, must be determined by the other equations of the system. Since $dS = dK$, $dS = s'dY$ and $dY = dE + dK$, it follows that

$$dY = (c' + s')dY \quad (3)$$

so that $c' + s' = 1$.

Suppose, now, we introduce an income-lag into the equations of set (1). It is also logical to introduce a lag into the money effect. We then have

$$i_t = L_L(Y_{t-1}, M_{t-1}) \quad K_t = k(i_t) \quad S_t = s_L(Y_{t-1}) \quad K_t = S_t \quad Y_t = E_t + K_t \quad (4)$$

where the t and $(t-1)$ subscripts refer to the current and previous periods respectively.

From the equations of set (4) we can immediately find that

$$dY_t = dE_t + s'_L dY_{t-1} \quad (5)$$

where s'_L is the *lagged*¹ marginal propensity to supply investible funds. Now there is no longer any *a priori* given relationship between dY_{t-1} —or Y_{t-1} —which can be regarded as given datum of the system, and dY_t —or Y_t —which is the variable we wish to determine. Consequently, dE_t cannot be determined from equation (5)—or E_t from the income identity of set (4). E_t can, however, be determined by a lagged income consumption function equation

$$E_t = c_L(Y_{t-1}) \quad (6)$$

Using equation (6) we get

$$dY_t = (c'_L + s'_L) dY_{t-1} \quad (7)$$

where c'_L is the *lagged* marginal propensity to consume. Equation (7) may be termed the lagged multiplier equation. Notice that current income can no longer be determined from only s'_L and dY_{t-1} : c'_L must also be known to give a determinate result.² Lagging has a significance which is highly important.

A radical alteration has now been introduced into the system. Equation

¹ The point does require emphasis as is shown below.

² If, of course, it is given *a priori* that $(c'_L + s'_L)$ is in fact unity, the value of one of the coefficients can always be determined from the other: see *infra*, p. 630. Cf. also O. Lange, "The Theory of the Multiplier," *Econometrica*, XI, 1943, pp. 227-45, and A. Smithies, "Keynesian Economics: the Propensity to Consume and the Multiplier," *American Economic Review*, XXXVIII, 1948, Papers and Proceedings, pp. 299-305.

(6) is no longer a dependent equation, but has become an *independent* equation of the system, for, as has been seen, without it we could not determine dE_t and, therefore, dY_t —or E_t and Y_t . All this is perfectly familiar and has been analysed many times before; but what has not been pointed out, as far as I am aware, is the following vitally important fact. There are now *two* data, M_{t-1} and Y_{t-1} , and there are still only *five* variables, E_t , S_t , K_t , Y_t and i_t ; but there are now *six* independent equations. In other words, the system as it stands is overdeterminate. This overdeterminateness cannot, of course, be avoided by introducing another investment good: for with the introduction of every new type of investment good an additional rate of interest makes its appearance, so that with each pair of additional equations (supply of and demand for investible funds for the particular investment good) there is an additional pair of variables. Similarly, with each additional consumption good introduced an additional consumption function equation makes its appearance. The problem cannot be solved by "disaggregation," to use Ralph Turvey's term in this connection.¹

Before analysing the problem, however, the exact interpretation of the differentials dY_{t-1} , dY_t , dE_t , dK_t and dS_t must be examined. It would be possible to define these differentials as *marginal* increases, *i.e.*, the value of any one of the variables in one period minus its value in the preceding period. Consequently, for example, dE_t would equal $E_t - E_{t-1}$. On such a definition, the value of c'_L would be in the neighbourhood of zero (either positive or negative) and not in the neighbourhood of unity. On the other hand, the differentials could be interpreted as *total* increases, *i.e.*, the value of any one of the variables in one period minus its value in some initial (equilibrium) period. Then dE_t would equal $E_t - E_0$, where E_0 depends on some initially given (equilibrium) conditions.² On this definition the value of c'_L would be in the neighbourhood of unity. Similar considerations, of course, apply to the other coefficients.³ This latter definition of total increases has the obvious advantage in that the differentials so evaluated themselves measure the changes in the values of the variables from their respective equilibrium values: on the former definition the marginal increases must be summed to obtain such values. Further, the total definition is more in keeping with modern usage,⁴ and will, therefore, be adopted throughout this analysis.

Suppose, then, that we have a single exogenous injection of income in

¹ See R. Turvey, "Some Notes on the Multiplier Theory," *American Economic Review*, XLIII, 1953, p. 257.

² Professor Machlup (see F. Machlup, *International Trade and the National Income Multiplier* (Philadelphia, 1943), p. 27) is one of the few economists to expressly refer to this problem. Cf. also P. A. Samuelson, "Dynamic Process Analysis," in *A Survey of Contemporary Economics*, H. S. Ellis, Ed., Philadelphia, 1949, p. 364. It is, despite its neglect, a very important one, more particularly in models where the multiplier and accelerator interact and an express definition of derivatives and differentials is needed for a consistent solution of the system.

³ If, on the total definitions, c'_L is 0.9 and s'_L is zero, then c'_L will become -0.1 on the marginal definitions: in general, the sum of the coefficients (total) minus unity equals the sum of the coefficients (marginal).

⁴ Cf., e.g., Professor Hicks' analysis in his *Contribution to the Theory of the Trade Cycle* (Oxford, 1950), pp. 170 *et seq.*

period $(t-1)$, $dY_{(t-1)}$. If $(c_L' + s_L')$ is unity the total increase in income in period t , dY_t , equals $dY_{(t-1)}$: in other words, income remains constant at its new level. The whole of the increase in the received income of period $(t-1)$, no more and no less, becomes expenditure, on both consumption and investment goods, in period t , so that the income of period t equals the income of period $(t-1)$. Now there are three sets of equalities here which must be clearly distinguished.

(1) The expenditure of period $(t-1)$ equals the income of period $(t-1)$. This is an identity—a truism—which must always hold.

(2) The expenditure of period t equals the income of period t . This, too, is an identity—or truism—which must always hold.

(3) The income ($\equiv$ expenditure) of period $(t-1)$ equals the expenditure ($\equiv$ income) of period t . This is *not* an identity, but merely an equality which holds because $(c_L' + s_L')$ is unity.

Now since the equations of types (1) and (2) are identities, Say's Law must *always* hold if it is applied to any *one* period. This can be termed the *timeless* interpretation of Say's Law, and is, in fact, operationally valueless. Hahn's criticism of Modigliani on this point¹ is, therefore, rather inconsistent, since he must assume that this timeless interpretation of Say's Law need not necessarily hold. For any period, the supply of and demand for every commodity, including money, are equal. There can be no *net* excess demand.² Dr. Lange³ has clearly shown that, in a single period timeless analysis, the net excess demand for (supply of) all commodities equals the supply of (demand for) money. Professor Hicks' analysis of the "otiose equation" theory of the rate of interest⁴ also emphasises this point.

Suppose, however, that we apply Say's Law to the relationship between the income ($\equiv$ expenditure) of period $(t-1)$ and the expenditure ($\equiv$ income) of period t ; this may be termed the *sequence* interpretation of Say's Law. Obviously, if the expenditure of period t equals the income of period $(t-1)$, then Say's Law in its sequence interpretation holds. But, as we have seen, this is true only if $(c_L' + s_L')$ is unity. Suppose, then, that it is given that the sequence interpretation of Say's Law *always* holds, as, presumably, classical economics assumed. Then, referring back to equation (5), $dY_{(t-1)} = dY_t$. dE_t is determined from equation (5) and equation (6) ceases to be an independent equation. The system is no longer overdeterminate and the classical (Walrasian) solution of general equilibrium (and of savings and investment and rate of interest) is valid *because we have*

¹ See F. H. Hahn, *loc. cit.*, p. 56.

² This, of course, must be interpreted as applying to the *whole* economy: it is a proposition in macro-economics (as is the whole of Hahn's analysis), not in micro-economics. Professor Goodwin's distinction between a micro-application and a macro-application of Say's Law, between Say's Law of the First Kind and Say's Law of the Second Kind as he terms it, is vitally important; but the problem must be ignored here: see R. M. Goodwin, "The Multiplier as Matrix," *Economic Journal*, LIX, 1949, pp. 539-40.

³ See O. Lange, *Price Flexibility and Employment* (Bloomington, Indiana, 1952), pp. 5-6.

⁴ See J. R. Hicks, "Review of *The General Theory*," *Economic Journal*, XLVI, 1936, pp. 245-6, and *idem*, *Value and Capital*, pp. 141-70. This theory is extremely important, and we will return to it later; see *infra*, pp. 632-3.

assumed that the *WHOLE* of any exogenous injection of income in one period is completely absorbed by the system and spent in the next. But we know that $(c_L' + s_L')$ need not be identically equal to unity,¹ so that Say's Law in its sequence interpretation need not necessarily hold. Our system, then, must still be regarded as overdeterminate.

One final point must be cleared up before attacking this problem of overdeterminateness. Where does the change in income come from if income is increasing, or go to if income is decreasing? Let us examine the case of falling income first, when some of the income of one period is not spent on either consumption or investment goods in the next period. Now no economist will dispute the fact that an *individual* can retain part of his received income from one period, say period $(t-1)$, in the form of money in the next period, period t , by not spending it. In what other way could expenditure ($\equiv$ income) in period t be less than income ($\equiv$ expenditure) in period $(t-1)$? It is quite legitimate to say that the individual is *hoarding* part of his received income of period $(t-1)$ in the *next* period, period t . To say, of course, that an individual can hoard part of the income he receives in any period in the *same* period is nonsense: the expenditure of any period equals the income of the same period. In other words, the concept of hoarding can only be validly introduced into a sequence analysis. There is no reason, then, preventing the summation of the hoardings of all individuals² to arrive at the total hoarding of the whole economy. We can, therefore, equate the decrease in the income of any period to the hoarding of that period, and so arrive at a definition of hoarding. Most Keynesians refuse to take this final step of summation: they maintain that, although an *individual* can hoard, the *economy as a whole* cannot. In a timeless analysis, of course, the conception of hoarding cannot be applied to the whole economy: Say's Law in its timeless interpretation must hold. But then, as we have just seen, the individual cannot be conceived to hoard in a timeless analysis. Keynesians are just as wrong if they infer that the individual can hoard in a timeless analysis as they are if they infer that in a sequence analysis the whole economy cannot do so.

It follows, too, that in a sequence analysis it is no longer necessary to assume that hoards disappear. They exist as a personal *asset* in a bank or as a *stock* of money, taken out of the income *flow* but nonetheless real for all that. Again, of course, Keynesians immediately answer: the quantity of money is controlled by the banking system, so that the economy as a whole cannot increase its monetary holdings. It is obviously true that the whole economy cannot hold more money than the banking system creates, but this is *not* a pertinent criticism of the concept of hoarding advanced here. In a sequence

¹ The solution of equation (7) is $dY_t = dY_0(c_L' + s_L')$, assuming that both c_L' and s_L' are constant. Income will contract, remain stationary or expand according as $(c_L' + s_L') \leq 1$. $(c_L' + s_L')$ can, of course, be greater than unity due to accelerator effects.

² Some individuals, of course, may be dishoarding (*i.e.*, spending in one period in excess of their received income of the previous period by running down previously accumulated hoards, by means of an inter-personal loan and/or by an extension of pure bank credit): but if income is decreasing then total *net* hoarding must be taking place.

model the money which can be hoarded by the community as a whole has been *previously* created by the banks: it is *already* in the hands of the whole community in the form of income. It is the action of the community as a whole with regard to the money which it *already* possesses that brings about a change in the holding of money, *i.e.*, in hoarding. Keynes himself has given currency to the phrase "a mass movement into cash."¹ This is a vitally important point which merits additional emphasis. *The banks cannot directly*² control the amount of non-spending, *i.e.*, hoarding, of the community as a whole, since the money out of which the hoarding can be made is already in the hands of the community in the form of income. Consequently, to say that there is no more hoarding to hoard is to miss the point completely.

Finally, there is no *a priori* reason why $(c_L' + s_L')$ should not be greater than unity. The presence of an accelerator effect may well result in such an explosive situation developing. Such a condition has been termed by Professor Samuelson³ one of "pure pump-priming." The additional expenditure is met from a depletion of previously accumulated hoards and/or an expansion in the quantity of money. Just as in the case of falling income, so here; we can quite legitimately say that the increase in the income of any period equals the dishoarding, or negative hoarding, of that same period.

If, then, the sequence interpretation of Say's Law does not necessarily hold, some other variable must be introduced into the system in order to remove its overdeterminateness. It is because the level of income is changing, *i.e.*, because either hoarding or dishoarding is occurring, that the system is overdeterminate, and it seems reasonable to introduce an additional variable which in some way depends on either hoarding or dishoarding to close the system. We can at this point profitably refer again to Professor Hicks' "otiose equation" theory of the rate of interest. "The ordinary method of economic theory would be to regard each price as determined by the supply and demand equation for the corresponding commodity or factor; the rate of interest as determined by the demand and supply for loans."⁴ At the same time, however, the rate of interest could have been determined by the supply of and demand for money, as in Keynes' theory. But, in a single-period analysis the timeless interpretation of Say's Law holds, and the equation giving the supply of and demand for money follows from the rest and is not an *independent* equation of the system. Consequently, "the equation for the demand and supply of money is otiose."⁵ According

¹ J. M. Keynes, *The General Theory of Employment, Interest and Money* (London, 1936), p. 172, italics added. The use of the term "movement" is rather unfortunate and obscures the basic point: a mass "retaining" of cash would have been more appropriate.

² The banks can, of course, influence the amount of income held unspent in the form of cash or deposits by bringing about a variation in the rate of interest; cf. *infra*, p. 635.

³ P. A. Samuelson, "The Theory of Pump-priming Reexamined," *American Economic Review*, XXX, 1940, p. 502.

⁴ J. R. Hicks, *loc. cit.*, *ECONOMIC JOURNAL*, XLVI, 1936, p. 246; cf. also *idem*, "Wages and Interest: the Dynamic Problem," *ECONOMIC JOURNAL*, XLV, 1935, p. 456.

⁵ *Ibid.*, *ECONOMIC JOURNAL*, XLVI, 1936, p. 246; cf. also *idem*, *Value and Capital*, pp. 59-60, 155-8 and 314.

to Professor Hicks, then, the rate of interest can be determined on *either* of two markets: on the supply of and demand for loans market (*i.e.*, the market for the supply of and demand for investible funds in our terminology), *or* on the market where the quantity of money supplied is equated to the demand for it.¹ A similar method can be applied to a sequence analysis, and if the sequence interpretation of Say's Law necessarily holds, this "otiose equation" theory of the rate of interest is valid. But if the sequence interpretation of Say's Law does not necessarily hold, the equation of the demand for and supply of money no longer follows from the rest of the equations of the system.²

In his later article³ Professor Hicks had a glimpse of this solution, though not, curiously enough, of the problem. He introduces an "investment rate of interest"⁴ determined by the interaction of what we have called the supply of and demand for investible funds. This rate is confronted with a liquidity preference function, based on the first equation of set (1), which gives what Professor Hicks terms "the money rate of interest."⁵ In the timeless Hicksian analysis, of course, both rates are identical. This double nomenclature is perfectly valid when it is realised that only two *aspects* of the same thing are being analysed: there are *not two* rates which are only made equal by an equilibrium process—there is only one rate of interest, whether the system is or is not in equilibrium. But in the sequence analysis the money rate (or the investment rate, depending on whether we start with Keynes or the classics) provides us with the second variable for which we are seeking.⁶

The problem of overdeterminateness is essentially one that Wicksell faced and never really solved.⁷ As far as I am aware, the only attempted solution is that of Professor Frisch.⁸ It can be noticed in passing that Professor Frisch has adopted the term "productivity rate of interest"⁹ in the almost identical place of Professor Hicks' "investment rate of interest." The latter term seems preferable, since, as we shall soon see, the rate must not be con-

¹ Sir Dennis Robertson arrives at an almost identical conclusion by means of a different approach: see his "Some Notes on Mr. Keynes' 'Theory of Employment,'" *Quarterly Journal of Economics*, LI, 1937, pp. 181-3.

² This vitally important fact can, perhaps, be shown in another way. Professor Hicks' elimination of one equation depends on the fact that the value of the output (*i.e.*, of the received income) of any period equals the expenditure of that same period—the timeless interpretation of Say's Law holds. But if the expenditure takes place in the *following* period, as in the sequence analysis presented here, no longer need its value be *identical* to the value of the initial output—the sequence interpretation of Say's Law need not necessarily hold—and an additional *independent* equation makes its appearance and introduces another variable into the system.

³ J. R. Hicks, *loc. cit.*, *Econometrica*, V, 1937, pp. 147-59.

⁴ See *ibid.*, p. 156.

⁵ See *ibid.*, p. 157.

⁶ In his *A Contribution to the Theory of the Trade Cycle* (Oxford, 1950), Professor Hicks' application of a monetary analysis for a system in which the sequence interpretation of Say's Law holds (Chap. XI) to a real analysis in which it does not hold (Chap. XII) is completely inconsistent, since his more comprehensive model involving both the real and monetary aspects, if he had worked it out, is overdeterminate.

⁷ Cf. Professor Ohlin's "Introduction" to Wicksell's *Interest and Prices* (London, 1936), pp. xvii-xviii.

⁸ R. Frisch, "On Wicksell," in *The Development of Economic Thought*, H. W. Spiegel ed. (New York, 1952), pp. 652-99, and particularly pp. 683-93. Frisch, of course, does not present any special theory of the rate of interest: his only purpose is an analysis of Wicksell's theories.

⁹ See *ibid.*, pp. 668 and 684.

fused with Wicksell's "natural rate of interest." The natural rate is virtually the profit rate when interest charges are excluded from costs and included in profits.

The new system can then be written:

$$\begin{aligned} i_t &= L(Y_{t-1}, M_{t-1}) & K_t &= k(A_{t-1}, r_t) & S_t &= s(Y_{t-1}, i_t, r_t) \\ S_t &= K_t & E_t &= c(Y_{t-1}) & Y_t &= E_t + K_t \end{aligned} \quad (8)$$

dropping the L subscript for convenience, where i_t is the money rate of interest in period t and r_t the investment rate in the same period. A_{t-1} is a given parameter which will be explained in a moment. We then have six independent equations as before, but we now have six variables, Y_t , E_t , S_t , K_t , i_t and r_t , and three data, M_{t-1} , A_{t-1} and Y_{t-1} . The system is no longer overdeterminate. It remains, now, to explain how this system of equations functions.

As we have seen, in the case when income is not rising there are three uses to which the received income of any period can be devoted in the next, viz., consumption expenditure, investment expenditure and the holding of money (*i.e.*, hoarding). Similarly, if income is rising there will be a net expansion of credit and/or a depletion of existing hoards (*i.e.*, dishoarding). Consequently, these three avenues can be regarded as competitive uses to which income can be devoted, and the "prices" of all three must play a part in determining the "demand" for each one (or "supply" of dishoarding if income is increasing). For the sake of brevity consumption expenditure can be assumed to be given, so that we are left with only two competitive demands (one of which may be a supply) for received income: the demand for investible funds and the demand for (supply of) hoards.

The money rate of interest must not be thought of as the gilt-edged rate of interest. It can be regarded as the average rate of interest charged on bank overdrafts in any period; or, better still, it can be regarded as the Bank Rate. It is similar to the Keynesian concept of the "own" rate of interest of money.¹ The investment rate of interest, on the other hand, is the rate which rules in the investment market proper, the market where the demand for investible funds is brought into equality with the supply of investible funds. It is, consequently, the rate of return which suppliers of investible funds receive on the funds which they have locked up in new investment. It is very probable, therefore, and will be assumed here, that the supply of investible funds is directly related to the investment rate of interest: an increase (decrease) in the investment rate of interest tends, *cet. par.*, to increase (decrease) the supply of investible funds. $s_r (= \partial S_t / \partial r_t)$ is therefore positive.

Let us now consider the case when income is increasing so that net additional credit (assuming a continuous increase in income) is being drawn upon by the community to increase its expenditure in one period above its income in the previous period. It can be quite easily seen in this case that the supply of investible funds is inversely related to the money rate, since some of those who supply investible funds must run overdrafts to do so.

¹ See J. M. Keynes, *op. cit.*, pp. 222-3.

Such "savers" are, in fact, "borrowers."¹ But suppose that income is not rising. If the money rate of interest were zero anyone could become immediately liquid at no cost:² for anyone could incur a bank overdraft which would cost nothing. There would, therefore, be no incentive to hold as deposits or cash in any period some part of the received income of the previous period. Given the consumption expenditure of any period,³ then, the whole of the difference between the received income of the previous period and this amount would be devoted to the supply of investible funds in the period. On the other hand, if the money rate of interest were not zero, in an otherwise similar set of circumstances, the incentives to liquidity clearly show that the supply of investible funds will be reduced, since some part of the received income must be held in a liquid form to satisfy liquidity preference. It follows, therefore, that, given the various incentives to liquidity, *cet. par.*, the higher the money rate, the less the supply of investible funds, and, of course, vice versa. Consequently, the supply of investible funds is inversely related to the money rate. $s_i (= \partial S_t / \partial i_t)$ is negative.

Obviously since the supply of investible funds increases (decreases) with increasing (decreasing) income, $s_Y (= \partial S_t / \partial Y_{t-1})$ is positive. Therefore

$$dS_t = s_Y dY_{t-1} + s_i di_t + s_r dr_t \quad (9)$$

gives the change in the supply of investible funds in period t due to changes in any of the three variables Y_{t-1} , i_t and r_t : s_Y and $s_r = \partial S_t / \partial r_t$ are positive and s_i is negative.

In the case of increasing income it is obvious that, ignoring expectations, the investment rate must be higher than the money rate; otherwise some of those who supply investible funds, by running overdrafts, would incur a loss. But it does not follow that the supply of investible funds must be reduced to zero if the money rate is allowed to become greater than the investment rate. A larger amount of received income will probably be held in the form of money since the cost of becoming liquid has increased, but there is no reason at all for supposing that the supply of investible funds will fall to zero. In so far as a decrease in the supply of investible funds tends to raise the investment rate, and an increase in hoarding itself (*i.e.*, a reduction in the increase in income) tends, as will be shown in a moment, to reduce the money rate, the supply of investible funds need not fall as much as would otherwise be expected.⁴

The demand for investible funds is obviously inversely related, *cet. par.*, to the investment rate of interest: the higher (lower) the investment rate, the smaller (larger) the demand for investible funds. But the demand for

¹ I am indebted to Sir Dennis Robertson for pointing this out to me and thus forcing me to formulate the more general case.

² Of course, in practice, the banks would not lend freely to anyone without suitable collateral, but in such circumstances they would lend freely to the money market, and any charges made by the latter would not be in the nature of pure interest but rather in the nature of a risk premium or a service charge.

³ So that, in fact, consumption expenditure itself depends on, *inter alia*, both rates of interest.

⁴ Mr. Harrod does not share this point of view: cf. his *Towards a Dynamic Economics* (London, 1948), p. 70. Further, consumption expenditure may well be reduced.

investible funds is also a derived demand related in some way or other to expenditure on consumption goods, with or without a time-lag. It is not the purpose of this article to attempt to construct a comprehensive model which takes account of the accelerator, so that the other major factor affecting the demand for investible funds can be written in the completely non-committal form of an arbitrary parameter with a single-period time-lag, $A_{(t-1)}$. This parameter, of course, depends on, *inter alia*, expectations and the technical conditions of production. It can be so chosen, however, that the demand for investible funds is directly related to it. It follows, then, that

$$dK_t = k_A dA_{(t-1)} + k_r dr_t \quad (10)$$

where $k_A (= \partial K_t / \partial A_{(t-1)})$ is positive and $k_r (= \partial K_t / \partial r_t)$ negative.

Since for any one period Say's Law in its timeless interpretation holds, $dK_t = dS_t$, and it follows that

$$s_F dY_{(t-1)} + s_i di_t + s_r dr_t = k_A dA_{(t-1)} + k_r dr_t \quad (11)$$

So that

$$dr_t = \frac{k_A}{s_r - k_r} dA_{(t-1)} - \frac{s_F}{s_r - k_r} dY_{(t-1)} - \frac{s_i}{s_r - k_r} di_t \quad (12)$$

Since k_r is negative and s_r is positive, the denominator must be positive. k_A is positive so that, *cet. par.*, the investment rate increases with the parameter A . s_F is also positive so that, *cet. par.*, increasing income itself tends to reduce the investment rate: the s_F coefficient gives a trend value to the supply of investible funds, so that a change in their supply does not *solely* depend on changes in the rates of interest. Finally, since s_i is negative, *cet. par.*, the money rate and the investment rate move in the same direction.

Substituting this value for dr_t , we find that

$$dK_t = \frac{k_A s_r}{s_r - k_r} dA_{(t-1)} - \frac{k_r s_F}{s_r - k_r} dY_{(t-1)} - \frac{k_r s_i}{s_r - k_r} di_t \quad (13)$$

The demand for investible funds is thus directly related to the shift parameter, A , and to the increase in income, and inversely related to the money rate of interest.

Little need be said about the money rate of interest function, which, on total differentiation, becomes

$$di_t = L_F dY_{(t-1)} + L_M dM_{(t-1)} \quad (14)$$

It is fairly obvious that, *cet. par.*, an increase (decrease) in income tends to raise (lower) the money rate of interest, since dishoarding (hoarding) will at the same time be taking place. In the second place, if an increase (decrease) in the quantity of money is to take place, *cet. par.*, the money rate must be lowered (raised) in order to induce the community as a whole to spend the increased quantity of money (or to refrain from spending when a contraction in the quantity of money is required). Consequently, L_F is positive and L_M is negative.¹

¹ A comparison of equations (7) and (19) clearly shows that the multiplier is a *determinant* of the system and the velocity of money a *determinate*. It is therefore incorrect to apply a "multiplier," akin to velocity, to the quantity of money to arrive at a solution of the system, as has been attempted by V. Lutz, "Multiplier and Velocity Analysis: a Marriage," *Economica*, N.S. XXII, 1955, pp. 29-44. Prices must first be introduced into a multiplier analysis of the usual type (see

An interesting idea follows from this equation. If income is changing there must be some change in the quantity of money which will keep the money rate of interest constant, so that di_t is zero for every value of t . Such a limitation defines a type of neutral money system. So, assuming that L_F and L_M are constant, for such a neutral money system

$$dM_{(t-1)} = -\frac{L_F}{L_M} dY_{(t-1)} \quad (15)$$

Since L_M is negative, the change in the quantity of money and the change in income are directly related.

From the Fisherine quantity equation of money it follows that

$$v_{(t-1)} M_{(t-1)} = Y_{(t-1)} \quad (16)$$

where $v_{(t-1)}$ is the velocity of circulation in period $(t-1)$. Consequently,

$$v_{(t-1)} dM_{(t-1)} + M_{(t-1)} dv_{(t-1)} = dY_{(t-1)} \quad (17)$$

Under a neutral money system it follows that

$$dv_{(t-1)} = \frac{dY_{(t-1)}}{Y_{(t-1)}} v_{(t-1)} \left(1 + v_{(t-1)} \frac{L_F}{L_M}\right) \quad (18)$$

The change in the velocity, therefore, depends on the values of L_F and L_M . If the velocity of circulation itself is now to remain constant it follows that

$$1 + v_{(t-1)} \frac{L_F}{L_M} = 0 \quad (19)$$

Assuming constant coefficients, this condition can always be fulfilled: for, since the velocity of circulation varies directly with the length of the period chosen, the period can always be so chosen that equation (19) holds. This suggests the definition of a period for a lagged sequence analysis.

Another point can be noticed about equations (12), (13) and (14). When income is falling hoarding is positive. This hoarding directly tends to lower the money rate. *It has no direct effect on the investment rate*: only the supply of investible funds has a direct effect on this rate. In other words, hoarding must not be regarded as part of the supply of investible funds.² It is just here, of course, that the so-called virtues of "thrift" led the classical economists into confusion. Sir Dennis Robertson³ seems to arrive at a result somewhat similar to the one reached here, but his method of attack is roundabout and very difficult to apply in a more elaborate model.

According to the loanable funds theory "the rate of interest is the price that equates the supply of 'credit,' or saving *plus* the net increase in the quantity of money in a period, to the demand for 'credit,' or investment *plus*

my forthcoming article in *Economica*, "The Interaction of the Multiplier and Price Mechanisms"), and this then incorporated into a sequence analysis for the real nature of such a "marriage" to be demonstrated.

¹ It has, of course, an indirect effect on the investment rate which depends on, *inter alia*, the state of liquidity preference as shown by equation (12).

² When I was formulating my ideas on this theory I used the term "saving" in place of the term "supply of investible funds." When I then expressly excluded hoarding from "saving" it led to a great deal of confusion. I am indebted to Sir Dennis Robertson and to Mr. M. Gaskin for bringing this point to my notice and suggesting a change in terminology.

³ See D. H. Robertson, *Essays in Monetary Theory* (London, 1940), pp. 65-72.

net hoarding in a period.”¹ It obviously makes no difference to this theory of course, if hoarding is subtracted from saving rather than added to investment. For the loanable funds theory to be true, then, the supply of investible funds (including net hoarding) must be unaffected by the money rate of interest. The money rate could thus be assumed constant, with L_M and L_R zero: it is more reasonable to assume, however, that $s_t = 0$, so that the elasticity of supply of loanable funds with respect to the money rate of interest is zero. But if we assume that this elasticity is not zero, then our model leads to different results. In the loanable funds theory, an increase in hoarding must always tend to *increase* the hybrid rate of interest. Now an increase in hoarding must, firstly, tend to *reduce* the money rate and, by thus tending to *increase* the supply of investible funds, *reduce* the investment rate; secondly, however, an increase in hoarding itself implies a *decrease* in the supply of investible funds (taking consumption expenditure as given), and, therefore, sets up a tendency to *increase* the investment rate. In fact, assuming that $M_{(t-1)}$ and $A_{(t-1)}$ are constant, it follows directly from equations (12) and (14) that

$$dr_t = -dY_{(t-1)} \frac{1}{s_r - k_r} (s_r + s_i L_r) \equiv dH_{(t-1)} \frac{1}{s_r - k_r} (s_r + s_i L_r) \quad (20)$$

where $dH_{(t-1)} (\equiv -dY_{(t-1)})$ is the total increase in hoarding in period $(t-1)$. Since s_i and k_r are negative and all the other coefficients positive, the investment rate will increase, remain constant or decrease according as $\left| s_r \right| \begin{matrix} \geq \\ = \\ < \end{matrix} \left| s_i L_r \right|$, which is a reasonable condition.

The savings-investment theory of the rate of interest can be easily shown to be merely a particular case of the sequence model. In this theory income is assumed to be fixed at an equilibrium level so that the dY 's are zero. The quantity of money is also assumed constant so that $dM_{(t-1)} = 0$ and, therefore, $di_t = 0$, so that the money rate of interest is constant. Consequently, any change in the supply of investible funds is at the expense of an equal and opposite change in consumption expenditure—the Treasury View—so that the sequence interpretation of Say's Law is held to be valid. Investment, of course, is not affected by any accelerator (or it is assumed that no accelerator effect is present). Therefore, the (investment) rate of interest is determined by the equality of savings and investment.

It is not easy to link the general Keynesian system to our model, for, while income changes, both rates implicitly play a part; nevertheless, an attempt can be made. The supply of investible funds in the Keynesian system (*i.e.*, saving) is unaffected by the investment rate, so that $s_r = 0$ —the elasticity of supply of investible funds with respect to the investment rate is zero. Suppose now that the supply of investible funds, being unaffected by the investment rate, gives the value of investment—this is a fair assumption,

¹ A. P. Lerner, "Alternative Formulations of the Theory of Interest," *Economic Journal*, XLVIII, 1938, p. 213, italics in original. See also B. Ohlin, "Some Notes on the Stockholm Theory of Savings and Investment, II," *Economic Journal*, XLVII, 1937, pp. 224-5.

since Keynes ignores accelerator effects. Since s_i is negative, investment is thus negatively related to the money rate, just as in the Keynesian model. At the same time, however, Keynes assumes that $L_R = 0$ —the elasticity of interest with respect to income is zero. Under these rigid conditions and assumptions, then, the Keynesian model would appear to be merely a limiting case of a more general system.

In conclusion, one final point must be raised. Can the money rate of interest be identified with the short-term rate of interest and the investment rate of interest with the long-term rate of interest? ¹ No detailed examination of the problem can, of course, be undertaken here, and only one or two points will be advanced to support such an identification. In the first place the definitions of the two rates suggest an immediate identification. The money market is directly related to the supply of and the demand for money as such: in other words, it is the market where liquidity claims are brought into equilibrium with the available quantity of money, through, *inter alia*, movements in the short rate. So the short rate behaves in a way very similar to, and serves almost the same function as, the money rate.² The investment market proper is where the long-term rate is determined: it serves to help equate the demand for and the supply of "capital," and is, therefore, almost identical to the investment rate.

Secondly, can the relationship between the short and long rates be identified with the relationship between the money and investment rates? The effect of, say, a rise in the short rate is to force individuals to sell long-term securities; the market values of these securities fall and the long rate rises; and vice versa in the case of a fall in the short rate. It is, therefore, the change in the market values of existing securities which is the immediate cause of a change in the long rate,³ and this new long rate in turn affects new investment. In a sense, then, it can be said that the static situation determines the dynamic. In contrast, in the theory presented in this article, the effect of a change in the money rate is transmitted to the investment rate via the interaction of liquidity preference and the supply of investible funds directed towards new investment. The change in the market values of existing securities (not shown in the system of equations) is thus the effect of the change in the investment rate and not the cause. So in the model presented here it is the dynamic situation that determines the static. Nevertheless, the related movements in the short and long rates are virtually identical to the related movements in the money and investment rates, even

¹ I am indebted to Sir Dennis Robertson for suggesting this to me.

² Cf. Kalecki's definition of the short rate. "The short-term rate of interest is the remuneration for foregoing the convenience of holding cash in its pure form": M. Kalecki, *Theory of Dynamic Economics* (London, 1954), p. 74, italics added.

³ This would appear to be the general approach: see, *e.g.*, R. S. Sayers, *Modern Banking* (Oxford, 1947), pp. 141-9, and J. M. Keynes, *A Treatise on Money* (London, 1931), Vol. II, pp. 352-62. Cf., however, *ibid.*, p. 357, where Keynes assumes that the effect of the short rate on the long rate is direct and does not take place via changes in the market values of long-term securities. The assumption here, however, is not the same as the general relationship between the money and investment rates posited in this article, but is similar to the more restricted conditions postulated in the case when income is increasing.

although both mechanisms would appear to operate in a slightly different way.

Another consideration weighs very much in favour of the model presented here. In the classical and Keynesian systems there is only one rate of interest, presumably the long-term rate on gilt-edged.¹ The other (short-term) rate can always be brought in by an equation of the type

$$I_s = F(I_L) \quad \dots \quad (21)$$

where I_s is the short rate and I_L the long. Apart from showing that $F' > 0$ there has been no real attempt to show, in a *general* analysis, the exact shape of this function or its relation to the other variables (in particular to money and the supply of investible funds) of the economic system. In fact, for a system including this equation to remain consistent, F' cannot be regarded as an independent variable and must, therefore, be treated as a constant entirely independent of the other variables of the system. But if the system is analysed by means of a sequence model with the introduction of a lag into the income effect, a relationship such as equation (21) can be replaced by the theory worked out here, while at the same time a more exactly defined relationship, taking account of the general state of the economy, between the short (money) rate and the long (investment) rate can be discovered.

The ideas put forward in this article show that some sort of marriage between classical and Keynesian theories does provide a more reasonable set of hypotheses on which to build a sequence model with changing income to explain the rate of interest. The vital significance of the presence of investment (or dis-investment as the case may be) is surely changing income, and any attempt to construct a theory of the rate of interest by means of an equilibrium model in which income is constant is doomed to failure. There are fundamental truths in both types of equilibrium theory, but one method without the other is sterile. Liquidity preference and thrift both have parts to play—and important parts for a cyclical analysis. One of Robertson's many criticisms of Keynes' theory of the rate of interest was that it lumped together "in the same portmanteau those who desire to *hold* more money with those who desire to *use* it."² A similar criticism can be brought against the classical theory: it attempts to lump together in the same portmanteau those who desire to *use* more money with those who desire to *hold* it. Both holding and using must play their *distinct* parts, and their joint roles must not be lumped together into a loanable funds portmanteau packed so full of other classical what-nots that there is, in fact, no room for liquidity preference at all. At the same time the forces of productivity must be allowed to affect investment. This analysis presents only one form of dynamic model. There may well be many other forms; but the keynote of all such explanations must be *changing* income.

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¹ Cf. J. R. Hicks, *loc. cit.*, *ECONOMIC JOURNAL*, XLVI, 1936, p. 248.

² D. H. Robertson, *loc. cit.*, *Quarterly Journal of Economics*, LI, 1937, pp. 176–7, italics in original.

SOME THEORETICAL IMPLICATIONS OF INTERNATIONAL ASPECTS OF THE UNITED STATES RECESSION 1953/54

THE reaction of the American and also the Sterling Area balance of payments to the recession in output and stagnation in demand in the United States in 1953/54 was remarkable in its contrast to earlier experience. Because of the attendant circumstances, especially the relative insignificance of income changes in the United States after an initial fall, coupled with vigorous expansion in Europe, it may well shed light on some aspects of the theory of international trade. In the following we shall endeavour to analyse in particular the behaviour of United States imports and inquire how far it supports the "elasticity-optimism" that has shaped American international economic policy planning, though it has encountered increasing scepticism in Britain.

I

A great deal of effort and ingenuity has been expended since the war on sustaining the view, reaching back to Marshall,¹ that the impact effect² of price movements on the volume of international trade, even of important countries, *i.e.*, countries whose policies have an effect on the price of the commodities which they export or import, is considerable enough to warrant optimism on the smoothness of readjustments effected through the free (or at least only globally, *i.e.*, monetarily, managed) play of the price mechanism.³ These efforts were partly based on *a priori* reasoning, and partly on a skilful destruction of the significance of such statistical indications as were available, which all pointed to a relative non-responsiveness of foreign trade to price changes.

The immense inherent difficulties in the interpretation of foreign-trade statistics facilitated the defence of the accepted views. In this instance the vast number of simultaneously changing factors made any view but that derived from *a priori* reasoning difficult to sustain. In particular, it was

¹ Cf. Professor Haberler, "Some Comments on Professor Hansen's Note," *Review of Economics and Statistics*, 1944, p. 191, quoting Marshall (*Money, Credit and Commerce*, p. 171). It is interesting that Marshall seemed more optimistic for a "large and rich country" than smaller and non-industrial areas. He could, of course, not be expected to foresee a situation in which one large and rich country could in many respects be the equivalent of the rest of the world put together. His successors have no similar excuse.

² I have, in collaboration with Mr. Streeten, tried to show that the usual quasi-mathematical shorthand expression "elasticity of demand" tends to be misleading and inimical to clear thinking on matters of foreign economic policy. "The Inappropriateness of Simple Elasticity Concepts in the Analysis of Foreign Trade," *Institute of Statistics Bulletin*, Vol. 13, 1951, p. 65.

³ There should be less disagreement on the reaction of smaller countries exporting standardised commodities with world markets, though even in their case the legitimate doubt might well be entertained about the desirability of the consequences of price adjustments, *e.g.*, devaluation, on the home distribution of income.

difficult, if not impossible, to isolate income and price movements sufficiently to arrive at definite empirical conclusions. The crisis of 1929-33, for instance, was followed by violent efforts of countries to isolate themselves through increasingly effective protection. It was complicated by many other unique features.¹ In 1949 devaluation by Western Europe, on the other hand, all but coincided with a vigorous American recovery, thus making any isolation of the effects of the former virtually impossible. Moreover, a public discussion preceded the British decision to devalue, in which American official circles joined. Thus a speculative withholding of American purchases was encouraged, which even if it did not obviously depress imports² must have contributed to the pressure on prices. The subsequent increase in the willingness to purchase after devaluation thus had little to do with the basic inter-relationship between gross national product and relative price levels on the one hand and imports, especially from the Sterling Area, on the other. All this distorted and detracted from the heuristic value of the statistical material.

II

The proportionate decline in the American gross national product after a year from the peak was precisely the same, *i.e.*, 3.8% in 1948 and 1949 as in 1953 and 1954. The impact on foreign countries, however, was drastically different. Instead of a dramatic loss of reserves up to September 1949 (and a slight net loss for the calendar year, even after strong recovery of foreign gold holdings in the fourth quarter is included), foreign countries added some \$2.5 billion to their gold and dollar holdings.

Nothing shows more dramatically the change in the behaviour in the United States balance of payments than a comparison between actual development and the expectations elaborated by the National Planning Association³ on the basis of past experience. This is shown in Table I. When column (6), the actual out-turn in the first half of 1954, is contrasted with column (4), the projection on the basis of a decline of 3-4%, which actually took place, it is seen that the decline in United States imports amounted to only \$0.9 billion per annum instead of the expected \$2.2 billion per annum, *i.e.*, only little more than two-fifths. Despite a cut in United States Government aid of over \$1 billion, the out-turn was \$½ billion more favourable to the rest of the world than anticipated.

I do not wish to analyse at length the reasons for this rather startling difference. It has been done exhaustively by the Oxford Institute of Statistics.⁴

(a) The fact that U.S. military expenditures in Europe were low and falling in 1949, while they were large and rising up to 1954, must have played an important role: the proportion of the balance which is sensitive to

¹ *E.g.*, the reparations issue and the banking crisis.

² Cf. below on the volume of imports.

³ *The American Economy in 1960 and The U.S. Foreign Economic Policy.*

⁴ *Bulletin*, August 1954.

TABLE I
Projection of the United States Balance of Payments.

	1948.	1949.	1953.	1954 projected assuming decline in United States G.N.P. of:		1954, 1st half, actual annual rates.
				3-4%.	10%.	
	(1)	(2)	(3)	(4)	(5)	(6)
Exports of goods and services . . .	15.6	14.6	19.2	19.0	17.5	19.0
Less : Imports of goods and services .	10.0	9.2	16.2	14.0	12.0	15.3
Plus : Net receipts of investment income . . .	1.1	1.0	1.3	1.3	1.2	1.5
<i>Equals : Balance on goods, services and investment income . . .</i>	6.7	6.4	4.3	6.3	6.7	5.2
<i>Means of financing :</i>						
United States Government sources (net) . . .	5.0	6.0	6.2	6.2	6.2	5.0
United States private sources (net) . . .	1.5	1.1	0.7 ^a	1.3	0.7	1.7
Liquidation of gold and dollar assets by foreign countries and international institutions (net) ^b . . .	1.2	0.1	-2.5	-1.0	—	-1.5
Total means of financing . . .	7.7	7.2	4.4	6.5	6.9	5.2
Errors and omissions . . .	-1.0	-0.8	-0.1	-0.2	-0.2	—

^a Small amount of net financing by private sources in 1953 results from large repayments of old investments by countries accumulating gold and dollar balances.

^b Minus sign indicates foreign accumulation of gold and dollar assets.

Source: 1948-49, United States Department of Commerce.
1953 estimate and 1954 projections, National Planning Association.

“commercial changes” has decreased sharply. The increased availability of Western European supplies no doubt also exercised an important favourable influence because it enabled a displacement of some United States exports which had been essential previously. In the immediate post-war period the urgency for United States supplies was so great that the deterioration of the availability of dollars through a fall in American imports immediately plunged the rest of the world into a painful crisis, as purchases in the United States could not be restricted. Moreover, anticipatory speculative movements of “hot” capital in the past vastly exaggerated the loss of reserves and were the proximate cause of the crises of 1947, 1949 and 1951.

(b) There was also a remarkable difference in the pattern of American export-competition in world markets. This is shown in Table II. In 1949 United States prices fell by more than 10%. As British prices rose somewhat in the same period, a slightly greater gap opened. If the relation of British and American export prices in August 1948 is taken as 100, it fell to 89.5 a year later, on the eve of devaluation. The relation of British to American export prices in June 1954, after a whole year of American recession or stagnation, which left United States productive capacity some 10-12% under-employed, were slightly more favourable than they had been before

TABLE IIA

*Relation of United Kingdom and United States Export Price Indices 1948-49**Relationship: August 1948 = 100*

	United Kingdom.	United States.	Relationship.
1948:			
August	111	135	100
September	112	133	97.7
October	112	133	97.7
November	111	132	97.8
December	—	131	—
1949:			
January	113	132	96.1
February	112	130	95.5
March	112	128	94
April	112	128	94
May	113	126	91.7
June	113	126	91.7
July	113	123	89.5
August	113	123	89.5
September	113	123	89.5
October	113	120	87.3
November	114	120	86.6
December	115	121	86.5

TABLE IIB

*Relation of United Kingdom and United States Export Price Indices 1953-54**Relationship: January 1953 = 100*

	United Kingdom.	United States.	Relationship.
1953:			
January	101	205	100
February	101	204	99.5
March	101	205	100
April	100	203	100
May	100	203	100
June	99	201	100
July	100	202	99.5
August	100	203	100
September	100	204	100.5
October	100	204	100.5
November	99	204	101.5
December	99	203	101
1954:			
January	99	203	101
February	99	202	100.5
March	99	203	101
April	99	203	101
May	99	203	101
June	99	203	101

the start of the United States recession, despite the expansion of United Kingdom output and income by some 5%. This contrast is undoubtedly the outcome and a symptom of the favourable psychological atmosphere in managerial circles due to the existence of a Conservative Government and of the growing concentration of entrepreneurial decisions in the United States. These factors acting together prevented not merely the oft-predicted cumulative shrinkage in internal productive investment;¹ but also the cut-throat competition for markets which might have been equally anticipated on the basis of past experience.

It is notable that American exports were not only maintained after an initial dip but in the second quarter of 1954 increased appreciably and, in the view of the President's economic advisers, substantially contributed to the lessening of the deflationary pressure on American internal economic activity. This expansion of exports was to a large extent due to the vigorous recovery in Europe and the related overseas area, sustained despite the United States recession, which carried industrial output in the former up to 20% above the previous years' levels. Cheap (surplus) food exports no doubt contributed to this effect but cannot account for more than a portion of the difference.

This expansion is also due to the remarkable technical progress in the United States, which maintains demand abroad for American products, despite less favourable price relations because of the improvements² em-

TABLE III

Wages and Productivity in United States Manufacturing

	Prices.	Average gross wages.	Real wages.	Output per man.	Money efficiency wages.
	1947-49 = 100.	1939 = 100.			
1947	95.5	194	118	124	156.5
1948	102.8	213	118	127	167.7
1949	101.8	221	127	127	174.0
1950	102.8	231	127	137	168.6
1951	111.0	251	132	141	178.0
1952	113.5	264	136	141	187.2
1953	114.4	280	136	145	193.1

bodied. It should be noted that though money wages in the United States seem to have been increasing only slightly faster than output per man, real wages increased significantly less than efficiency. The increase in productivity seems to have contributed to the relative slowness of the rise

¹ Thus American fixed investment continued to add between 3½ and 4% per annum to American productive capacity, and modernised an even larger fraction, despite the stagnation of demand. The policy of agricultural price support was equally active in both periods.

² A stepping up of advertisement and improved credit terms, i.e., the other paraphernalia of non-price competition in which America excels would have the same effect.

in money-efficiency wages which exerted some pressure on foreign countries where labour was in a better bargaining position.

The notable independence of European economic activity from the United States recession would not have been possible if the European balance of payments had not been buttressed by non-commercial receipts of dollars. Had an outflow of reserves started, "confidence" in the European Governments—so startlingly in contrast to previous occasions—would obviously have vanished speedily. As it was, however, confidence in the European Governments *was* maintained, rumours about an impending devaluation were *not* put about, and thus Europe was enabled to sustain her recovery. I shall return to this point presently.

III

Remarkable as this development is, the reaction of American demand for foreign products is of an even greater interest.

In the first place there can be little doubt that foreign countries could hardly have maintained their demand for United States exports had the slump in United States imports been of the expected magnitude: given the relative weakness of the reserve position of foreign countries, the reaction could not have been symmetrical: foreign countries would have been soon forced to restrict imports, and after the general abandonment, or weakening, of discriminating controls, this would only have been feasible by a general restriction of credit.

In the second place the development can be studied in a period of singularly important conjuncture: the United States attained in the first half of 1954 a position of stability at roughly 10–12% under-employment of existing productive equipment.¹ Thus speculative anticipations about a further considerable fall of imports due to United States causes were absent. Neither were there, on the other hand, rumours of devaluation elsewhere and thus speculative withholdings of American orders on account of factors acting from the outside. Confidence in the United States and British Governments provided the basis for stability. Thus the consequences of the initial United States income effect can be studied uncomplicated on either side by speculation.

Finally, the decline in the United States gross national product was, as we have already mentioned, not accompanied by a slump in Western Europe. On the contrary, output in European countries increased by anything between 5 and 20%, and this explained the increase in American exports. The consequences of this startlingly unexpected contrasting development was first the maintenance of the general level of prices outside America and then their gentle rise. The contrasting picture is analysed in Table IV.

While the unit value of United States imports fell all but 10% in 1949 there was an almost complete stability in 1953/54. As gross national product fell by the same proportion in the United States on both occasions, a far greater shrinkage of United States imports might have been expected in the

¹ Unemployment was significantly less.

TABLE IV
United States

Period.	Gross national product seasonally adjusted annual rates (1).	Industrial production (adjusted) (2).	Value of imports (3).	Volume of imports (4).	Unit value of imports (5).	Volume of imports in relation to industrial production (6) = (4)/(2).	Value of imports in relation to gross national product (7) = (3)/(1).
<i>Base : June 1948 = 100</i>							
1948:							
3rd quarter	102	99	97	94	102	96	94
4th quarter	105	101	103	100	102	99	98
1949:							
1st quarter	103	98	97	96	101	98	94
2nd quarter	103	91	87	91	96	100	84
3rd quarter	102	88	82	87	94	99	81
4th quarter	102	90	96	103	93	115	94
1950:							
1st quarter	105	95	103	108	96	113	98
2nd quarter	111	102	105	107	98	105	95
<i>Base : January 1953 = 100</i>							
1953:							
1st quarter	100	101	100	99	100	98	100
2nd quarter	103	101	102	102	100	101	100
3rd quarter	101	98	97	96	100	97	96
4th quarter	100	94	93	93	100	99	93
1954:							
1st quarter	98	90	92	91	100	101	94
2nd quarter	98	90	100	92	104	105	102

second instance on the hypothesis that the quantum of world trade reacts quickly and violently to relative price changes (especially as the income effect in Europe and elsewhere worked in the same direction).¹ Indeed, the projections shown in Table I did, quite reasonably, anticipate such a reaction, even though the National Planning Association, equally reasonably, did not even assume that the *fall* in the American national product would be accompanied by an *increase* in the European. This relative "inflation" in Europe ought to have brought retribution additional to that anticipated by the projection.

In fact, the deterioration was much less in the second than in the first period. Table IV contrasts the relationship between the evolution of the "money" and "real" sphere in United States production and imports. It is seen (Col. 6) that imports declined rather less than the volume of industrial production (after a slight relative fall in the third and fourth quarters of 1953). In this the experience is not very different to that of 1948/49. In

¹ The continuance of the rise in the volume of imports between the fourth quarter of 1949 and first quarter of 1950, despite an increase in prices, shows the importance of the recovery and of the cessation of speculative withholding of demand on the volume of United States imports in that period.

both cases imports were obviously primarily influenced by the volume of industrial production. The contrast on the monetary side, however, is marked: the value of imports (in distinction to their volume) did show a sharp (20%) fall relative to national product in 1949 before devaluation. In 1953/54 the decline was much less (7%) and only temporary. Though the national product did not recover, the value of imports did—despite a rise in price and despite the stagnation in income. Relative price movements did not seem to have had any effect on the volume of United States imports.¹ Devaluation (and even more the speculative anticipation of devaluation) seems to have worsened the total supply of dollars. If speculative movements can be avoided or squashed there is no justification for a change in exchange rates, at any rate on the basis of the demand reaction in the United States.²

Finally, Table V analyses the geographical impact. It is seen:

- (a) that the seeming closing of the dollar gap in 1954 was due—
- (i) to rising military expenditure (at the annual rate of \$2.4 billion),
 - (ii) to unilateral transfers (\$1.3 billion per annum),
 - (iii) to heavy United States private capital export,
 - (iv) to the maintenance of non-military imports;

(b) that the impact effect on the Sterling Area was also much less violent than in 1948, 23% in 1953/54 as against 38%. It was still sharper than the fall of total imports, which was 13 and 21% respectively between the extreme points.

As the fall in Sterling Area prices was particularly severe in 1948/49 the inference is obvious: "flexible" (dollar) prices do not promote favourable balance of payments for the weaker or dominated country.

¹ This does not mean that United States demand in the long run is not sensitive to violent increases in foreign prices by way of an increase of United States production (decrease of waste), though it is doubtful whether a considerable substitution of wool by synthetic fibres (amounting since the war to some 6-8 million bales or roughly equivalent to 16½% of the Australian production) and of rubber by artificial rubber would not have taken place even if wool and rubber had been continuously available. The same is the case in the displacement of tin by plastics and other materials. Admittedly, even this asymmetric reaction need not be reversible. It might well be, for instance, that though the increase in foreign prices stimulated American production, a subsequent drop would not increase American demand for foreign products. American protection might be increased rather than imports. And on the basis of economic arguments alone such protection might well be justified. One can hardly help being impatient with pleas for freer trade in the United States which are based not on the argument of helping other countries (which is certainly morally desirable and may be a political necessity) but on the argument of increasing the United States standard of life. The average United States standard of life is far too high relatively to other countries in any case, and it is increasing, if anything, faster. Liberalisation, on the other hand, might hit certain sections of the United States population very hard. There is no domestic economic reason which would justify such repressive redistribution of income in the United States.

² Export competition in third markets might be a better justification. But if a United States depression is the cause of heightened export competition, it can be shown that a sufficiently large number of countries have an interest in discriminating against United States imports to make that policy preferable to devaluation (given the unfavourable reaction of United States import demand to devaluation).

TABLE V
Balance of Payments of the United States

	ALL AREAS			\$ million		
	1948.			1949.		
	1st quarter.	2nd quarter.	Half-year.	1st quarter.	2nd quarter.	Half-year.
Exports of goods and services:						
Total	4,413	4,231	8,644	4,266	4,414	8,680
Less unilateral military transfers	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Net total	4,413	4,231	8,644	4,266	4,414	8,680
Imports of goods and services:						
Military expenditures	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Other	2,523	2,534	5,057	2,608	2,422	5,030
Total	2,523	2,534	5,057	2,608	2,422	5,030
Balance	1,890	1,697	3,587	1,658	1,992	3,650
United States private capital (net outflow —)	—148	—266	—414	—159	—189	—348
Other unilateral private transfers (net outflow —)	—176	—159	—335	—147	—141	—288
Overall Balance	1,566	1,272	2,838	1,352	1,662	3,014
United States Government credits and grants	—1,366	—972	—2,338	—1,569	—1,602	—3,171
Balance on foreign capital and gold	—555	—485	—1,040	100	—236	—136

	1953.			1954.		
	1st quarter.	2nd quarter.	Half-year.	1st quarter.	2nd quarter.	Half-year.
Exports of goods and services:						
Total	5,425	5,750	11,175	4,767	5,699	10,466
Less unilateral military transfers	1,282	1,385	2,667	826	996	1,822
Net total	4,143	4,365	8,508	3,941	4,703	8,644
Imports of goods and services:						
Military expenditures	464	473	937	592	608	1,200
Other	3,573	3,840	7,413	3,125	3,521	6,646
Total	4,037	4,313	8,350	3,717	4,129	7,846
Balance	106	52	158	224	574	798
United States private capital (net outflow —)	—219	100	—119	—328	—316	—644
Other unilateral private transfers (net outflow —)	—120	—122	—242	—106	—110	—216
Overall Balance	—233	30	—203	—210	148	—62
United States Government credits and grants	—496	—592	—1,088	—302	—381	—683
Balance on foreign capital and gold	758	398	1,156	499	260	759

Source: *Survey of Current Business*.

TABLE V—continued
Balance of Payments of the United States
UNITED KINGDOM

	1948 quarterly average.	1949.		
		1st quarter.	2nd quarter.	Half-year.
Exports of goods and services:				
Total	260	281	329	610
Less unilateral military transfers	n.a.	n.a.	n.a.	n.a.
Net total	260	281	329	610
Imports of goods and services:				
Military expenditures	n.a.	n.a.	n.a.	n.a.
Other	205	242	199	441
Total	205	242	199	441
Balance	55	39	130	169
United States private capital (net outflow —)	— 5	— 4	— 6	— 10
Other unilateral private transfers (net outflow —)	— 11	— 9	— 12	— 21
Overall Balance	39	26	112	138
United States Government credits and grants (excluding military transfers)	— 241	— 276	— 296	— 572
Balance on foreign capital and gold	— 131	— 41	— 252	— 293

	1953.			1954.		
	1st quarter.	2nd quarter.	Half-year.	1st quarter.	2nd quarter.	Half-year.
Exports of goods and services:						
Total	271	260	531	244	284	528
Less unilateral military transfers	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Net total	271	260	531	244	284	528
Imports of goods and services:						
Military expenditures	33	35	68	67	77	144
Other	277	320	597	238	294	532
Total	310	355	665	305	371	676
Balance	— 39	— 95	— 134	— 61	— 87	— 148
United States private capital (net outflow —)	3	32	35	38	— 23	15
Other unilateral private transfers (net outflow —)	— 9	— 9	— 18	— 8	— 11	— 19
Overall Balance	— 45	— 72	— 117	— 31	— 121	— 152
United States Government credits and grants (excluding military grants)	— 95	— 65	— 160	— 39	— 19	— 58
Balance on foreign capital and gold	325	192	517	126	262	388

Source: Survey of Current Business.

TABLE V—continued
Balance of payments of the United States
TOTAL STERLING AREA

	1948 quarterly average.	1949.		
		1st quarter.	2nd quarter.	Half-year.
Exports of goods and services:				
Total	659	658	743	1401
Less unilateral military transfers	n.a.	n.a.	n.a.	n.a.
Net total	659	658	743	1401
Imports of goods and services:				
Military expenditures	n.a.	n.a.	n.a.	n.a.
Other	493	534	441	975
Total	493	534	441	975
Balance	166	124	302	426
United States private capital (net outflow —)	— 22	—	— 13	— 13
Other unilateral private transfers (net outflow —)	— 19	— 19	— 20	— 39
Overall Balance	125	105	269	374
United States Government credits and grants	— 241	— 289	— 327	— 616
Balance on foreign capital and gold	— 260	— 104	— 273	— 377

	1953.			1954.		
	1st quarter.	2nd quarter.	Half-year.	1st quarter.	2nd quarter.	Half-year.
Exports of goods and services:						
Total	644	585	1,229	545	681	1,226
Less unilateral military transfers	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Net total	644	585	1,229	545	681	1,226
Imports of goods and services:						
Military expenditures	50	53	103	87	97	184
Other	636	683	1,319	515	620	1,135
Total	686	736	1,422	602	717	1,319
Balance	— 42	— 151	— 193	— 57	— 36	— 93
United States private capital (net outflow —)	— 22	17	— 5	34	— 25	9
Other unilateral private transfers (net outflow —)	— 24	— 20	— 44	— 19	— 23	— 42
Overall Balance	— 88	— 154	— 242	— 42	— 84	— 126
United States Government credits and grants (excluding military transfers)	— 120	— 96	— 216	— 56	— 38	— 94
Balance on foreign capital and gold	353	209	562	107	268	375

Source: Survey of Current Business.

It could be argued, of course, that the relative stability of American imports in the face of price increases might be due to the relative insensitivity of the *raw-material* and *food-imports* to price changes and that, *tanto quanto*, a devaluation of the currencies of the countries which compete with American *manufactures* might still be helpful. The statistical material available is too scanty to enable the forming of a definite conclusion. Such as it is it certainly does not support this contention. The detailed yearly figures available up to 1952 indicate that the decline between 1948 and 1949 in the price of finished manufactures was slightly less than that of raw materials: $3\frac{1}{2}\%$ as against 4% . The decline in the volume of imports of the former was significantly smaller. In the second period for which the same detail is not available the value of imports of finished raw materials whose price again moved much in the same proportion as that of crude raw materials declined significantly less.

TABLE VI

Value of United States Imports for Consumption (by Economic Classes)

Monthly averages.	Crude materials.	Crude foodstuffs.	Manufactured foodstuffs and beverages.	Semi-manufactures.	Finished manufactures.
<i>Base: June 1948 = 100</i>					
1948:					
Sept. quarter .	92.1	84.6	108.7	104.9	99.8
Dec. quarter .	88.2	114.6	103.8	108.6	111.3
1949:					
March quarter .	85.2	106.2	98.7	99.4	104.1
June quarter .	76.4	94.9	108.2	83.3	93.9
Sept. quarter .	72.0	89.7	105.8	76.6	89.8
Dec. quarter .	81.1	125.8	91.7	96.4	97.6
1950:					
March quarter .	91.1	131.8	100.8	103.5	96.6
June quarter .	87.1	108.1	116.2	120.1	109.0
<i>Base: January 1953 = 100</i>					
1953:					
March quarter .	95.9	100.4	104.4	101.8	103.0
June quarter .	95.0	89.9	120.4	111.9	106.4
Sept. quarter .	91.3	89.7	115.4	97.9	102.1
Dec. quarter .	86.5	101.7	92.2	84.2	105.4
1954:					
March quarter .	86.6	112.6	104.3	77.2	92.1
June quarter .	88.7	106.5	132.6	88.5	107.8

Source: *Survey of Current Business*.

IV. CONCLUSION

I do not wish to generalise from this single and possibly singular experience. The dangers of doing so and of evolving general "laws" for foreign-trade "elasticities," and by extrapolation deriving policy recommendations, have been demonstrated only too abundantly in recent years. I have no

doubt that there is a critical point in the relation of the volume of United States to other Western national products below which United States imports may well decline even relatively to United States income, thus giving the impression (possibly quite falsely¹) of a more considerable price effect, an effect which was so conspicuously absent in 1953-54.

What stands out clearly is that the common-sense view, which held that United States imports at under-employment levels are not sensitive to prices either upward or downward seems to have been borne out by the developments of the past two years. The explanation does not seem difficult. On the one hand, the import price has relatively little to do with the final retail prices charged for the finished goods imported and even less for the prices of the final products into which the raw materials imported enter. On the other hand, decreases in the price of competitive products would be matched by the under-employed economy or protective measures would be enacted. It was the confidence in the maintenance of stability of currencies which prevented speculation in 1954 and thus enabled the European countries to maintain this recovery and thus exploit the irresponsiveness of the United States foreign balance to foreign price-movements to the full. Rumours of devaluation or fluctuating exchanges might well have aggravated their own cause and increased the strain, both directly and through the inevitable anticipatory speculation. The United States Government by its military expenditure and aid policy happened to achieve the anti-cyclical effect which was (quite unjustifiably) hoped from the establishment of the various international institutions. The question remains, of course, whether in the absence of international tension a non-military increase in aid or other expenditure will be politically practicable in case of a future United States depression.

Whatever may be the answer to that—political—question the developments of the past years clearly put the (price) "elasticity-optimists," those who retain their faith in the sharp impact effect of price movements on the volume of international trade even at under-employment levels, who therefore favour devaluation, or even fluctuating exchange rates in those circumstances, under a pressing obligation to reassess the implications on their views of the statistical evidence on evolution of international trade in the past year.

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¹ Because the fall may well be due to the expansion in Europe. The exceptionally favourable development of the balance of payments of Europe in this unfavourable period certainly had a lasting consequence: the liberalisation of restrictions on dollar imports all but doubled United Kingdom dollar imports at \$237 million between the first quarters of 1954 and 1955, while exports to the United States increased by only \$25 million to \$140 million. The development of the Western European trade balance with the United States was similar. Thus the policy of liberalisation permitted an expansion of United States exports without a sensible worsening of the terms of trade.

THE EFFECT OF DEPRECIATION ON THE OUTPUT-CAPITAL COEFFICIENT OF A FIRM¹

1. INTRODUCTION

A PROPORTIONATE fall in output need not accompany the decline in value over time which characterises depreciable capital equipment. The decline in value of such assets may be the result of one or more of the following factors: (1) attrition of useful life, (2) rising repair costs, and (3) falling output. Factors (1) and (2), either singly or in combination, are sufficient to bring about a decline in the value of capital equipment over time, output per period of remaining life suffering no decline whatsoever. In fact, so long as asset life is not infinite (factor (1) is not zero), it is difficult to conceive of output falling as rapidly as value at each and every point in time. Ordinarily the output path is less steep than is the value path, and in certain conceivable cases output may not fall at all.

In general then, the disparity between capacity output and capital value can be expected to increase as capital equipment ages. For a firm as a whole it follows that the age distribution of its assets can exercise a profound effect (we shall term it the *depreciation effect*) on the relationship between capacity output and capital value. As the average age of capital equipment increases relative to useful life, the output-capital coefficient can be expected to increase also; on the other hand, as average age decreases, say by the rapid addition of new capital equipment to an old firm, the output-capital ratio can be expected to decrease.

A few of the consequences of the depreciation effect, which will be developed more fully and rigorously in subsequent pages, can be sketched. A firm entering an industry with new capital equipment will find it impossible to maintain *both* capacity output and capital value at their original levels. Therefore, if maximum productive efficiency is associated with a firm of a particular physical size, the maintenance of that size will involve financial manipulations. Further, as the *value* of new assets must be greater than that of older assets, entry into an industry with new assets may be blocked by restrictions in the capital market; in any case, such restrictions will be a factor favouring the acquisition of an old firm. On the other hand, if optimum size covers a range of outputs (or increases over time), the depreciation effect provides an ordinarily unnoticed opportunity for the new firm. Without increasing its capital value, *i.e.*, without investing additional funds, the new firm can increase its capacity output (and its share of the market if that grows at a slower pace) simply by reinvesting income-covered depreciation charges within the firm.

The analysis also has significance for aggregative problems. The output-

¹ The author has benefited from the criticisms of Professors Baumol and Gurley. Funds from the John Simon Guggenheim Memorial Foundation are gratefully acknowledged.

capital coefficient, useful in forecasting and in models of economic growth,¹ is itself not independent of the age distribution of capital equipment and therefore of changes in the rate of growth. On still another level of analysis, studies of the concentration of industry (in the sense of capacity output) can be criticised when based upon measures of asset value, if differences in rates of growth as between large and small firms are ignored.²

2. THE ANALYSIS

The depreciation effect is *not* the result of errors in computing depreciation charges. To make this absolutely clear, we shall develop the analysis upon the assumption that the straight-line technique yields equal periodic charges that accurately reflect reductions in an asset's present value, N .³ Assuming scrap value is zero and using G to indicate replacement cost, i for the interest rate and n for equipment life, the following definitions for a single asset are established:

$$\begin{aligned}\text{Depreciation} &= G/n = N_0 - N_1 = N_1 - N_2 = N_2 - N_3 \dots = N_{n-1} - 0. \\ \text{Profit rate} &= i. \\ \text{Profit} &= iN_{t-1}. \\ \text{Net Receipts} &= G/n + iN_{t-1}.\end{aligned}$$

The assumption also implies: (1) that asset prices are constant, and (2) that the efficiency of the asset (defined in terms of net receipts) declines with age (by iG/n per period).⁴ If output and factor prices are constant, the decline in efficiency must result from a decline in output, a rise in repair costs or both.

Our first task is to show that capacity output and capital value do not generally move together as capital equipment ages. On the contrary we will maintain that replacement cost (equals original cost by assumption) is generally a much better index of capacity output, and that it is an exact index under some not unrealistic circumstances. Having established this, we can use the ratio of replacement cost to capital value as an approxima-

¹ The assumption that this coefficient is constant has been used as an aid in forecasting. (See *The Economic Report of the President* (January 1953), p. 91, and United States Department of Commerce, *Markets after the Defense Expansion* (Washington, 1952), p. 34. It has been an important assumption also in the discussions of the growth models initiated by Harrod and Domar. See, for example, R. F. Harrod, "An Essay in Dynamic Theory," *Economic Journal*, Vol. XLIX (March 1939), and Evsey Domar, "Expansion and Employment," *American Economic Review*, Vol. XXXVII, No. 1 (March 1947). So long as the rate of growth is also assumed to be constant over a long period of time, the depreciation effect is of no significance. As these models are made more realistic, however, the depreciation effect assumes importance.

² For example, Federal Trade Commission, *Report on the Concentration of Productive Facilities* (Washington, 1949), and M. A. Adelman, "The Measurement of Industrial Concentration," *Review of Economics and Statistics*, Vol. XXXIII (Nov. 1951), pp. 269-96. An alternative measure will be suggested below.

³ If the technique yields only approximate results, the relationships developed will still hold for book values. The additional consequences that result will be touched upon toward the end of the paper.

⁴ Compare with the "one-hoss-shay" type of asset so often assumed in economic analysis. The constant efficiency asset, characterised by both constant output and constant repair costs, requires a compound-interest depreciation method by which depreciation charges rise over time.

tion to the capacity-output-capital-value ratio upon whose movements our analysis depends.

Variations in Value and Output for the Single Asset

The value of a firm's output, P , at constant prices is simply the sum of variable costs (which are assumed to increase proportionately with output kP); fixed costs (including depreciation and minimum maintenance costs F); repair costs (related to age of capital equipment), M ; and profit, I . Thus

$$P_t = kP_t + F + M_t + H_t = \frac{F + M_t + H_t}{1 - k}.$$

But $H_t = iN_{t-1}$, and as the present value of the asset, by definition, equals its original cost, G , minus its depreciation to date, $(t-1)G/n$, $H_t = iG - (t-1)iG/n$, and we have

$$P_t = \frac{F + M_t + iG[1 - (t-1)/n]}{1 - k}.$$

The index of capacity output must be

$$(1) \quad \frac{P_t}{P_1} = \frac{F + M_t + iG[1 - (t-1)/n]}{F + iG}.$$

Since we have assumed a constant replacement cost, G , of the asset, $G_{t-1} = G_0 = G$, and for the single asset the index of replacement cost is

$$(2) \quad \frac{G_{t-1}}{G_0} = 1$$

Finally, since the capital value, N , equals G at $t = 0$, and declines by G/n each period, the index of capital value is

$$(3) \quad \frac{N_{t-1}}{N_0} = \frac{G - (t-1)G/n}{G} = 1 - (t-1)/n$$

We have the following relationship:¹

$$[1 - (t-1)/n] \leq \frac{F + M_t + iG[1 - (t-1)/n]}{F + iG} \leq 1.$$

All three indexes are equal only when $t = 1$ or when $M_t = 0$ and $n \rightarrow \infty$. The first avoids the problem and the second holds only for non-depreciable assets. There are also some unrealistic values of i for which values of two indexes will be equal.²

¹ The inequality on the left can be verified by assuming the reverse, i.e., that

$$1 - (t-1)/n > \frac{F + M_t + iG[1 - (t-1)/n]}{F + iG}.$$

Multiplying both sides by $F + iG$ yields $F + iG - F(t-1)/n - iG(t-1)/n > F + M_t + iG[1 - (t-1)/n]$, i.e., $-F(t-1)/n > M_t$, which is clearly false.

² This can be seen as follows: Subtracting 1 from each index and dividing all by $[(t-1)/n]$ we have

$$-1 \leq \frac{\frac{M_t}{F + iG} - 1}{\frac{F}{iG} + 1} \leq 0$$

The value index (corresponding to -1) is an exact index of output only if $i \rightarrow \infty$. On the other hand, replacement cost (corresponding to 0) is an exact index if $i = 0$.

Among the more realistic possibilities, we can distinguish two extreme cases. On the one hand, output may remain constant, the total requisite fall in profit (and net receipts) being solely the result of rising repair costs. In this case replacement cost is an exact index of capacity output ($M_t = (t-1)iG/n$).¹

On the other hand, the requisite fall in profit may stem exclusively from falling output, repair costs remaining constant. As constant repair costs are included in F , M_t becomes zero. Subtracting 1 from each index and dividing all by $[(t-1)/n]$ we get

$$(4) \quad -1 < \frac{-1}{\frac{F}{iG} + 1} < 0$$

Value and replacement cost are equally good indexes of output in this case if $F = iG$, i.e., if fixed costs per period are equal to profit in the first period (or the hypothetical profit that would be made in any period if assets were new); value is the better index if $F < iG$, replacement cost if $F > iG$. There appears to be little reason to prefer one index to the other.²

From the one extreme, then, where one index may be as good as the other, we find replacement cost steadily improving its advantage over capital value as an index of capacity output as the proportion of the fall in profit which is the result of increasing repair costs rises until the other extreme is reached where replacement cost is an exact index of capacity output. In the realistic area between the extremes there seems little reason to doubt the superiority of replacement cost as a capacity index.³ We shall assume in succeeding

¹ Profit in the first period is iG , because $N_0 = G$. For the profit rate, $iG/N_0 = i$, to be constant period after period, the periodic fall in profit must equal interest on the fall in capital value, i.e., interest on the depreciation charge or iG/n .

² Fixed costs under our construction include minimum maintenance costs and depreciation, as well as the usual interest and basic salaries paid regardless of the level of output. Whether these would amount to less than the interest rate applied to replacement cost is a moot question. Let us assume, however, that depreciation is the only fixed cost. F/iG becomes $(G/n)/iG$, i.e., $1/n$. As $1/n$ is the depreciation rate, we can say that asset value as an index of capacity output is better than, equal to or poorer than replacement cost, depending upon whether the depreciation rate is less than, equal to or greater than the rate of interest. In industries where capital equipment has a long life the value index of output is likely to be better than it is in industries operating relatively short-lived equipment. Even in such cases, however, the existence of fixed costs other than depreciation makes it highly doubtful that value is better than replacement cost as an index of capacity output.

³ If the straight-line method is inaccurate but used nevertheless, the two series of book figures which ensue can still be evaluated as capacity indexes. Assuming estimates of asset life are correct, straight-line depreciation can be inappropriate because the stream of net receipts stemming from the use of the asset diminishes with asset age too slowly or too rapidly. If net receipts diminish solely because of rising repair costs, gross fixed assets (the book figure for original cost) is an accurate index of capacity regardless of the rate of diminution and, for that matter, regardless of the depreciation technique used. If the diminution is the result solely of falling output, gross fixed assets is a better index the slower the rate of diminution. The depreciation technique consistent with the "one-hoss-shay" type of asset so often assumed by economists (neither falling output nor rising repair costs) is but another example in which output does not fall so that replacement cost is an exact index of capacity output. If assets are depreciated over a period shorter than asset life, as in accelerated depreciation, the net book figure is clearly an inferior index of output capacity.

sections that replacement cost is an *exact* index of output. In those cases where this assumption results in an exaggeration of the error involved in relying on capital value as an index of output the advantage remains that it provides a well-defined bench-mark from which modifications can be made with relative ease.

Reinvestment of Depreciation Allowances by the Firm

As we have seen, constancy of a firm's asset value does not imply constant output because of the depreciation effect. We shall now argue that with the

Changes in Replacement Cost and Equipment Value Associated with a Given Asset Value

(Equipment Life = Two Interinvestment Periods)

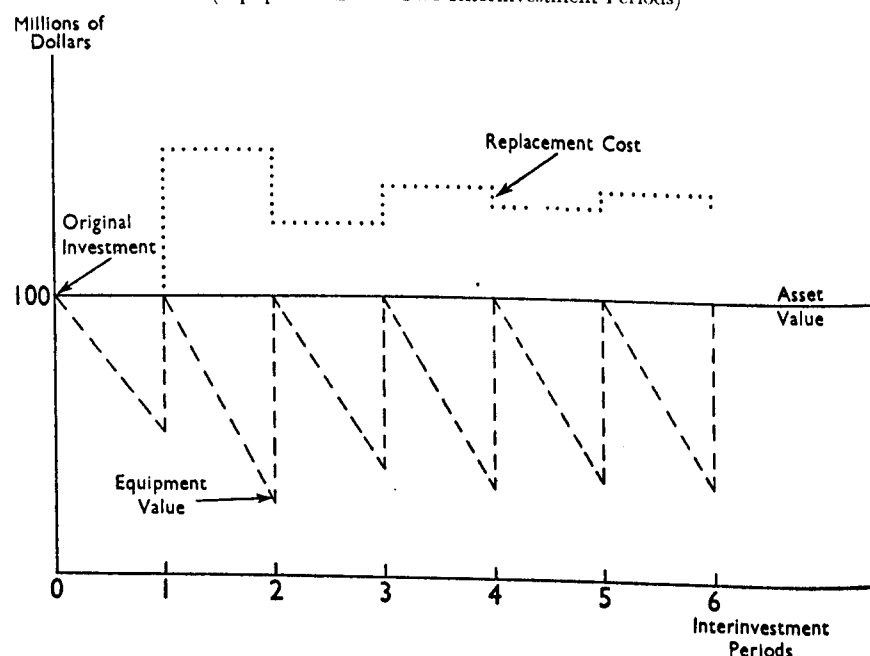


FIG. 1

passage of time a firm can increase its output capacity, its asset value remaining constant, simply by using income-covered depreciation charges to purchase more assets of the same kind.¹ We shall treat the period for which depreciation funds are held idle as a variable, p , the "inter-investment period"; continuous reinvestment becomes a special case.² The capacity-value coefficient for the firm, the ratio between G , now identified with

¹ If depreciation funds are invested temporarily in earning liquid assets, the income so earned is a profit, and under our assumptions must be paid out in the form of dividends. If, however, these earnings are invested in fixed assets, the amount is a new investment and can be treated in the same fashion as the original capital.

² Some assets are probably replaced or replenished at such short intervals that an assumption of continuous investment would not be unrealistic. Nevertheless, as assets become more substantial and longer-lived, it is likely that decisions to invest in them, whether for replacement or new

capacity output, and K , value of the firm's total assets (capital equipment plus idle depreciation funds), will tend toward an equilibrium value whose magnitude we seek to determine.

The movement toward this equilibrium is illustrated in Fig. 1. Replacement cost (G), equipment value (N) and asset value (K) are identical at the outset. As the equipment ages over each inter-investment period, its value declines. The amount of the decline, continuously covered by income, is held in the form of cash so that asset value remains constant. At the end of the first period these idle funds are invested in more capital equipment of the same kind; replacement cost and equipment value rise by the amount invested. As no funds are idle at the moment, equipment value is again identical with asset value, but replacement cost (and capacity) rises above its previous level because no equipment has yet been retired. Despite retirements in subsequent periods, replacement cost remains above the starting figure and above equipment value. We now proceed to determine the equilibrium relationship between replacement cost and asset value.

The Capacity-Value Coefficient in Equilibrium

The following additional symbols and terms will be useful:

$d = G/K$ = capacity-value ratio index.

$h = n/p$ = the life of fixed assets measured in inter-investment periods.

Hence $1/h$ is that proportion of the life of an asset that expires each inter-investment period; *i.e.*, the straight-line depreciation rate per inter-investment period.

e will be used to designate equilibrium values.

The "equilibrium" capacity-value ratio will be achieved when the periodic depreciation charge (all of which is used for replacement) is equal to the original cost of the assets retired during the period, and when this amount remains unchanged throughout succeeding periods. This can be determined most easily by dealing with asset value at those moments when no depreciation funds are held idle; *i.e.*, just after each reinvestment of accumulated depreciation funds has been completed. At these moments asset value is identical with equipment value (see Fig. 1), and the ratio of replacement cost to equipment value can be substituted for the ratio of replacement cost to asset value.

In equilibrium capital equipment at the beginning of a period must be composed of h parts, ranging in age from the new piece of equipment to that to be abandoned at the end of the period. The replacement cost of each of these parts must be the same and equal to depreciation, $(1/h)G_e$, for the

investment purposes, are made less often and require more consideration. Thus, like dividends which are paid at regular intervals, depreciation funds may first be accumulated in the form of cash and invested only at regular intervals. These decisions may, in fact, be directly related to the dividend decisions. The fact that decisions are made periodically, however, does not mean that the investment which results is not continuous. Investment through new construction, for example, might be continuous though decisions to invest are taken periodically. Investments in purchased assets, however, may be concentrated at points of time. Either possibility is incorporated into the analysis by making the inter-investment period an explicit variable.

equilibrium condition to hold, but the value of each part will clearly be smaller, the shorter its remaining life. The value of any part can be defined as its original (or replacement) cost, $(1/h)G_e$, less its accumulated depreciation, its expired life times its periodic depreciation charge, $(1/h^2)G_e$. Thus the value of an asset three periods old would be $[(1/h)G_e - (3/h^2)G_e]$.

The value of all equipment, N_e , must equal the sum of the values of each part. Thus

$$N_e = (1/h)G_e + [(1/h)G_e - (1/h^2)G_e] + [(1/h)G_e - (2/h^2)G_e] + [(1/h)G_e - (3/h^2)G_e] + \dots + [(1/h)G_e - (h-1)/h^2 G_e].$$

When these terms are collected,

$$N_e = G_e - (1/h^2)G_e[1 + 2 + 3 + \dots + (h-1)]$$

Applying the usual formula for the sum of the first $h-1$ integers of an arithmetic series ($= h(h-1)/2$) this simplifies to $N_e = G_e \frac{h+1}{2h}$, which, upon substitution of n/p for h , becomes

$$(5) \quad N_e = G_e \left[\frac{n+p}{2n} \right]$$

The capacity-value ratio index, d , has been defined as G/K , but N_e , the equipment value, as used here is equal to K , the value of the firm's total assets, since by assumption all depreciation funds have been reinvested in equipment. Hence in equilibrium,

$$(6) \quad d_e = \left[\frac{2n}{n+p} \right]^1$$

It is clear from equation (6) that the longer the length of life of capital equipment (*i.e.*, the greater n) and the shorter the period during which depreciation funds are held idle (*i.e.*, the smaller p), the greater the capacity-value coefficient becomes, approaching 2 as a limit. Hence, to the extent that the output capacity of some equipment is correctly indicated by its replacement cost, the *equilibrium* capacity of assets of given value ranges between one and two times the capacity of new assets of equal value.²

To sum up, the depreciation effect on capacity derives from a reduction in the average service life of assets. The value of the assets is reduced without a proportionate drop in their annual capacity. The value of the service

¹ This proof assumes that equilibrium tends to be established as illustrated in Fig. 1. Baumol has shown that the system will indeed converge to equilibrium. A more complex derivation of the author's results has been developed by Harberger and Christ, who also show that the system converges.

² It has been usual in examining depreciation problems in economics to assume that $p = 0$, *i.e.*, that depreciation funds are invested continuously. (See, for example, Friedrich and Vera Lutz, *The Theory of Investment of the Firm* (Princeton: Princeton University Press, 1951), pp. 147-53 and 230-3; and R. F. Fowler, *The Depreciation of Capital Analytically Considered* (London: P. S. King & Sons, Ltd., 1934), especially pp. 27 and 86). It is now clear that should this be the case the magnitude of the equilibrium depreciation effect is 2 regardless of the length of life of the assets. In equilibrium the ratio of replacement cost to average equipment value is always 2, but the existence of idle depreciation funds reduces the ratio of replacement cost to asset value to some smaller figure.

life so surrendered is made available to the firm if income covers depreciation charges. If these sums are reinvested periodically in like assets, annual capacity is increased at the expense of service life while asset value remains unchanged. Other things remaining equal, the purchase of assets of longer life or the use of a shorter inter-investment period will result in a larger equilibrium depreciation effect. *The equilibrium level of capacity, once reached, can be maintained perpetually, though each asset has a limited life, so long as income is sufficient to cover depreciation charges.*¹

The Rate of Growth in Asset Value and Deviations from the Equilibrium Ratio

If depreciation funds are not reinvested, as is typical of a declining firm, the proportion of a firm's assets which are older increases over time so that the depreciation effect becomes larger and larger. On the other hand, the output-value coefficient of a firm that constantly makes net investment expenditures tends to be less than the equilibrium value. Thus the rate of growth of the firm in terms of value is an important determinant of the actual capacity-value coefficient of a firm.

3. APPLICATIONS

Entry Restrictions and Expansion Possibilities

The depreciation effect is the source of certain problems for the prospective new firm, even if the entrepreneur is fully cognisant of it. To begin business with new equipment capable of producing given output, the new firm must be prepared to invest up to twice as much capital as a firm that operates at that level of output with assets having an equilibrium age distribution. The new firm achieves the same profit rate on its capital as the older enterprise (straight-line depreciation is assumed accurate), its net receipts being proportionately larger as a result of smaller unit repair costs. On the other hand, its turnover (ratio of sales receipts to asset value) is proportionately smaller and its profit-sales ratio proportionately larger.

With knowledge of the depreciation effect these characteristic differences

¹ These results can be modified to take account of working capital. If capacity is fully utilised, working capital, C , may, as an approximation, be regarded as a fixed proportion (or multiple), w , of replacement cost. Then the sum of replacement cost and working capital is a valid approximate index of capacity output. If the firm's only source of funds for purchasing equipment and adding to working capital is income-covered depreciation charges, the capacity-value ratio for the firm becomes the ratio of $(G + C)$ to $(K + C)$. It can be shown that in equilibrium

$$\frac{G_e + C_e}{K_e + C_e} = \frac{2nG_e(1+w)}{G_e(n+p+2nw)} = \frac{2n}{n+p} \left[\frac{1+w}{1+w\left(\frac{2n}{n+p}\right)} \right].$$

As $2n/(n+p)$, the depreciation effect without working capital, varies between 1 and 2, the depreciation effect with working capital is generally less than when working capital is independently financed, but greater than 1. As w varies from 0 toward ∞ , the depreciation effect varies from $n/(n+p)$ toward 1. Thus, even when income-covered depreciation charges represent the sole source of funds for both working capital and capital equipment considerable output growth is available to the new firm, even though nothing is added to its asset value.

should apparently cause the entrepreneur no alarm. Given imperfections in the capital market and other related institutional factors, however, entry into an industry at the optimum size with new assets may be restricted by the high investment-output ratio. If the new firm must borrow a sizeable proportion of the necessary funds the interest cost may be higher than it would be if it were buying out a firm with assets of equilibrium age distribution. If the owners of a new firm have no significant outside source for money capital and their own money capital is limited, the purchase of an existing firm would again be preferred over the purchase of new assets. This can be a source of pressure favoring merger as a means of expansion.

Further, if optimum size is to be maintained over time the firm is faced with a new set of difficulties. If it can replace with new assets only, its inter-investment period must equal asset life; it must store up depreciation charges in order to make replacement as the original equipment is retired from use. Its ratio of output capacity to asset value (including the idle funds) becomes 1. Given fixed interest charges and declining profits over the life span of each set of assets, and it becomes undesirable to hold idle funds. Barred from internal growth, the firm must purchase securities or, if the interest earned is less than interest cost, arrange to repay debt as depreciation charges accrue. Alternatively, it may be desirable to repay some capital funds to the owners of the firm. The return of capital to the stockholders may be barred, however, by law or by mortgage provisions if any funds are borrowed; institutional factors are often more restrictive to the reduction of capital investment than they are to its increase. In any event the systematic reduction of capital would normally require advance planning and would have the further effect that new financing would have to be arranged every time replacement took place.

To avoid these problems the firm might start operations below desired size with the intention of obtaining that size through the reinvestment of depreciation funds. If the market value of the assets is derived from net receipts at optimum size, however, the firm might find itself making losses or at least a reduced rate of return on capital because of the higher unit costs associated with operations at less than optimum size. Only if optimum size should extend over a considerable range could this procedure be used successfully. The reinvestment of depreciation funds then becomes an effective way of increasing the capacity of the firm and its share of industry output. The growth of the firm in terms of output is made possible without a parallel growth in its value.

Expansion Plans and Excess Capacity

If the effect of the ageing of assets on capacity-value ratios is not fully appreciated, the behavior of business firms may become less rational and may react on industry structure and performance. Business-men rely on several indicators in assessing the relative success of their operations. Among these are turnover and the rate of return on sales. As a new firm grows older the first can be expected to improve, but the unknowing manager might be

unduly concerned by a continuous decline in the latter.¹ If expansion plans, for example, are based at all upon changes in the rate of return on sales, the decline may inhibit expansion, which would in turn accelerate the decline. Expansion, of course, would slow the fall in the rate of return on sales as the acquisition of new assets would tend to "freshen" the average age of the firm's total assets.

If the new firm determines its relative position in the industry by its share of asset value or is obliged by institutional factors or stockholder pressures to permit no reduction in invested capital, output capacity will expand faster than asset value. Excess capacity may be created in this fashion throughout the industry and may become an especially serious problem in a new industry where all firms start at approximately the same time. While maintaining asset value or a rate of expansion in terms of value, the greater rate of expansion in capacity may result in excess facilities, lower prices and lower profits, which would in turn force a revaluation of the assets themselves. The initial cut-throat competition experienced in so many new industries (the post-war experience of the frozen-food industry is a recent example) may stem in part from this effect.

Size, Profit and Turnover

We turn now from the effects of the depreciation effect on the behavior of the firm to consider other matters to which it is relevant. Many efforts have been made to discover the relationship between firm size and profit rate. Most of these proceed by measuring size in terms of capital investment. Our analysis would indicate that these results can easily be misunderstood because capital investment is not a good measure of the size of firms in terms of output capacity when the asset ages of the firms are not the same.

Most of these studies have noted differences in rates of turnover between large and small firms which tend to bear out the point.² The smaller rates of turnover ascribed to large firms may not be a function of size so much as a function of rate of growth. The rapidly growing firm will have a shorter average asset age which would lead us to expect a lower rate of turnover. The problem becomes one of determining whether the large firms have in fact grown faster in the period preceding the analysis than have the smaller firms. Many arguments could be marshalled in support of this thesis.³

¹ It is interesting to note that E. I. du Pont de Nemours & Co. relates sales to gross capital investment in determining its rate of turnover. See Financial Management Series #94, *How the Du Pont Organization Appraises Its Performance* (New York: American Management Association, 1950). Inconsistently, perhaps, the firm watches its rate of return on gross rather than net investment. See, however, footnote on p. 666.

² See for example W. L. Crum, *The Effect of Size on Corporate Earnings and Condition* (Cambridge: Harvard University Graduate School of Business Administration, 1934), pp. 17-19.

³ Berle and Means have presented estimates which purport to show that large corporations, as a group, have grown much more rapidly than all other corporations. These estimates show that from 1921 to 1923 the average annual rates of growth were 6.1% and 3.1% respectively. See A. A. Berle and G. C. Means, *The Modern Corporation and Private Property* (New York: The Macmillan Co., 1932), pp. 33-43. These results are not conclusive for the individual rates of growth. See also the author's unpublished dissertation, *Studies on the Growth of the Individual Firm* on deposit at The Johns Hopkins University.

Another conclusion found in these studies is that the ratio of profit to sales is higher for large corporations than it is for small corporations. We have seen that rapid growth tends to raise this ratio. Therefore, unless growth rates of large and small firms are comparable over the relevant preceding period, the characteristic attributed to size should, perhaps, be attributed to rate of growth.

The Concentration of Industry

These remarks have relevance for efforts to estimate the concentration of industry (in the sense of capacity output as opposed to wealth) by using value measures. If the larger firms in an industry tend to grow at the more rapid rates, value measures of concentration are likely to overestimate the degree of concentration (of output) at any given time.¹ Changes in the rates of growth within size classes from one period to another must be considered in any attempt to measure changes in concentration over time. Differences in growth rates aside, we have seen that as an absolute index of changes in capacity over time any measure of value has serious limitations. Measures gross of depreciation (which represent replacement cost of the firm's assets) are probably better; the use of both gross and net measures should establish a range which would be more illuminating than either alone.

Growth of the Individual Firm

The problem of growth has received increasing attention in recent years at both micro- and macro-levels. The depreciation effect has significance for both. The growth of the individual firm must often be conceived in terms of output because it is in response to or in anticipation of changes in the demand for output that a firm undertakes growth; yet asset value is often used as an index of growth. One measure yields a pattern of growth much different from the other. The depreciation effect would lead us to expect a *uniform* rate of growth in output for a new firm to be accompanied *at first* by a much *slower* rate of growth in asset value (perhaps even a decline). Thereafter, asset value would grow at a rate which would tend to increase over time, but, except for spurts of replacement expenditures which become smaller relative to asset value, this rate would never exceed the output rate.

The Aggregated Output-Capital Coefficient

The sharp differences in capacity-value ratios which can be found among firms tend to be ironed out in aggregative analysis. The bias involved in relating output of the economy to the value of assets or the change in one to

the change in the other is probably not too great for short run analysis nor for constant rates of growth. The size of the ratio is dependent on the rate of growth, however, and is effected, therefore, by changes in the rate of growth.¹ The output-value ratio should be lower the more rapid a sustained rate of growth has been. By itself, therefore, a low ratio need not indicate that a rapid rate of growth is coming to an end because investment needs are being saturated.²

Some Repercussions of Book-value Relationships

When the straight-line method is used to compute depreciation under circumstances which do not warrant its use (as we have defined this), the relationships specified hold for the book figures, but the amount of net fixed assets (equipment value on the firm's books) no longer reflects market value. Figures for gross fixed assets (original cost on the books) are, of course, independent of most depreciation techniques used in estimating asset value. Though the book-value figures are erroneous, they are still basic data for many business decisions and for much economic analysis.

The nature of the errors introduced by the unwarranted application of the straight-line method depends upon which of a myriad of actual depreciation processes is being estimated by the straight-line technique. Our remarks will be limited to one admittedly extreme case which nevertheless may serve as a guide to the consequences of other possible variations. We shall assume that both output and repair costs are constant from one period to the next, so that depreciation, which results exclusively from attrition of asset life, should increase from period to period.³ The use of the straight-line method (equal charges from period to period) under these circumstances results in reported profit figures which are understated for new assets (the depreciation charge is larger than it should be) and overstated for old assets. Reported profits for a particular asset are, in this case, independent of asset age and proportional to output and replacement cost.⁴ Economic profit for each asset (net receipts less the depreciation charge which yields a uniform profit rate) falls as it ages, of course, but this is not reported. For the firm as a whole changes in reported profits are proportional to changes in capacity. Changes in the reported profit rate (the ratio of reported profit to reported asset value) depend on changes in the age distribution of assets, the newer the assets, the lower the reported profit rate. The reported profit

¹ It is interesting to note, however, that Domar, who has worked with these ratios in his growth models, has substituted gross assets (original cost) for asset value in his most recent work with output-capital ratios. Evsey Domar, "Depreciation, Replacement and Growth," *Economic Journal* (March 1953), p. 14.

² See references in note 1 on p. 655.

³ This is, of course, the basis for arguments in support of the compound interest method of computing depreciation. See Perry Mason, *Principles of Public Utility Depreciation* (Chicago: American Accounting Association, 1937), pp. 60-70, and W. A. Paton, *Advanced Accounting* (New York: The Macmillan Co., 1941), p. 317.

⁴ Net receipts are proportional to replacement cost, i.e., output value and repair costs associated with each asset do not vary over time. As depreciation on each asset does not vary over time either, profit, the residual of these, is also constant for each asset over its life span.

¹ The Federal Trade Commission, for example, has used net capital assets to measure concentration (*op. cit.*). Adelman has criticised this usage and has relied on total assets as being proportional to value added (*op. cit.*). The exclusion of allowances for depreciation represents a common error, if the intent is to measure capacity, unless growth rates of larger firms are similar to the growth rates of smaller firms. If the degree of integration is unchanged, output and value added are closely related (assuming repairs require more labour and not more material, they move together) so the relationship developed for output would also hold for value added. If vertical integration enters, replacement cost would tend to move with value added rather than with output.

rate rises as the capacity-book-value ratio increases in magnitude and falls when it decreases.¹

It has been shown that the older the assets of a firm relative to their total useful life, the larger the capacity-book-value ratio. Under the conditions now assumed the same thing is true of the reported profit rate. A new firm would report a lower profit rate than an old firm; a growing firm would report a lower profit rate than a declining or stationary firm. Consequently the rate of growth of a firm may be an important determinant of its reported profit rate. Studies which relate size to profit rate on the basis of such data would be difficult to interpret. If the larger firms are actually growing the fastest, the lower profit rates which they report could be entirely the result of the depreciation effect on book values. Thus the use of profit rates to indicate relative efficiency requires the implicit assumption that growth rates are equal or that depreciation is accurately computed.

To the extent that business firms base their behaviour on reported profits, their decisions may be adversely affected. Business firms, for example, may base future expansion plans, in part, on the trends of past rates of profit. Other things being equal, the use of inaccurate straight-line depreciation may justify the expectation that rapid rates of growth will be accompanied by a falling reported rate of profit. If unaware of this possibility, those firms that have been contributing to a boom through heavy investment in new facilities may be discouraged from extending their present rates of expansion into the future.

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¹ Profits as a percentage of cost or of sales would remain constant so long as the degree of integration remains unchanged and capacity is utilised. Du Pont's practice of relating profit to gross investment (referred to in footnote 1 on page 663) may not be so irrational as it appears on the surface. Many of the equipment items in the chemical industry appear to have efficiency paths like that assumed here.

REVIEWS

West African Trade. By P. T. BAUER. (London: Cambridge University Press, 1954. Pp. xv + 450. 55s.)

THIS is a study, concentrating almost exclusively on the economies of Nigeria and the Gold Coast, of monopoly and competition and of market structure and organisation in an underdeveloped area. One of its principal themes is the importance of traders and middlemen in economic development. Mr. Bauer insists again and again on the productiveness of trade. He dwells on the role of the trader in economising resources, developing new markets, promoting specialisation and the growth of a money economy; on the need, as a prerequisite of successful development, for a class of trader-entrepreneurs, possessed of managerial and technical skills, given to accumulation, and sensitive to economic opportunities; and on the advantages of unrestricted competition between traders in the interests of producers and consumers alike. There cannot be too many intermediaries because those who perform no service will soon be by-passed. The multiplicity of traders at the retail and semi-retail stage involves no waste, since there is little or no capital to be under-utilised and little alternative productive use to which the time expended by the traders might be put. On the other hand, the concentration of import and export trade in few hands, and the restrictions by which this concentration is fortified, carry the familiar penalties of monopoly.

Mr. Bauer develops his theme with great skill and with a great wealth of detail. No more relentless and monumental analysis of the workings of monopoly and competition in the trade and marketing of any country has appeared for many years. Nor does Mr. Bauer's relentlessness stop at analysis. He examines official policy in the same spirit, pillorying almost every restriction on competition imposed or proposed by the governments concerned and every fallacy by which they have been defended. He recognises, particularly in Chapter 8, that there are forces at work making for concentration in trade with the colonies. The possession of large capital and integration with other trading activities, for example, yield advantages directly to the individual firm and may also be of service to the community. But in Mr. Bauer's view, these advantages present less formidable obstacles to the emergence of effective competitors than do mistaken official policies.

Among such policies he gives most prominence to those restricting entry, whether by way of immigration restrictions, quota limitations or licensing regulations. The first type of restriction falls with particular severity on Levantine traders, who, though few in number, exercise a valuable competitive check both on produce-buying syndicates and on the large import houses. What impresses him most in the other forms of restriction is their superfluity: only too often they have been irrelevant, or even contrary, to the very purpose by which they were justified. One example is provided

by the system under which the purchase of agricultural produce for export remained subject to quota throughout the war (with a ban on new entrants that lasted until 1947) even although the British purchasing departments had undertaken to buy without limit of quantity. Another example is the system of compulsory produce inspection which enforces grading standards quite unrelated to price differentials on world markets.

The most controversial part of the book relates to the policies followed by the Marketing Boards. This occupies, however, only about one-fifth of the whole; and although the views expressed will already be familiar to most economists, they are more fully documented than in Mr. Bauer's earlier writings. He shows conclusively that there is little or no relation between the original objects of the Boards and the various apologies that have since been offered for their price policies. The simple fact of the matter is that the Boards were far too conservative and far too pessimistic and piled up surpluses that became increasingly embarrassing.

Mr. Bauer argues that producers were receiving, both during the war and in the early years of the Marketing Boards, about one-half, and often as little as one-third, of the commercial value of their produce. The difference between commercial value and producer price includes three elements, one of which represents export duty (and is not the *direct* responsibility of the Marketing Boards), the second represents the operating surplus retained by the Boards, and the third what Mr. Bauer calls "under-realisation" on sales. This third item corresponds to the difference between the price realised by the Boards and the price obtained by sellers in other countries; and many readers will be doubtful of the apparent implications that the Boards could have insisted on this higher price and that, if the Boards had not been created at all, "under-realisation" would not have arisen. This is one of the few points in the book where the evidence, although it may well be compelling, is not adequately marshalled.

Mr. Bauer sees the Marketing Boards "for good or evil . . . as instruments for the socialization of saving and for a large measure of government control and socialization of peasant production." It seems a little premature to assume that the Boards will continue to add to their surpluses indefinitely, but even if they do not, producers will probably forfeit in export levies some part of the value of their produce. How one views this possibility depends largely on the importance one attaches to a higher rate of saving as a means of accelerating development, and on the equity of differential taxation of one group of producers. Mr. Bauer rightly emphasises that private saving will suffer and that there are limits to the usefulness of public investment in promoting development in the private sector of the economy. But he might agree that the needs of the transport system, to which he draws special attention, warrant exceptional measures and that better transport might, for example, contribute at least as powerfully to the extension of the "traders' frontier" as still higher producer prices for groundnuts.

One cannot withhold astonishment at the mastery with which, single-handed, Mr. Bauer has surveyed so wide a field and demolished so many

misconceptions. As one puts down his book, one is driven to ask what programme of action he would put before governments under the inescapable urge to act. This is a question that he has elected not to answer. His book "is concerned solely with discussion, examination, and analysis of ideas and proposals put forward and of policies pursued . . . and with their results and implications" (p. 264). Perhaps Mr. Bauer protests too much; no one could write a book of this kind without conveying to the reader a bias in favour of particular lines of policy. One reader at least would cheerfully have sacrificed the two chapters on the economics of marketing reform and the demonstration which they contain of the folly of the proposals of others, in favour of a summary of Mr. Bauer's own views of the policies that West African governments might adopt.

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Value, Capital and Rent. By K. WICKSELL, translated by S. H. FROWEIN. (London: Allen & Unwin, 1954. Pp. 180. 18s.)

THE sixty years which have elapsed since Wicksell first published *Über Wert, Kapital und Rente* have witnessed a great increase in the complexities and technicalities of economic theory, and the publication of a vast number of text-books on the theory of value and capital. Yet when one reads this work to-day one still feels very inclined to recommend it at the top of the list to students of economic theory. It has an economy of means, lucidity and strength of logic which puts it far above the majority of text-books in the field. It is unmistakably the work of a distinguished mind, and the passage of time has done extraordinarily little to render it obsolete. Even the revolutionary developments in the theory of capital, money and economic fluctuations which took place in this country in the thirties, and have since become familiar to every student of economics, derived much from the two books published by Wicksell before the end of the nineteenth century—*Über Wert, Kapital und Rente* and *Geldzins und Güterpreise*. In his elegant and interesting foreword Professor Shackle indicates the thread running from the work of Wicksell to that of Lord Keynes and Professor Hayek, and he concludes that it is to Wicksell that we must give the title of the founder of the "unified theory of money, employment and the business cycle."

On the whole the English translation reads smoothly. In this connection it is perhaps in order, with a view to any future edition, to draw attention to one or two points. In Wicksell's preface the clause (p. 24 of the English version, 8 lines from the foot) "remuneration actually obtained from the different factors" should read "remuneration actually obtained by the different factors." One could suggest further refinements: for instance (p. 24) the clause "to estimate . . . the proportion of each element which is everywhere equal, from the known value of the total sum" might be more clearly rendered "to estimate the share of each element, which is the same

in all uses, in the known value of the total product." In the foreword to p. 25 "*stetiger verlauf*" might be translated "steady course" rather than "constant course." And is there any need to depart from the customary rendering of "*Kapitalzins*" by "interest" in favour of the clumsier "capital-interest"?

But these are minor blemishes; nor are they all necessarily entirely faults of translation. I would venture to suggest that the obscurity of p. 24 does not arise simply from the fact that Wicksell's summary of Wieser's view has been awkwardly translated; I think that Wicksell himself was confused as to the significance of Wieser's thesis. It is surely not true, as Wicksell asserts, that in principle the differential calculus can do anything which Wieser's system of simultaneous equation cannot do towards telling us "how and why the participation of different elements of production" is rewarded by such and such amounts. Wieser's approach is really that of modern activity analysis. He points out that if we know a sufficient number of varying optimal combinations in which all the scarce factors are used, we can deduce the price of each of these factors. In other words, using linear equations he assumes given technical coefficients of production in each production process, and asserts that for those processes used in equilibrium the sum of the products of each technical coefficient, multiplied by the respective equilibrium factor price, must equal the value of the product. The system of simultaneous linear equations thus obtained, when solved, yields the factor prices. To the present reviewer this way of spelling out the technical conditions of production does more to explain "how and why" the factors earn what they do earn, than does variation of factors "at the margin" against an unspecified technical background. At any rate, it is a valid alternative approach. However, Wicksell (alongside of Marshall and others) did his work well: every economist is to-day thoroughly grounded in marginal analysis, and the majority of readers will for this very reason almost certainly incline as Wicksell did towards marginal analysis. Altogether, the analysis presented in *Value, Capital and Rent* is admirably clear and incisive. We owe a big debt to Professor Shackle and Mr. Frowein for the publication of an English translation.

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L'Europe sans Rivages. By F. PERROUX. (Paris: Presses Universitaires de France, 1954. Pp. 668. 1,800 Frs.)

"SOME there are," Professor Perroux says in his Preface (p. v), "who think of Europe as a territory to be cultivated and defended; others see in it a work to be accomplished." His book is an eloquent plea for the latter view, a reasoned protest against the view of Europe as a geographical unit penned in the "little cape," the projection on the western end of the vast Asian Continent (p. 3). The work to be accomplished transcends national frontiers: it is on a world scale (p. 144-5). The great industrial centres,

such as the Ruhr, and the great commercial centres, such as London, are like magnetic poles from which lines of force radiate throughout the world.

Professor Perroux's treatment of the destiny of Europe is primarily economic, but underlying it is a moral conception, which he formulates in terms of liberty: the liberty of the individual to realise "values guaranteed by the experience of humanity, but transcending all experience" (p. 386). It is the privilege of Europe to combine "the technique which subdues the material world with the ideal of the open society" (*la société ouverte*) (p. 389). The "open society" is not to be identified with economic liberalism. "In its inspiration, it denies the category of enemy; it accepts the frontier which helps to unite, and refuses the frontier which separates; its aims extend to the limits of the human race" (p. 390).

Europe has not acted up to its ideals. Its mastery of the material world has threatened to transform Man himself into a mechanical slave, a process limited only by the sense of fraternity inspired from Christianity (pp. 391-2). The economy of welfare has been in conflict with the economy of power.

But even the economy of welfare itself has been perverted by the "avarice of nations" (p. 399). Every nation claims to reserve its material resources exclusively to its own people. In the present century, however, the economy of avarice has been yielding ground to an economy of "the whole man and all men" (p. 401): an economy which reckons "the costs of the human race" (*les couts de l'homme*). The process began in plans of development, conceived in terms of preparation for war. But the very same measures can be directed to the welfare of the whole species. "This emergence of the costs of the human race is an event which is likely to assume an importance in history comparable to the abolition of slavery" (p. 405).

Of Part III, forming the concluding 200 pages of Professor Perroux's work, "*L'Europe et la Dévalorisation des Frontières*," the greater portion is devoted to criticism of various plans for closer union of Western Europe: a customs union; a monetary union; the Coal and Steel Community; projects of an agricultural pool; Federation. There is much penetrating criticism of detail. But broadly the fault Professor Perroux finds with all of them is that they lead up to a community which would be not less exclusive than the nations which compose it—perhaps no more than a customs union discriminating against outside nations; perhaps a newly constituted Great Power inspired by the old nationalism. They are not steps towards the world he aspires to, in which the European spirit would be realised.

In that world a great part of the wealth absorbed in armaments would be diverted to an economy of welfare for the whole human species. To this end he urges an initiative from the United Nations to Soviet Russia for internally controlled disarmament (p. 409), an initiative "*dont il n'est pas permis, malgré les déceptions accumulées de préjuger l'échec.*" The end of the cold war is not yet, but perhaps it is beginning to seem not quite so remote.

He contrasts two possible localised experiments in integration (p. 440): that of the *nation aggrandie*, and that of the *dévalorisation des frontières*. The former would be surrounded by a tariff barrier; would have its own army,

money, transport system; would intervene as a third Great Power in the conflicts between the other two. The latter would reduce tariff barriers against outside nations as well as within its own boundaries; would use a world currency, and an inter-continental transport system; and would participate in a world army. Its political decisions would be devoted to maintaining peace and to defending, in peace and war, the values of civilisation.

Professor Perroux is looking forward to a world government. The national State, he says, exercises a monopoly of legitimate coercion (pp. 371 and 442). Does it not follow that, when frontiers are devalorised, that monopoly throughout the world will be exercised by the authority which wields the world's organised force? The constitution of this authority, its relation on one side to the developed countries, which believe in democracy, on another to the undeveloped, which would be its "colonies," and, at the same time, to those which fall into neither class, will raise problems which Professor Perroux does not face, and which he would perhaps say the time has hardly arrived to solve.

The problem of the standard of living in undeveloped countries cannot be dissociated from that of over-population. The fact of over-population, at any rate in Asia, Professor Perroux does indeed recognise (p. 208); of its bearing on any projects of improvement he has nothing to say.

Professor Perroux stops short of such questions. But his work of more than 600 pages is an important contribution to controversies which are preoccupying the world at the present time.

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Economic Activity Analysis. Edited by OSKAR MORGENSTERN. (New York: John Wiley (London: Chapman & Hall), 1954. Pp. xviii + 554. 54s.)

THIS handsome lithographed volume contains papers produced by an Office of Naval Research project at Princeton University. It is, as usual, difficult to know whether to congratulate the United States Navy on its far-sighted support of academic work, or to sympathise with the United States tax-payer on the curious forms taken by his defence effort. For the finished product appears to deserve the attention of four groups of people, many of whom will not be reached because they will not think of looking in an expensive treatise, bulging with mathematics. Although it is possible to discern the connecting thread of the book, its contents would have had more influence scattered through the appropriate journals.

Let us take first, for it is in a class by itself, the paper by Karl Menger on the Laws of Return. This is a translation of two papers published in *Zeitschrift für Nationalökonomie* in 1936. It is a beautiful example of the application of mathematics to economic theory, which should have the attention of students everywhere. Menger's aim is to show precisely what meanings can be attached to diminishing and increasing returns, and what

properties of the production function are reflected in those various meanings. This is important, not only for the light which it throws on an important section of theory, but also for the revelation of the sloppiness of thinking in the most revered and classical formulations of the laws of returns. Another example of the poor quality of economists' logic is given in a later paper by Morgenstern; the belief that a system of equations can be solved if and only if the number of equations equals the number of unknowns. This condition is in general neither necessary nor sufficient.

The first four papers in the volume are about input-output analysis, and are reasonably accessible to the mathematically soft-headed. First a paper by Balderston sets out in a consistent notation general equilibrium systems from Walras to Leontief and von Neumann. Then Eckstein discusses in more detail the nature and use of the input-output system—a handy thirty pages to put into the hands of the inquirer, though perhaps a little too apt to imply that the difficulty of obtaining accurate results from an input-output system will be overcome in time. Then come two technical papers; one, by Balderston and Whitin, on the problem of aggregation—for the possible or realised transactions in a complex economy are inconceivably numerous, and a heroic degree of aggregation into industries is required to bring the system even within the compass of an electronic computer. Since this aggregation involves, or may involve, a departure from the assumptions on which valid predictions from the system must be based, it is important to know how far it can safely be carried. By experiments on models with different methods of aggregation, the authors show that the "errors" in the solutions are indeed far from negligible. A paper from Modlin and Rosenbluth discusses the proper treatment of foreign and domestic trade and transport charges in an input-output model.

The central section of the book is accessible only to mathematicians. It consists of two long papers by Wong, and two by Woodbury, mostly concerned with the habits of input-output matrices; some short but tough remarks by Bernstein on "continuous" programming; and an interesting diversion by Bott, Mayberry and Whitin into the theory of "trees", which can be used to show whether an input-output system has a solution. The mathematical papers are distinguished by much elegance and clarity.

The book closes with a paper by Morgenstern, which is of interest to those who want to see the grand strategy of economic science. It has two main themes; first, that the possibilities of experiment in economics have been underestimated, and should be more fully exploited; second, that the invention of the electronic computer immensely widens the possibilities of our work, provided of course that innumerable dollars are available for its support. He contemplates, for instance, taking 100 time series, each of 600 terms, and computing 300 Fourier coefficients for each of them; or doing multiple correlations of fifty series, or serial correlations between hundreds of series. Professor Morgenstern writes of the widening horizon with such enthusiasm that it seems almost Luddite to inquire if the quality of the nut is likely to justify such formidable machinery for cracking it. The

calculating machine gives a vast extension to the powers of the reason; but to reason Marshall added the faculties of perception, imagination, sympathy and caution as needed in the equipment of the economist. One suspects that there are sharply diminishing returns to the development of one of the five faculties without the others.

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National Incomes and International Trade: a quantitative Analysis. By H. NEISSER and F. MODIGLIANI. (Urbana, Illinois: University of Illinois Press, 1953. Pp. 396. \$7.50.)

THE authors of this important study present and analyse a system of equations connecting the volume of international trade with the incomes of the participating countries. For this purpose the world was divided into six parts: each of four major industrial countries (the United Kingdom, the United States, Germany and France), a group of seven minor industrial countries and a group consisting of the remaining or "primaries" countries. Commodities were classified into raw materials, foodstuffs and manufactures. The equations are of two types: import functions, determining the demand for imports in relation to national income and occasionally other variables, and export functions, which relate the exports of each member to the imports of its customers and again a few other variables. There are consequently thirty-six equations with thirty-six unknowns (the various import and export volumes), and the latter can be found once the incomes and the other independent variables are given.

The coefficients in these equations are estimated by least-squares methods from observations referring to the inter-war period, more particularly the years 1925-37. In several cases data were not available for part or whole of this period, or the period was divided into two parts. For each equation several variants were considered, and the fit finally obtained was usually good.

The equations thus obtained made it possible to investigate a number of problems in which the international interdependence of incomes is of the essence. Thus one chapter is devoted to the response of the volume of trade to income changes under varying assumptions, and another to the international transmission of income changes. Other applications deal with trade volumes under full employment and with the relative decline of international trade during the thirties.

It would be impossible to do justice to the wealth of results that emerges from these analyses, but the above summary should suffice to show that Professors Neisser and Modigliani set themselves an ambitious task and pursued it with commensurate skill and determination. They have made an outstanding contribution to the econometrics of international trade, and indeed to the study of international economics in general. It is all the more necessary to make some critical remarks about their procedures.

In the first place it appears that they consider national incomes the principal determinants of international trade even in the relatively short run. Unlike many other students of the subject, they seem to regard prices as of secondary importance. This comparative disregard of prices was fashionable in the nineteen-forties, when it even led to the naïve belief that, if only all countries pursued full-employment policies, the balance of payments would somehow look after itself. Traces of this belief are apparent in the Bretton Woods agreement. Events after the war have not confirmed these views. In fact, it has become clear that adjustments of domestic prices or exchange rates are indispensable for achieving and maintaining international equilibrium. Professors Neisser and Modigliani are not very explicit on the mechanism by which, in their model, international payments are balanced, but their estimates do not make it likely that income changes alone would be sufficient.

On the other hand, their model has the offsetting merit of manageability. It is in that respect very similar to Professor Leontief's input-output analysis. Perhaps this advantage outweighs even the extreme simplification of the export functions. The applications of their model to the problems mentioned earlier are among the most interesting features of the book. The "inverse" use of the model there displayed would have been much more difficult or impossible if the model had been more sophisticated. It is regrettable, however, that there is no indication of the effect of errors in the estimated coefficients on the results of these applications.

The lack of an explicit equilibrium model has also affected the statistical side of the authors' work. They recognise that in international economics the incomes of participating countries can hardly be regarded as exogenous, as is required by the least-squares estimation technique they use. In common with most contemporary econometricians they give various *ad hoc* arguments for using least squares all the same. Since previous attempts to apply simultaneous-equation techniques to international trade have been disappointing, the authors should not be blamed too much for their adherence to tradition. Even on a more practical level, however, their statistical methods do not always inspire confidence. Despite the shortness of the period of observation, they have sometimes split it up because of alleged structural changes. Some rather strange trend factors are introduced, and in at least one case (p. 308) they resorted to the indefensible expedient of leaving out an observation which did not fit.

The presentation of the results also leaves much to be desired. There is not a single diagram in the whole book, and since so many of the data series used underwent some manipulation by the authors after they were taken from published sources, they should have been made available to the reader. In the more theoretical chapters an undue desire to avoid mathematics has caused some ambiguities and obscurities.

Despite these occasional lapses, the book as a whole contains abundant proof of conscientious scholarship and clear exposition. Its methods and results will repay the most careful attention from practical and theoretical

students of international trade, who will find it one of the most valuable contributions of recent years.

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The Federal Reserve System, 1945-1949. By J. S. FFORDE. (London: Oxford University Press, 1954. Pp. vii + 351. 35s.)

DURING its forty years' existence the Federal Reserve System has seen its prestige fluctuate in a bewildering fashion. The short-lived confidence of the twenties that it could ensure economic stability gave way to the profound scepticism about monetary policy as a whole which characterised the period of the Great Depression and its aftermath. The lack of confidence in monetary weapons was intensified in the period immediately following the Second World War, when it was seen that the activities of the Federal Reserve were directed primarily to supporting the market in government securities. Mr. Fforde tells the story of the System's struggle to disengage itself from the sterile inflexibility to which the policy of bond support seemed at one time to have condemned it. It was the necessary prelude to the period since 1951 in which the Federal Reserve System has enhanced its reputation by its contributions to the control of American economic activity.

In his attempt to give a clear and logical presentation and interpretation of events in a credit system of great complexity, Mr. Fforde is by and large successful and has produced a book of great technical and theoretical interest for economists and bankers. The central problem, with which the System had to grapple at the end of the war, was to regain control over the lending activities of the commercial banks and at the same time prevent erratic fluctuations in the prices of government securities. Some support was necessary in the interests of monetary policy itself, for a large proportion of the new debt was in the hands of temporary holders. But the Treasury's insistence that support involved no departure from par in the prices of $2\frac{1}{2}\%$ long-term government bonds involved the monetisation of debt, which enabled the commercial banks to offset pressure on their reserves caused by the retirement of debt. Mr. Fforde shows how in the immediate reconstruction period this rigid interpretation of stability gave rise to the phenomena of "pattern playing" and "free riding." The commercial banks unloaded bills and certificates on to the System, and with the new reserves thus acquired bought up additional Treasury bonds in the market. Gradually the prices of bonds rose in order to give a yield to maturity which was consistent with confidence in the maintenance of the short-end of the rate curve. Both bank and non-bank holders found it profitable to realise their capital gains as the prices rose above par and to use the proceeds to buy longer bonds and gain a similar capital profit. Provided that existing short-term securities could always be unloaded on to the Reserve Banks, the logical conclusion was "a horizontal rate curve with the price of all bonds giving a yield to maturity of $\frac{3}{4}$ per cent." Mr. Fforde makes the interesting point that the shift of deposits as between the thousands of independent banks was

particularly aggravating factor. "Lacking precise liquidity rules regarding short-term assets, banks that lose deposits are prone to sell short-term securities, while those that gain them are prone to buy longer-term securities, leaving the central bank as the residual buyer in support of the short-term market."

This difficult situation was further aggravated by disagreements over policy between the Treasury and the System which arose out of differences in their primary and immediate responsibilities and in institutional background and traditions. The Federal Reserve officials gradually perceived that with a large government debt distributed widely among all classes of lenders, and with lenders coming to regard their marginal holdings of government securities as a principal source of funds for finance, there existed unprecedented power to influence the general availability of credit. But the essential prerequisite was the abandonment of the policy of inflexibly pegged interest-rates. This power could only be exercised provided that the System was free to increase or reduce the availability of credit either by being a willing purchaser or an aggressive seller of outstanding government securities with consequential changes in their prices. It was part of the System's case against the Treasury that such changes need only be fractional, because gradual institutional developments had by this time given the money markets a high sensitivity to relatively small changes in rates. As the Treasury's opposition gradually weakened, the necessary technique for operating a flexible monetary policy was developed, the essence of which was to ensure an orderly but not an inflexibly rigid market for government bonds.

Mr. Fforde's approach to his task of unfolding the story has much to commend it. His detailed account of the events of the period 1945-49 is preceded by an introductory survey of American monetary history since 1933 and a conclusion which analyses the final emergence of a positive central banking function. This last chapter, in which Mr. Fforde finally permits himself the liberty of giving a most lucid and stimulating theoretical analysis of Federal Reserve Policy throughout the period, is in the reviewer's opinion the best part of the book. His practice in the earlier parts of the book of confining himself to a factual description of very complex events is not entirely successful, particularly when he is describing the technicalities of operations in the American bond market. Any writer would find it difficult to make such an account completely intelligible, for it can be compared with the task of explaining verbally how to play bridge to someone who has never seen a pack of cards. But Mr. Fforde obviously has such a flair for exposition that one feels that he would have succeeded better had he related the mass of data to a theoretical framework. In other parts the level of exposition undoubtedly suffers because he has not given himself sufficient time to absorb his extensive material. But his book, apart from these minor blemishes, is a notable addition to banking and monetary literature, which no serious student of the subject can afford to ignore.

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Public Policies Toward Business. By CLAIR WILCOX. (Homewood, Illinois: Richard D. Irwin, 1955. Pp. ix + 898. \$6.50.)

THE revolution in military tactics provoked by the machine-gun was countered relatively swiftly by the invention of the armoured fighting vehicle. The increase in the fire power of the author provided by the shorthand-writer, the dictaphone or facility on the typewriter can still be met by the reader only with the conventional, and dangerous, weapons of inattention or skimming. Hence, the growing acerbity of short-winded English reviewers towards the length of American texts. It is pleasant to be able to welcome Professor Wilcox's 900 pages more urbanely.

I hope that I am not misconstruing his purpose if I class this as a book intended to convey information rather than to provoke thought or present new ideas. As such, it meets an important need, and one which is still unsatisfied for the British undergraduate. We properly insist on the student's acquiring a working knowledge of the institutional framework within which business enterprises operate, including the framework created by government. But he has to be referred for such knowledge mainly to Command papers, annual reports of this agency or that and scattered articles in the more reputable financial and business periodicals. On few parts of the framework are there good and modern text-books.

Professor Wilcox is concerned with that area of policy in which government interferes directly with the freedom of action of individual business enterprises. By this I mean that such generalised influences as monetary budgetary or external financial and commercial policy are excluded. Moreover, summary treatment of issues like industrial relations or capital-market regulation has been dictated by the organisation of the American undergraduate syllabus. It is natural that an American text should give pride of place to restrictions by government on the freedom of business enterprise to restrict their own (or others') freedom of action, and the first two hundred pages present a lucid and balanced account of the historical development and present state of anti-trust policy in the United States. From the normal we move steadily through the abnormal (I must emphasise that Professor Wilcox does not make the latter synonymous with the pathological): "supplementing competition" and "moderating" it—the distinction is a slipper one, replete with theoretical implications, although there is obviously difference in kind in the purposes of, say, the Securities and Exchange Commission and the Commodity Credit Corporation; the substitution of regulation for competition; and, finally, public enterprise. For good measure there is a chapter on other, mainly European, countries, which, though inevitably superficial and (not inevitably) over-sure in its judgments, contains, like the rest of the book, a surprising amount of accurate and concisely presented information. No doubt my confidence that I now understand the full meaning of agricultural parity is as misplaced as that of an American undergraduate who thinks that Professor Wilcox (who does not claim to) has taught him all about the Schuman plan; but both interested foreigner and

native student must be content with superficial knowledge on many issues and can remain grateful to the author.

More is needed to write an encyclopædia than wide knowledge, a good reference library or even—though this is important—a dedicated attitude towards teaching. The greatest need is for freedom from inhibitions and, in particular, freedom from doubts as to whether the facts presented justify any conclusions. It is perhaps a greater diffidence about the relevance of economic theory to practical economic affairs, in this field at least, which explains the absence of any modern English counterpart to Professor Wilcox's work. That explicit discussion of theory is excluded is no criticism of a book on institutions. But a great deal of theory is implied in the judgments, and to one raised on a different folklore it is a shock, provoking both impatience and envy, to see the cheerful confidence with which Professor Wilcox presents them. On pp. 11 and 12 we are given a *credo* in which competition and monopoly (both taken as having self-evident meanings) are identified with virtue and sin respectively. One hundred pages later we are provided with a definition of "workable competition," which is offered as a concept less precise than that of perfect competition but more useful for public policy. Seven hundred pages later we are told that workable competition may be defined either in terms of its results (to be judged by what standards?) or in terms of market structure. And we end with the comforting conclusions that, the American economy having performed so well, "the policies that have promoted—or permitted—these developments cannot have been far wrong." Certainly let us judge policies ultimately by their results. What one misses in Professor Wilcox's book is the recognition, though perhaps it is implied in the sentence quoted, that government policy towards business has had to be carried on in all countries without legitimate aid from economic analysis. Judges and officials and, less excusably, economists have indeed translated theorems from the world of logic to that of economic affairs. The fact remains that the number of propositions in the theory of competition which are both verifiable and useful is still minute, and that belief in "competition" (or knowledge of what it is to the American who equates it with virtue) is almost as much a matter of faith and naïve common sense as in the days of Adam Smith.

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Fair Competition. The law and economics of antitrust policy. By J. B. DIRLAM and A. E. KAHN. (Ithaca, New York: Cornell University Press (London: Geoffrey Cumberlege), 1954. Pp. vii + 307. 36s.)

The Attack on Big Business. By J. D. GLOVER. (Boston, Mass.: Harvard University Graduate School of Business Administration (London: Bailey Bros. & Swinfen), 1945. Pp. vii + 375. 48s.)

MR. DIRLAM and Mr. Kahn set out in their book to defend the present state of American anti-trust law against recent economic criticism. In the

post-war period anti-trust enforcement has been riding high: the courts have handed down far-reaching decisions often accompanied by *dicta* more radical than the decisions themselves. In the same period many economists have grown less confident about the economic rationale of anti-trust. Formerly it was often assumed that the anti-trust law, if rigorously enough enforced, would lead the economy towards a state of "pure competition" and that no amount of progress along this road could fail to be for good; latterly it has seemed palpable that oligopolistic industries in which competition is far from "pure" account for much that is fertile and progressive in the economy.

The combination of more strenuous enforcement with growing doubt about the economic end in view has led to much criticism of court decisions. Some economists have seen in decisions condemning measures of vertical integration, requirements contracts and the like, a threat to genuine efforts to secure economies of scale and organisation; the price discrimination statute has come under heavy fire on the ground that, as recently interpreted, it prevents suppliers from making economically justified price concessions to large integrated distributors. This criticism has been generalised in the proposition that the law should not bite on situations which, though rich in market imperfections, are yet "workably competitive." It has been urged that the "rule of reason" in anti-trust law—the judicial requirement that the Sherman Act prohibition of "every contract, combination . . . or conspiracy in restraint of trade" should be read as condemning only undue or unreasonable restraints—should involve a thorough economic analysis of each case in order to determine whether alleged restraints are "unreasonable" by reference to tests of economic performance.

In the first part of their book the authors consider the legal implications of this criticism, and in doing so give the clearest account that has yet appeared of the meaning of the anti-trust law and its relation to economic thinking about monopoly problems. They show that anti-trust is a rule of law designed to serve political and social ends and not merely (or mainly) the requirements of economic engineering. As a rule of law it must proscribe, not prescribe; the condition of having enforceable law is that the courts shall think in terms of forbidden business activities, and not, as Chief Justice Taft once put it, "set sail on a sea of doubt" by attempting a fresh economic assessment of the public interest in the context of each new case.

The "rule of reason" prescribes only that the courts shall satisfy themselves about the true character (which is what the lawyers call the "intent") of the activities brought to their notice. When a distributor of moving pictures refuses to let a cinema have the "first run" of its films, it may have sound commercial reasons for its refusal, or it may be taking part in a boycott; when a large metal smelter obtains control, by contract or purchase, of important sources of ore or electric power, it may be seeking to compete more efficiently or it may be seeing to it that no competitor can invade its domain. The true explanation—the "intent"—has to be distinguished, as in any other field of law, by applying common sense to the evidence.

Economic consequences—facts about price levels and bankruptcies—may be important as evidence for the prosecution, for the monopolist, like anyone else who comes up against the law, is held to have intended the natural consequences of his acts. But subtle considerations of long-term economic advantage will not avail the defence, once the monopolistic intent is clear.

It is easy to see why the economist may be impatient with this argument; he wants to change situations which are economically unsound. He may rely on his belief, born of theoretical analysis, that certain market structures will result in lower output and higher prices, or he may wish to measure performance directly, by reference to rates of innovation, cost reduction and so forth. But, as the authors show, market structures may be imperfect, *e.g.*, oligopolistic, without there having been any business activity that could be justly penalised. Even fully-fledged monopoly power may, in Judge Hand's phrase, be "thrust upon" an enterprise solely by dint of superior business acumen or a legitimately protected patent position. As to performance, economists simply have not provided conclusive tests; there is no agreed means of predicting, for example, whether the motor-car industry in the United States or in Britain would be more or less efficient for being more or less concentrated than at present. The legal tests avoid these difficulties. The basic premise of anti-trust is that if deliberate grasping for monopoly power, whether by collusion or by exclusionary business tactics, is stopped, the economics of the matter will not go far wrong.

For those who seek lessons in American experience for anti-monopoly legislation elsewhere, it is salutary to have the American position so clearly set out and to note that it recognises a limit to the amount of economic inquiry which can be squared with the requirements of a rule of law. This, of course, is not the only possible position; other countries may succeed in devising administrative means of handling the problem with a higher degree of economic refinement. But to most Americans it is much more important that this type of business regulation should be enforced judicially, with a final appeal to the Supreme Court rather than to "the Minister," than that there shall be no possibility of economic error. Mr. Dirlam and Mr. Kahn believe that, in view of the political and social ends of effective anti-trust policy, the onus must lie on the economist and the business-man to show that the legal tests result in positive economic harm. In the second part of their book they analyse many recent leading cases in order to establish their contention that the recent criticism has not discharged the burden of proof. This part of the book is perhaps less satisfactory than the first part; to some extent the authors confirm their own thesis that satisfactory economic tests do not exist, though they succeed in showing that the complaints made about court decisions are often exaggerated or partial.

This book succeeds admirably in interpreting the central tradition of anti-trust in relation to current economic thought. It is worth noting that the recent Report of the Attorney-General's National Committee to Study the Anti-trust Laws reached a position very similar to that of Mr. Dirlam and Mr. Kahn, although the views which they criticise were clearly influential in

getting that Committee set up. This shows the strength of the tradition. Those who wish to understand and profit by American experience should have the Committee Report and this book ready to hand.

Professor Glover's book is lightweight by comparison. The author's aim was to provide "thoughtful business leaders" with a compilation of criticisms of "big business," but he has gone about the task in a unselective and heavy-handed way. Quotations from major works of economics or philosophy are lumped in with snippets from newspaper articles and political speeches, and the important arguments are rarely distinguished from the ephemeral and propagandist. Moreover, Professor Glover is the victim of his plan. Having provided chapter headings for "economic," "political and social" and "ethical and moral" criticism, he is committed to finding material for each head. This tends to make the book repetitive and much of the material in the "ethical and moral" chapters—with quotations from men like Brunner, Schweitzer, Gandhi, Mumford, Gill and many others whose concern is with the spiritual or æsthetic values of industrial civilisation in general—seems little relevant to "big business" as such. Space from this end of the book might have been devoted with advantage to a weightier treatment of the economic chapters.

Professor Glover draws attention, for example, to the type of argument which uses statistics of costs and profits to show that the largest companies are relatively inefficient, but explains that any figures which do not fit this thesis merely measure advantages of monopoly (or monopsony). It is a fair complaint that much careless (and some dishonest) work has been done on these lines. The difficulty is that in any particular case it might be true that a concern was both inefficient and "low-cost." What the "thoughtful business leaders" would no doubt like to know, like the rest of us, is what help economists can give in providing the tools for an honest examination of some genuinely difficult issues.

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The Reputation of the American Businessman. By S. DIAMOND. (Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1955. Pp. 209. 32s.)

MR. DIAMOND sets out to analyse obituary comment in the American Press at the death of six prominent business-men ranging in time from Stephen Girard to Henry Ford. The theme is simple: the Press attitudes to the business-man-hero move through a marked progression; the success of the early nineteenth-century business-man in the person of Girard is ascribed to strength of character; with Vanderbilt in 1877, however, personal character has been supplemented by recognition of a fortunate environment, and when we come to Morgan in 1913 the emphasis is very

largely on the latter. Alongside this shift is a growing tendency to treat the deceased, not as an outstanding and exceptional man, but as someone who typifies to an exaggerated degree the qualities of ordinary Americans as depicted in the folklore of capitalism (Morgan, for example, is described as suffering from the handicap of not being self-made!). This tendency reaches a peak in 1947 when Henry Ford is mourned as one who personified all the virtues, both public and private, of the American people, a product, not merely of "free enterprise," but of the entire American Way of Life. The author ascribes this shift to the growing undercurrent of criticism and hostility in the general public against an economic system which permits such careers and to the consequent need of the business community, and the Press which it largely controls, to protect the great man and free enterprise itself by identifying them with the social system as a whole. This thesis seems questionably simple. Although the power of advertising on newspaper comment has been amply demonstrated, the relationship between editor and public in this respect would appear to be more complex and dialectical than the author would have us believe. He also appears to overlook the facts that in the time of Girard or even Astor a Samuel Smiles career was plausible, whereas at the turn of this century impersonal factors were of infinitely greater moment, and that in a hundred years the general public itself may have become more sophisticated in its understanding of the forces of capitalism. But it makes an attractive theme, and would have provided a good idea for a well-written and perhaps ironic essay with conclusions diffidently suggested.

Unfortunately, the idea had to be put through the Ph.D. mill, and this has lessened the effectiveness of the book. The successive chapters devoted to the individual business-man-heroes are too largely composed of repetitive and prolix quotations from obituaries to advance the argument satisfactorily. Moreover, although the author fortunately eschews a "quantitative" treatment, he gives an impression of scientific detachment which one who has been employed in analysing the American Press would regard with scepticism: there is, for example, little attempt to indicate the size of circulation or influence of the different journals quoted. In developing his argument, which only becomes fully explicit in the Conclusion, Mr. Diamond has not been able to resist bringing in the fashionable ideas of the sociologists about "communication"; these, although valuable in themselves, are not organically related to an argument which could have been expressed in simple terms. But these are failings, not of the author, but of the "objective" system which produced the book in its present form.

F. THISTLETHWAITE

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North American Supply. By H. D. HALL. History of the Second World War, United Kingdom Civil Series, edited by Sir Keith Hancock. (London: H.M. Stationery Office and Longmans, 1955. Pp. xi + 559. 35s.)

DURING the war the British Commonwealth received from the United States some \$21 billion worth of munition supplies. Payment was made for \$3½ billion worth; the balance was supplied on Lend-Lease. Over the whole of the war, America supplied just over one-fifth of the munitions delivered to British Forces. And this was about one-ninth of her own munitions production. The Canadian figures were naturally smaller. About \$3½ billion of munitions and war services was received, and this was over half of Canada's munition production. Mr. Duncan Hall's book is the history of how this happened. It deals mainly with supplies from the United States—a proportion dictated less by the relative importance of the supplies than by the fact that throughout the war the process of negotiation, procurement and assignment was far simpler with Canada.

On opening the book it is a surprise to find that over two-thirds of its length is devoted to the history of what happened before Pearl Harbour. On reflection one realises that, though less than 5% of the total munitions supplies we received came forward in this period, the allocation of space is right. It was in this period that the great problems of policy arose and that the British representatives in the States did so much to contribute towards the final successful outcome.

Mr. Hall describes how in those early days there were four objectives, of which two were gravely limited by the supply of dollars available. The first was to get immediate war supplies while Britain was in danger, and to keep us fed. The second was to create production facilities for munitions; in readiness both for that inevitable time when a way would be found to finance British needs over and above the available dollars and for the still later time when America itself would want a vast munitions production to equip her own Forces for war. The third was a constant process of tentative exploration with sympathetic Americans of the ways in which this further financing might be arranged, and the last objective was to convince the United States military and civil authorities of the magnitude of the production which would be needed to defeat Germany.

Over most of this period the leading personality on the British staffs in the United States was Arthur Purvis, a Canadian Scot of vivid personality and great imagination. It is he who is the hero of this book. At the time of his tragic death in August 1941 the supplies received were small; but Lend-Lease was in operation, though America was not yet at war, and a few weeks later the Victory Programme had been jointly worked out by the British and American Chiefs of Staff. Evidence of the success of the other objective did not come until much later when it was realised that in less than two years from Pearl Harbour the United States had reached its peak production: a process which in Britain had required over three years.

After Pearl Harbour there was a change in the scene. The early years had been dominated by individuals and by personal relationships. These were still important, but the main sources of decision shifted to the new machinery; the Combined Boards for Assignment, Raw Materials, Shipping and Production which operated with varying degrees of success from early 1942 onwards.

Attempts at this stage to secure top-level policy decisions to determine British military supplies were nearly always abortive. Munitions assignments were mostly decided on short-term detailed cases, and attempts at global planning of munitions production were in the end confined to marginal adjustments. Supplies of metals and tools were the subject of inevitable discussion on the export implications. But in the end we were given the aid asked for when it was really needed.

This complex story has been clearly and soberly told. Perhaps, as in other official histories, one might wish that a little more of the excitement of the times would show, but the many memoirs which have already covered these events (and which will no doubt continue to appear) can be relied upon to provide the missing drama.

One criticism may be made. The statistical material (apart from the excellent global figures already published by Professor Allen) seems inadequate to those of us who can still remember the vast but fascinating compilations which played so important a part in securing American supplies. What did the Purvis balance sheet look like? How did the Victory Programme compare with what was later required? How did the pattern of British requirements change with changing experience of the war?

The reader would appreciate the problems more with such background information. Two figures from the book are very revealing when they are contrasted. In December 1940, when our dollars were nearly all committed, Purvis, as a "shot in the dark," gave the President the then stupendous figure of \$15 billion (four times the current annual production in the United States) as the amount of war supplies which the British Commonwealth still required from the United States in order to overcome Germany. The total received by VE Day was \$21 billion.

HUGH WEEKS

London.

Industry and Science. By the MANCHESTER JOINT RESEARCH COUNCIL. (Manchester: Manchester University Press, 1954. Pp. viii + 188. 12s. 6d.)

THIS book sets out the results of an investigation into the relationship between science and industry in the greater Manchester area which was carried out in 1950–53 by the Manchester Joint Research Council, a body composed of representatives of the University and of the Manchester Chamber of Commerce. The investigation, which was conducted by means of interviews, covered 225 firms in a wide range of industries, excluding nationalised industries and certain other industries whose experience did not seem relevant to the purpose of the inquiry. Only firms employing fifty

or more persons were included, but very large firms with country-wide ramifications were omitted because it was felt that they had been adequately covered elsewhere. From those firms remaining the selection of those to be included in the survey was made on as random a basis as could be achieved. Three-quarters of the firms selected agreed to participate. By the end of the investigation, visits had been made to firms in the textile industry which covered 20% of the textile establishments in the area, and to firms in the engineering industries which covered 17% of the engineering establishments. Comparable figures for "modern" industries and miscellaneous industries were 22% and 23% respectively.

At the start of the investigation the view was accepted, for the purpose of the inquiry only, "that new scientific and technical knowledge is absorbed into certain sections of British industry too slowly, and that a scientific approach to the day-to-day problems of production and organisation is less common than it should be." The questions asked by the three investigators engaged on the survey—they were all men with knowledge of both science and industry—were designed to collect facts which would throw light on whether this view was correct or not. They inquired about the recruitment of scientists and technologists into industry and about the use made of them when they were there. They also inquired about the extent of research and development work carried out by firms and their contacts with research associations, universities and other sources of scientific information. Separate chapters of this book are devoted to each of these topics, and the results of the investigation are set out in detail in an Appendix which contains a large number of statistical tables.

It was found that qualified scientists or technologists were employed in 52% of the firms visited, these firms accounting for 84% of the labour force of the 225 firms. In all, there were 1,297 qualified men, rather more than half of whom were science graduates and the rest holders of diplomas. The great majority of these men were employed in seventy-seven firms judged by the investigators to be undertaking research and development from new knowledge. Nearly two-thirds of the firms which employed four or more graduates were found to be in the "modern" group of industries. About half the total number of science graduates were engaged in research and development work, and the other half in management, process control, technical sales and so on. Diploma-holders were less heavily engaged in research and development and more heavily in management, process control, etc. It is notable that nearly 14% of the graduates were on the boards of their companies, while the corresponding figure for diploma-holders was less than 6%.

When the investigators turned from inquiries about the number of scientists employed and the work they were doing to the relationship between this and the needs of the firms, they were, as they recognised, on much more shaky ground. Their conclusions are worth repeating, however: "If the cross-section is representative of the whole, one-third of industry does not really require much from science; another third requires mainly competent

application of established principles, and only the final third really needs the aid and stimulus which science alone can give. In the last and most important section the scientifically qualified staff is satisfactory in five-sixths of the firms; in the middle section it is adequate only in two-fifths."

Among the firms investigated, less than 20% were found to be undertaking their own research or had research facilities available in associated firms, but a considerable number undertook development work. Even where research was being carried out, little of it was of a fundamental nature. Research of this type is more commonly carried out in the large firms excluded from the survey and in research associations and universities. Of the firms visited, 151 were members of at least one research association, and 86% of these appeared to consult their associations actively; consultation was particularly marked in the textile and modern industries and among the larger firms. As high a proportion of firms as 40% made use of universities, more of them seeking advice on scientific matters than on recruitment. Those consulting universities included small firms with no qualified scientists on their staff, as well as firms employing a large number of graduates. As might have been expected, advice on scientific matters was sought most often from Manchester University and College of Technology, but contact was maintained with a large number of other universities, especially with Leeds on textile matters.

The investigators found that many firms made only limited use of such sources of scientific information as the Department of Scientific and Industrial Research, trade associations, suppliers and consultants. Most commonly, reliance is placed on suppliers of raw materials and plant. This source, more than any other, is responsible for scientific advice to over 40% of the firms visited. The investigators found no less than forty-four firms who gave them examples of unsolved scientific problems which, in the view of the investigators, could have been quickly solved if the firms had known whom to approach for help.

An important general conclusion drawn by the authors was that where scientists are employed they are not used wastefully, but that there is a significant proportion of firms which require scientific help but are not so staffed as to be in a position to make use of it. The authors' strongest impression of all was that deficiencies in the present situation are not so much due to a shortage of scientists as to the absence of attitudes favouring the use of science on the part of those at top management levels. A further impression was that much more liaison is needed between industry and those engaged in scientific research: "one of the clearest convictions this enquiry has left with those most intimately concerned is that more and better liaison and education are needed to a far greater degree than more and better science. The resources of science still untapped by industry are immense."

This is an interesting but by no means an exciting book. Several of the chapters contain a large number of statistics and are heavy reading. It would also have been a more satisfactory book if the authors had separated their value judgments about the importance of science to industry from their

account of the information they had collected. Given the nature of this investigation, however, it was probably too much to hope that the book resulting from it would be other than a somewhat pedestrian one. The book has undoubtedly suffered also from the fact that the Manchester Joint Research Council's principal investigator died before the account of the research could be fully written up. Even in its present form, however, the book contains much new information and a good deal of wise comment. It would be surprising if the investigation whose results are recorded here has not itself played a part in strengthening the links between industry and science in the Manchester area.

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AUBREY SILBERSTON

Government Finance and Fiscal Policy in Post-war Britain. By A. R. ILSERIC. (London: Staples Press, 1955. Pp. 274. 25s.)

MR. ILSERIC states in his preface that he has two types of reader in mind: the professional man with an interest in economics but no formal training, and the student. His book is more likely to be useful to the former class, since Mr. Ilesic is not very good at explaining his terms, and he presupposes a more considerable knowledge of the language and working of the City than the average student is likely to possess; on the other hand, there is little or no economic analysis of the type the student would normally require.

Mr. Ilesic treats his subject in three quite separate parts. The first is concerned with the national income, and the process of confronting the various relevant aggregates in making a rational plan for balancing the nation's accounts. While this section does not delve deep enough to show the real construction of the accounts, it is neatly done, and students in a hurry should find it clear and useful.

The second part deals with fiscal policy, but concentrates almost entirely on the effects of income and profits taxes, and of death duties, on incentives to work, save and invest. Mr. Ilesic tends to take the expenditure side of the budget as a datum, and outlay taxes are hardly discussed. On the question of incentives Mr. Ilesic is over-anxious to present the view of all parties and not to obtrude his own. The result is not satisfactory. Even the simplest logical argument must be supported by a quotation from someone; many of these are irrelevant to the time and place under discussion; most of them originate in a somewhat different context from the one Mr. Ilesic wants to use them for. This plays havoc with the logic of the argument. Mr. Ilesic is firmly persuaded of the perpetuity of the Age of Inflation; he is therefore much concerned with the burden of profits taxes on industry, especially through original cost depreciation allowances and F.I.F.O. stock valuations. Almost in the same breath, however, he allows himself to toy with the idea of the government supplanting corporate saving by budget surpluses, and distributing these to firms in accordance with its own preferences. Altogether this is the weakest part of the book.

When we reach Part III, on monetary policy and debt management, things greatly improve; this is evidently Mr. Ilesic's main interest. Although he still builds on the foundations laid by others, he now has a thesis to maintain, and on the whole it is a balanced and reasonable one. Several good points are made: such as the particular troubles for cheap money policy and "Dalton's" in particular, caused by the fact that railway trustee investors were by nature not to be satisfied by the particular fare laid before them by the Chancellor. Again, the portent of the slight but significant rise in interest rates in the early months of 1946 is well brought out. On the crucial matter of whether Mr. Dalton's cold feet in the second quarter of 1947 were justified or not, Mr. Ilesic appears not quite to have made up his mind; on the whole he seems inclined to the view that they were beyond artificial respiration. In general, Mr. Ilesic is inclined to run away too easily with psychological explanations, which have so often been an excuse for not seeking deeply enough for the real reasons underneath.

The reader should be warned against sundry petty carelessnesses: people get their wrong initials, Lord Piercy and Lord Eustace Percy seem to have got tied up; two dates are stated for the beginning of purchase tax, and so on.

URSULA K. HICKS

Oxford.

Stock Market Economics. By M. S. RIX. (London: Pitman, 1954. Pp. v + 284. 25s.)

THIS is an uneven book. It has some good descriptive chapters and analysis of matters within the stock exchange. It is not altogether successful in relating the affairs of the stock exchange to the economy as a whole. There is an excellent chapter on bonus issues which deserves to be read by those financial journalists who explain them away as mere book-keeping, as well as by those politicians who over-estimate their importance. Such matters as the gearing of ordinary shares and the advantages and disadvantages of shares of no par value are clearly and succinctly described. Two chapters on speculation are interesting though rather more controversial. The analysis here might have penetrated farther by exploring the answer to Keynes' question "Why are speculators buying shares?" Unnecessary jargon is avoided and the necessary technical terms are carefully explained. Miss Rix is not ashamed to explain points so elementary as to be taken for granted by those in the financial world but yet confusing to newcomers. For that many students will be grateful.

The weaknesses are more difficult to pinpoint. To indicate them it might be said that this book seems to describe a flat pond on which many bits of paper are floating, instead of a turbulent pool through which flow strong currents of industrial investment and government financing, subject to the undertow of inflation, ruffled by the eddies of nationalisation of industry, frothing at times from the effects of fiscal and monetary policies.

The chapter on saving and investment is weak. It is discouraging to be

told that "in any analysis of the stock markets the economist's notion of investment in real capital must be abandoned." Surely it is the difficult task of tracing the relationship between real investment and various types of stock-market activity that should bulk large in stock-exchange economics.

The impression is given that the official estimate of personal savings is gross in that dis-saving by individuals living beyond their means is treated as a possible deduction from it. Company savings are under-estimated; it seems to be suggested that they are declining. In discussing the investment policy of insurance companies no attempt is made to distinguish between the phase of correction of the abnormally high war-time proportion of funds in gilt-edged and normal growth. It is alleged to be a disadvantage of managed investment trusts that the market value of their shares do not bear a fixed relation to the net-asset value of the company. But if they did, investors making the market would be judging all investment-trust managements as of equal ability, and ignoring the effects of the different gearing of different trusts. This confusion arises from attempts to compare fixed-unit trusts, where there is neither gearing nor scope for the ability of management in changing the portfolio, with managed trusts, where there is both.

The analysis of the relationship between the gilt-edged and industrial markets is unsatisfactory. "Leadership" is ascribed to gilt-edged; but this is not fully explained. One reason given is that they are riskless; at this some holders of "Daltons" might demur; the distinction between safety of income and of capital needs to be made; inflation might also be mentioned at this point. It seems particularly doubtful in 1955 whether "Government stocks are at the head of all major movements" of prices, and also whether the effect of monetary policy on industrial share prices is only via the gilt-edged market.

The select bibliography, which includes such a general work as Samuelson's *Economics*, omits two of the standard works on the British capital market, Lavington and Grant.

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RONALD F. HENDERSON

An Introduction to Stochastic Processes with special reference to Methods and Applications. By M. S. BARTLETT. (London: Cambridge University Press, 1955. Pp. xiv + 312. 35s.)

THIS is not an easy book to review. It is a depository of a large amount of information about techniques of mathematical and statistical analysis, and its value can be properly appreciated only when a variety of practical problems have been investigated with its aid. Mere reading of the book, however painstaking and careful, cannot produce more than a rough assessment of its potential value. However, it is clear that Professor Bartlett has brought together in a compact and useful form an account of the recent advances in the theory and analysis of stochastic processes, which would

otherwise be found only in scattered books and journals. To this accomplishment, he has added an illuminating commentary on the relation between apparently dissimilar approaches to the same problem.

A stochastic process is one which has an element of chance in its structure, and the theory of such processes may be regarded, in Professor Bartlett's words, "as the 'dynamic' part of statistical theory, with a multiplicity of applications." Thus some knowledge of the theory of stochastic processes is necessary in order to deal adequately with problems concerned with population growth (especially when numbers are small), genetics, the servicing of machines liable to chance breakdowns, queues, the possible development of epidemics, bacterial mutations, cosmic-ray showers and the risks involved in running an insurance company or in gambling. Such problems can be discussed to some extent on deterministic, that is non-stochastic, lines, but Professor Bartlett properly lays great stress on the misleading conclusions that may be drawn from this common but inadequate approach. For example, the conditions which are favourable to the development of an epidemic of such a disease as measles can be properly understood only when the process is formulated in stochastic terms. In general, the factors leading to the stability of a particular process may be misunderstood if the stochastic element in the process is ignored.

Apparently diverse applications often have a common theoretical structure. In Professor Bartlett's book processes are classified according to their mathematical structure, and elegant general methods are developed for deducing the various probability distributions associated with the realisation of a particular class of process. Thus, in the case of a machine servicing problem, it is possible to deduce the limiting probability distribution of the machines' idle time given the number of operators available. Alternatively, when a process consists of a movement to and from a number of different "states," it is possible to calculate the probability distribution of the recurrence or passage times, *i.e.*, the time between repetition of a specified state or between the occurrence of two different specified states.

What message does this work convey to economists? Applied economists are already largely aware of the need to relate their statistical analyses to the manner in which their data are generated. Comparatively little, however, has been done by economic theorists in the way of taking account in their work of the stochastic nature of many economic processes. Until such an attempt is made, prediction even of a qualitative nature is likely to be misleading, and the applied economist or econometrician is not given a sufficient guide as to the appropriate means by which a theory can be refuted or verified or by which the values of parameters can be satisfactorily estimated. Recognition of the need for stochastic rather than deterministic economic theory is probably a considerably easier objective to attain than the actual formulation of such theories. However complex the mathematics deployed by Professor Bartlett to analyse stochastic processes, it is striking how simple are structures of the processes which have so far yielded their secrets to his powerful tools. It is difficult to conceive of any economic process which

could be idealised satisfactorily into an equivalently simple form. There is thus a great deal of hard exploratory work to be done before any noticeable progress is made. The first essential step is the creation of a body of theorists who will desire to know as much about probability theory as they at present do about the differential calculus.

A further obstacle to progress is the fact that the theory of stochastic processes is most highly developed for processes which are classed as stationary, that is, processes of which the realisations depend on time differences. However, it is evolutionary processes, of which the realisations depend on absolute time, that are likely to be commonly encountered in economic applications.

Professor Bartlett provides much information which is of great interest to the economic statistician, whether or not he is also concerned with the stochastic development or adaption of economic theory. Thus a whole chapter is devoted to the problems of statistical inference that arise in connection with stochastic processes. He discusses the circumstances under which the method of maximum likelihood is a valid method of estimation in such circumstances, and once again the peculiar difficulties which arise with evolutionary processes are made clear.

A final chapter is devoted to correlation and regression analysis of time series. The relation between correlogram analysis and harmonic analysis is clearly discussed, and the excessive sampling fluctuations that arise with the latter method are explained and remedies suggested.

Because of the conciseness of the presentation, the reading of this book involves considerable concentration. The effort is well worth making in order to obtain the benefit of Professor Bartlett's remarkable insight into the theory and applications of stochastic processes. Ample food for thought is provided for all those whose thoughts are rebellious or uneasy about deterministic economic theories.

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A. D. ROY

Chance and Choice by Cardpack and Chessboard. Volume II. By L. HOGBEN. (London: Parrish, 1955. Pp. 917. 70s.)

THE second volume of Professor Hogben's treatise on statistics mainly deals with regression and correlation, the analysis of variance and covariance, factor analysis, curve fitting and a variety of significance tests and estimation procedures. A number of text-books have appeared in the last decade which cover this field, but *Chance and Choice* offers something new to the research worker and the teacher in statistics.

As in the first volume, the sampling procedures and concepts are explained by exhaustive discussions of simple games with cards, dice and counters: these are illustrated by ingenious and elaborate pictures. Although only the exceptional pupil is likely to be able to plough through these explanations with understanding, lecturers in statistics should find here

some useful assistance in teaching their subject. Unfortunately, when the author is dealing with the branches of the subject which involve the normal distribution of errors, games with cards and dice prove to be less apposite, and he falls back on more orthodox examples about experiments on animals.

Those who do not know the subject matter already will find this a difficult book. This is partly because of the author's ingenious choice of new methods of proof and new notations, for example in the chapter on "The Algorithms of Summation," and partly because of his employment of elaborate words, and sentences such as this one: "Through Bowley the new evangel of correlation spread to the social sciences, expounded against a background of geometrical concepts which defy any attempt to make explicit the manifold circumstances in which co-variation may arise." At the beginning of Chapter 17, the discussion about fitting a regression coefficient is confused by choosing the example of Hooke's Law in the form $s = kt$, containing no additive constant. The most efficient estimate of k from observations (x_i, t_i) of s and t is then $\sum x_i t_i / \sum x_i^2$, (since we know that $s = 0$ when $t = 0$): the procedure recommended on pp. 726-7 is to compute the sample regression

coefficient $K = \frac{\text{cov.}(x_i, t_i)}{\text{var. } x_i}$, ignoring the information that $s = 0$ when $t = 0$,

and a solution is provided which implies $s = kt + 0.10$ instead of $s = kt$. The confusion could have been avoided by discussing Hooke's Law in its more usual form $l = kt + c$.

An excellent feature of this book is the careful examination of the assumptions underlying the accepted procedures of statistical analysis. Most teachers are likely to learn something new or be reminded of something they have forgotten if they read through the forty-page chapter on "Assumptions underlying analysis and synthesis of variance": although this chapter is partly based on the work of Crump and Eisenhart, it contains many original suggestions and new twists in the exposition of this important subject.

The final chapter on "Second Thoughts on Significance" also provides the fruits of original and careful thought about the foundations of the subject. A particularly refreshing touch in this chapter is the author's modest claim in the final section 20.09 "The Show Must Go On," that he has been learning the subject while writing the book: he thus sets a good example to other writers of text-books on statistics.

D. G. CHAMPERNOWNE

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The Malthusian Population Theory. By G. F. McCLEARY. (London: Faber, 1953. Pp. 191. 15s.)

In this book Mr. McCleary offers a short and most readable introduction to Malthusian Population Theory. He has tried to give in brief terms a biographical sketch of Malthus' life, an outline of the thesis of the first and second editions of the "Essay" and a discussion of the applicability of Mal-

thusian Theory to present world conditions. It should be said at the outset that this is a good introduction in that it puts the Malthusian viewpoint clearly and well. For a similar exposition of the contrary arguments the reader will have a look elsewhere.

Mr. McCleary begins with a chapter on Malthus' life prior to 1798, and the historical background to the first edition of the "Essay on Population." He then summarises the arguments of the first and second editions and comments on the changes in the later version. He is anxious to emphasise that Malthus has an importance far beyond the population theory he advanced. Whether that theory is right or wrong, he performed the great service of stirring up a debate which made everybody (the public, the politicians and the social scientists) acutely aware of the danger that population might outrun subsistence. In addition to this, his statistical studies in the second edition are a landmark in the use of inductive methods in the social sciences. Mr. McCleary gives an excellent short summary of this statistical work in which Malthus tried to analyse the factors controlling population in the various states of Europe. However, it is a most approving summary, and at the end the reader feels very much inclined to accept Malthus' claim that the "facts" have confirmed his principle of population. Mr. McCleary does not go out of his way to emphasise the criticisms by later writers of both the data and the methods used.

The next chapters follow Malthus through the steps of the second edition and deal with "projects for making the world better." These cover Malthus' attacks on contemporary proposals for utopian states, and projects for reducing poverty by emigration, poor relief, foundling hospitals, etc. Malthus attacks the mercantilist arguments that a large population will lead to a powerful and wealthy state and defines the government's duties as restraining population by educating the masses to "moral restraint" and encouraging production by creating conditions of security for the capitalists. Embedded in this is an interesting section on Malthus and the Corn Laws. In 1803 he seemed most luke-warm toward them compared with his pamphlet of 1815.

The chapter on "Malthus and Contraception" gives the views of Condorcet, Francis Place and Robert Owen, and details Malthus' rejection of this alternative. Mr. McCleary's emphasis on this rejection seems unnecessary. Despite the term "neo-Malthusianism" few people have ever doubted that what Malthus advocated was celibacy until marriage, the postponement of marriage until the children could well be supported and during marriage the avoidance of birth control of any kind. The major criticism, which Mr. McCleary does not discuss, is that these proposals are unrealistic. If married couples are to abandon all methods of regulating their families it becomes almost impossible to forecast the number of children any particular pair will acquire. Yet Malthus asks each prospective bride and groom to estimate both their family size and their future income (which will depend on the actions of all other couples) and delay their marriage accordingly. As a sole road to world prosperity this hardly seems reliable.

Most of the second half of Mr. McCleary's book is concerned with "Was Malthus right about population?" He deals first with some criticisms by J. S. Mill, Sidgwick and Cannan on the use of ratios in Malthusian Theory. Malthus' claim that an unchecked population tends to double every twenty-five years was, Mr. McCleary believes, proved by the factual evidence in his second edition. The limitation of food increase to an arithmetic series is more speculative, but seems eminently reasonable because of diminishing returns. Then comes the interesting Nassau Senior-Malthus correspondence of 1829, which is reproduced in full (five letters). The basic difference between them was the relative importance to be attached to what Malthus called "passion between the sexes" and what Adam Smith had called "the desire of bettering our condition." By emphasising the former Malthus had arrived at his conclusion that population tends to increase faster than subsistence. Senior accented the latter and reached precisely the opposite conclusion. Mr. McCleary admits that Senior has proved right in Western Europe but only due to two factors which Malthus could not be expected to foresee, cheap food from the new world and the widespread use of contraception. But, he claims, this is unusual. Malthus' view held good over all the world in his own time, and is still valid for most of the world to-day. But this concession to Senior is inadequate. It ignores the strongest point in his position, which is that history has always, in general, shown Malthus to be wrong. The masses in most countries of the world may be poverty stricken and even liable to death by famine or disease, yet in so far as their conditions are above those of the savage the long-run tendency must have been for subsistence to grow faster than population. If the world "tendency" is to be used meaningfully, in the sense of "most-likely to happen," then Malthus must be turned on his head. He cannot be saved by conceding the different experience of Western Europe in the last hundred years.

To say with Nassau Senior that the normal expectation is that subsistence will grow faster than population is not to assert that the reverse can never occur. Mr. McCleary gives us a harrowing chapter on the rate of population increase in Asia to-day; an increase, be it noticed, brought about by the success of medical science in lowering the death-rate—a circumstance which Malthus had not envisaged. But then, unlike his hero, Mr. McCleary offers birth control as a solution to the problem.

The book concludes with a charming biographical chapter on Malthus at Haileybury and a copy of the inscription on the commemorative tablet in Bath Abbey. Just another of those deft touches which make this book so readable.

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Marx and Engels on Malthus. Edited by R. L. MEEK. (London: Lawrence & Wishart, 1953. Pp. 190. 15s.)

IN this slim volume Dr. Meek provides us with a forty-page introductory essay and selections from the writings of Marx and Engels on Malthus. The selections are grouped under three headings: Marx and Engels on the Malthusian Theory of Population; Marx on Malthus and Economic Theory in General; Marx and Engels on Malthus and Darwinism. The subjects are interesting, and some of the material is published in English for the first time; notably the whole of the section on Marx on Malthus and Economic Theory in General, which is taken from previously untranslated portions of *Theories of Surplus Value*.

The selections on population theory tell their story well. Marx and Engels knew that on this issue they must fight tooth and claw, for socialism itself was at stake. Malthus, in the first edition of his "Essay," had set out to prove that utopian societies were impossible and, if his theory of the continuous pressure of population on food supplies was sound, he had succeeded, for the iron law of wages would always be valid, no matter what social system prevailed. As Marx put it in the *Critique of the Gotha Programme*, "basing themselves directly on this, the economists have proved for fifty years and more that socialism cannot abolish poverty *which has its basis in nature*, but can only generalise it, distribute it simultaneously over the whole surface of society!" But as well as this frontal attack on socialism, Malthusian population theory played an important part in justifying the conditions of the workers in contemporary capitalism. It explained the poverty of the working class and the drudgery of life in the factories. It encouraged the New Poor Law and frowned on private charity. All in all, then, it is not surprising that for his work on population Malthus should have drawn strong words from Marx and Engels.

In *Capital* Marx hits at "Parson Malthus" for his *Essay* "a schoolboyish, superficial plagiary . . . not a single sentence thought out by himself." Engels agreed that Malthus stole his population theory "like all his other ideas" from his predecessors, but gave him some credit for recognising that unemployment, poverty and an apparent surplus of population could be caused by a shortage of purchasing power and increased mechanisation. In Malthus' presentation, however, demand deficiency and mechanisation were temporary, minor, supplementary causes compared with his "principle" of population. But to Marx and Engels they were the permanent and complete explanation of the poverty of the working class in capitalist society. In these selections they explain how competition forces the capitalist continually to search for new techniques, which are normally capital intensive. Any given stock of capital therefore requires less and less labour to operate it. The stock of capital is rising with accumulation, but the relative demand for labour is falling; at the same time the supply of labour is increasing with a rising population and the displacement of peasants and craftsmen. The result is growth of the reserve army, the pool of unemployed, which expands and contracts over the trade cycle, but whose existence is a

fundamental feature of capitalism. It is the reserve army which weakens the bargaining strength of the workers till their real wages are reduced to miserable levels. Thus capitalism means unemployment and poverty for the labouring masses and gives the illusion of overpopulation and of a pressure of rising population on inadequate food supplies which Malthus tried to justify as an "eternal necessary" because of diminishing returns in agriculture.

But the true cause of poverty is capitalism not population, and diminishing returns are a Malthusian myth. The potentialities of science and the unexploited resources in agriculture and industry are boundless, and they could offer a continuously rising standard of living to a sharply rising population, but only a socialist state could realise these possibilities. Continued capitalism will always see poverty for the masses and a large pool of unemployed labour. In rejecting the Malthusian "law" of population, in which mankind is continually outstripping subsistence, Marx and Engels nearly create another "law" in which science continually outstrips population, but not quite. As always, they refuse to recognise "laws" which are to be valid under all conditions, and in all societies. Engels admitted that he could conceive of a period when the increase in population threatened to be too great and when some limitation would be desirable. But only in a socialist society, accustomed to planning, would it be at all easy for the State to decide when that day had arrived and how the limitation should be instituted. Certainly Malthus' "moral restraint" would only be a practicable solution in such a socialist society when the whole population would be educated and accustomed to good living standards.

The selections on "Marx on Malthus and Economic Theory in General" cover three topics: "Malthus on Rent"; "Malthus' Theories of Value and Profit"; and "Malthus on Over-production and Over-consumption."

Malthus' work on rent was, in Marx's view, all of a piece with his work on population: more "shameless and mechanical plagiarism" and more "falsification of science" by the "bought advocate" of the ruling landed aristocracy. He attacked him for stealing the theory of rent from Anderson and then perverting it to reactionary purposes. Marx argued that Anderson correctly ascribed rent to the differentials in fertility existing at any one time and not to the absolute levels of fertility. Far from assuming diminishing returns over time, Anderson supposed that scientific progress will result in the opposite. Malthus took this theory, converted it into one of falling yields per man and used it to support both his theory of population and his plea for protective tariffs for the land-owning classes. It is this partisan use of economic theory to support the interests of a reactionary class which Marx called "falsification of science." In this Malthus was contrasted with Ricardo, who was praised for his preoccupation with increasing total output regardless of who was hurt or favoured. In an interesting aside, Sismondi was reprimanded for his concern with individual welfare. Marx argued that progress in its early stages is always at the expense of the majority. "The higher development of individuality can only be purchased through a historical process in which individuals are sacrificed."

The section on Marx on the Malthusian theory of value and profit sees Malthus once again in disgrace compared to Ricardo, this time for being superficial, for approaching value as an exchange phenomenon instead of an expression of real costs and of social relationships. By doing this Malthus hides the existence of exploitation, and he disguises the true nature of profit. In Marx's view Malthus starts by "presupposing" the existence of profit, which is then added to the labour content to get the exchange value. This makes it appear as though the labourer receives the due reward for his work and that profits do not arise from exploitation, but are the payments for work done by another necessary factor of production. As Marx puts it, "What Malthus does not understand is the difference between the sum total of labour contained in a commodity and the quantity of paid labour in it. It is precisely this difference which constitutes profit."

In "Malthus on Over-production and Over-consumption" Marx gives him some credit for recognising that there were contradictions in capitalism which could lead to crisis. But the applause is restrained, for again he is accused of having plagiarised the idea, this time from Sismondi, and of perverting it to reactionary ends. In Malthus' analysis the wages of labour must remain low both because of the pressure of population and because low wages are the only thing which keeps the worker industrious. Profit must be kept high enough to encourage accumulation. Yet accumulation means increased output, which cannot all be sold to the workers because of their low wages. Since wages cannot be raised, this gap in effective demand can only be filled by a class of consumers who receive incomes but do not produce goods. Specifically, in England this means landlords and their retainers, Civil Servants, the clergy and rentiers living on National Debt interest. If capitalism is to expand smoothly the consumption of this unproductive class must expand side by side with accumulation, or demand deficiency crises will emerge. In short, Malthus sees as permanent and natural a society in which the industrious poor must be kept poor and industrious and the idle rich, rich and idle. Marx was able to be very sarcastic at the "parson" for this "solution."

The selections conclude with Marx and Engels on "Malthus and Darwinism"; a surprising choice, for the topic seems unimportant compared with the others. On Darwin, Marx and Engels were in two minds. They admired his "excellent work," which emphasised the evolutionary character of all of nature, including mankind. But they hated Darwin's praise of Malthus and his claim that the "struggle for existence" and "natural selection" in the organic world was but a generalisation from the Malthusian concept of the continuous pressure of population on subsistence in human society. So in these selections we find Marx and Engels attacking Darwin on two fronts. First, they deny that "the struggle for existence" is a true description of life in the plant and animal world. Secondly, they argue that even if it were a true description it is improper to transpose rules which apply to those worlds to the analysis of human society.

In his introduction to these selections Dr. Meek gives a brief outline of the

historical setting of Malthus' work, a summary of his arguments and an analysis of the criticism by Marx and Engels which the selections illustrate. This last is most useful, for some readers will find it hard to pin-point the arguments amid the florid and repetitive style. The concluding section of Dr. Meek's essay is entitled "Malthus Today," and in it he gives us his view of the roles that Malthusian theories are now playing and the reason why this republication of the Marxist counter-arguments is timely. To-day, he states, the Malthusian population theory is used in capitalist countries to justify conditions in Asia and in colonial areas. Apologists claim that population presses inexorably on subsistence, and the people are necessarily a prey to famine and disease. Increases in output are bound to be swallowed up by increases in numbers. Since no amount of independence can solve this dilemma, there is no reason to grant it. Another side of Malthusianism also has a part to play. The theory of effective demand, in its modern Keynesian form, serves to justify expenditure on armaments as the only form of government expenditure which can possibly be large enough to ward off the slump. Put these two sides of Malthusianism together and you have the justification for imperialism and for the arms race. But this is not all. If the Asian and colonial peoples are bound to die wretchedly from famine and disease, the idea of using the arms on them in another war does not seem so terrible. Since Dr. Meek has carried his arguments this far, it is not surprising that he should conclude with the cry: "The struggle against Malthusianism is an integral part of the struggle for peace in the world today."

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General Union: A Study of the National Union of General and Municipal Workers.
By H. A. CLEGG. (Oxford: Basil Blackwell, 1954. Pp. xiv + 358.
27s. 6d.)

MR. CLEGG's book provides a clear and eminently readable account, derived from first-hand investigation, of the present structure and government of the National Union of General and Municipal Workers. The forces and methods which brought together various unions to form the present amalgamation are touched upon more lightly, but sufficient account is given to provide the essential background. The description of the union's share in wage negotiation in a selection of the many industries in which it operates is in one or two cases rather too sketchy to afford much of interest in itself. But, taken as a whole, the account given of the part the union plays in these industries is of value in assessing the methods which the union has pursued and the degree of success they have achieved.

The union possesses certain features in its organisation and methods which distinguish it from most other unions. Notable among these is the system by which branch secretaries are paid commission which may enable them to devote their whole time to the work of local organisation. Large

branches here, as elsewhere, are poorly attended, but the work of whole-time branch secretaries may provide an effective link between members and the official machinery. The emphasis which the union places on district organisation is also interesting, and the power of district secretaries has tempered the modern trade-union tendency towards central control. On the whole, however, the main interest of the book lies in the study of general unionism as a method of organisation and in comparisons with the Transport and General Workers' Union.

It is undoubtedly the case that the main obstacle in the way of industrial unionism is the existence of the general unions, and they have been active in opposition to proposals for achieving it. They were a historical necessity for the growth and development of the trade-union movement. The author presents also a reasoned case for their continued existence. But his strongest argument is that they *will* continue to exist "since there is no likelihood that the general unions will disband and no one has the authority to break them up, or seems likely to gain that authority." Turning to comparison with the Transport and General Workers' Union, it is often puzzling to determine why, despite certain very obvious similarities between the two unions, their industrial experience in certain industries has been so dissimilar. Both unions were established as amalgamations in the early 1920s, and for a time had membership figures of the same order. The greater growth of the Transport and General Workers' Union was no doubt to some extent the result of the dominating personality of Mr. Ernest Bevin. It was influenced even more, however, as Mr. Clegg shows, by the predominating trade-group structure of that union which has made it easier for it than for the National Union of General and Municipal Workers, with its emphasis on district structure, to absorb other unions with a national coverage. Both unions have, certainly in recent years, been on the right wing of the trade-union movement and definitely anti-Communist in policy. The pursuit of this policy by the National Union of General and Municipal Workers has, however, been rather more a question of practical trade-union administration than openly avowed and pugnaciously pursued intention; it does not seem to have exposed itself to the same open counter-hostility as has the Transport and General Workers' Union. And it is here perhaps that we may find the real reason for the more tranquil passage which the National Union of General and Municipal Workers has enjoyed in recent years, particularly in industries such as docks and road transport, in which both unions participate in collective bargaining. The successes of the latter union are particularly notable in cases where the industry—or the section of it which the union organises—is well delimited by district. The method of decentralisation, which is by district in this union, has better fitted it to deal with matters on a district than on a national basis, whereas the opposite is the case in the Transport and General Workers' Union.

The policy of the union is fairly summed up by the author as being that of "business unionism"—the business, as one officer of the union has put it, of selling labour and getting as good a price as it can which, as in other business,

involves keeping on good terms with its customers. Certainly the policy of the union, while loyally co-operating as part of an industrial and political labour movement, has been singularly free from doctrinaire prejudice.

Attention may be drawn to a few factual errors in the book. It is not correct (as stated on p. 106) that lawyers cannot appear before "departmental tribunals" to handle cases under the National Insurance (Industrial Injuries) Act, 1946. Claimants under that Act are entitled to be legally represented before the Commissioner and, with the consent of the Chairman, before the local appeal tribunals. The leaders of the North London gas strikers in 1950 were not (as stated on p. 164) "arrested"; they were served with summonses. To state (as is done on p. 288) that the miners "allow" a representative of the North Wales Quarrymen "to sit for one of the seats in their group" in the General Council of the Trades Union Congress is surely wrong. The voting is by secret ballot, but, so far as the declared figures of the voting show, it would certainly appear that it is despite the opposition of the miners that a representative of the North Wales Quarrymen sits on the General Council.

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Judges in Industry: A Study of Labour Arbitration in Australia. By M. PERLMAN. (Melbourne: Melbourne University Press (London: Cambridge University Press), 1954. Pp. xviii + 219. 37s. 6d.)

THIS book consists of an introductory section dealing with the Australian arbitration system as a whole, three more detailed studies of its application to particular industries and a final section contrasting the role played by the Arbitration Court in two specific disputes in 1929 and 1949 respectively.

Throughout, the author seeks to distinguish between two conceptions of arbitration which he describes as "administrative" and "autonomous." The first conception regards arbitration as an instrument of public policy, economic control and quasi-legislative economic planning. The attitude of its proponents might perhaps be summarised in the statement, quoted by the author, of one of the Arbitration Court judges, who referred to himself and his fellow justices as the "economic dictators of Australia." The second conception of arbitration is a much more limited one. The initiative is left to the parties—to employers and workers and their organisations; the function of arbitration is more judicial than legislative; it provides a seat of judicial review to which the parties may repair when they cannot reconcile their divergent views.

The interesting suggestion emerges that autonomous arbitration, being judicial in its approach, tends to become legalistic in its methods and dilatory in its handling of disputes. It is difficult to see, however, why an arbitration system, merely because it does not set itself up as an instrument of economic policy, should regard its functions as narrowly judicial. In any system of industrial arbitration, of interests as distinct from rights, the arbitrator is

more often a law-giver than a law-interpreter, more often the propounder of a practical solution to the immediate problem than the discoverer of hidden truth by means of legal procedure and in the mysteries of legal precedent. That, at any rate, seems to have been the view of the Labour Government in 1947 in its amendments of the Arbitration Act and, in particular, in welding on to it a system of conciliation commissioners. Dr. Evatt, the Attorney-General, said in the second reading debate at that time:

"The system of industrial regulation cannot be properly administered without impartiality, disinterestedness, and a strong sense of justice; and these qualities should be, and usually are, developed by a legal training and judicial habits. But it is a profound mistake to think that these qualities, and especially the judicial temper, can be exhibited only in courts of law or in the application of ordinary legal techniques and procedures."

The notable fact emerging from this book is the different degree of success which the Australian arbitration system has achieved in the three industries, the pastoral industry, the metal trades and stevedoring, which are here separately studied. The careful analysis which the author makes of these industries and their organisation and development in Australia suggests many reasons for that different experience. There is perhaps, however, one more fundamental reason than all—that no system of regulation of industrial relations can be surely based except on the consent of those whose conduct it seeks to regulate. This is a point which is confirmed by the remark of Mr. R. M. Eggleston, Q.C., in the foreword which he contributes to this book that, although arbitration in Australia is compulsory and "a method of prescribing for the parties a rule of conduct imposed on them by a superior authority of a quasi-legislative character," yet it must be realised that "the effectiveness of the Court's operations depends to a large extent on persuading the parties that the long-term advantages of arbitration outweigh the immediate disadvantages of an unfavourable decision."

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Federalism, Finance and Social Legislation, in Canada, Australia and the United States. By A. H. BIRCH. (London: Oxford University Press, 1955. Pp. xiv + 314. 35s.)

MR. BIRCH sets out to show the major episodes in the development of financial relations between the federal and unit governments in the United States, Canada and Australia. He starts with three "country" chapters showing the development from the beginnings of federation to the end of the Second World War. Then he has a chapter which is primarily theoretical but well illustrated with examples on the basic principles of federal growth. Subsequently he turns to problems of social legislation and spends four chapters on this, one on the constitutional problem and the other three devoted to the individual countries. A summary chapter concludes

the major part of the book, but there are two final chapters, one dealing with the post-war developments in his three countries and another outlining some of the constitutional arrangements in the new Federations of to-day and to-morrow—India, Central Africa, Nigeria, the West Indies.

Mr. Birch has read deeply in his field and has brought together a good deal of information which is otherwise not easily accessible and, even if it is accessible, usually unreadable. It is all too rare to find anyone who is capable of moving easily from the more purely constitutional to the more purely economic problems in this borderland territory. Moreover, he carries his learning lightly and is able to summarise the major points of his arguments succinctly and clearly.

One's chief worry is whether he has not attempted to cover too wide a field. It is stated on the dust-jacket that the book "began as a history of inter-governmental financial relations" but "developed into a comparative analysis of the problems of federal finance in relation to other problems of twentieth-century federal government." The result of this process of growth is that the book loses a good deal of the unity which it might otherwise have had. In effect, there are two major themes—Federal-State relations and social legislation—which do not have a very strong connection. And the quick summary of recent legislation in other countries, although extremely useful and interesting, really opens up still another field.

One or two slips may be noted. It is surely wrong to say (p. 296) that before 1946 the Legislative Council in Nigeria had no jurisdiction over the northern part of the country. And the argument (p. 38) that the Australian federal constitution accepted the principle of compensating the States for revenues lost through federation hardly seems to square with his detailed description of the arrangements, from which it would appear that federal grants were based on the derivation principle. Only in the case where the distribution of customs duties by States after federation was not different from that before federation would the two principles be the same.

But these are minor points. Mr. Birch has produced a most interesting and readable book.

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Soviet Industrial Production, 1928-1951. By D. R. HODGMAN. (Cambridge, Mass.: Harvard University Press, 1954 (London: Geoffrey Cumberlege, 1955). Pp. vii + 241. 40s.)

AMERICAN research on the Soviet economy has shown a quite imposing output-record in the past decade. Aided by a richer and more systematic collection of source material than is available over here, it has reaped the benefit of some large external economies. Yet its location in that country has not been without disadvantages. Inquiry and its results have not remained unaffected by the prevailing cold-war atmosphere; and writers have been at pains to show that they study as critics, untouched by sympathy

with their subject. This obsession has bedevilled the discussion of Soviet output-statistics; charges of bias in the so-called "constant prices" in which output is expressed being so emotively overlaid as to make it difficult to reach a clear picture of the actual position.

At first this charge of bias rested on the choice of an early year (1926-27) in which the price-structure favoured those products that were to show the most marked increases of output during the 1930s. This was, of course, the familiar Paasche-Laspeyres discrepancy (a discrepancy which has been shown by Gerschenkron to apply at least as much to a comparison of American engineering output in 1899 and 1939 as of Soviet engineering output in 1928 and 1937). More recently the charge has rested on the treatment of new products: these were said to have been introduced into the index (at any rate up to 1936) at current, and hence inflated, prices. This is the criticism on which Professor Hodgman focuses attention. The trouble is that such evidence as we have refers to the form in which industrial enterprises were instructed to make their returns; there is no evidence to show whether these returns of new products at current prices were or were not treated at a higher administrative level to deflation by a price-index of comparable products before being embodied in the output-index (in one or two special cases only, including producers' co-operatives, one knows that this *was* done even prior to the change of practice in 1936—see p. 6). Professor Hodgman does, however, produce at least two quotations from Soviet writers (pp. 15-16) which seem to indicate fairly conclusively that the treatment of new products introduced at least *some* measure of inflation into the index, possibly even after 1936 as well as before; moreover, he claims that analysis (by years and by industries) of discrepancies between his own index and the official one supports this criticism.

The positive contribution which Professor Hodgman has made is to produce an output-index of his own—a year-to-year index using wages and salaries (including social insurance contributions made by industries) in 1934 as weights (these he speaks of as "value-added weights"). In other words, he has measured output in terms of its wages-cost per unit in a single year instead of in the industrial selling-price of a single year. To this end, with much skill and ingenuity, as well as great industry, he has pieced together an impressive amount of data on output, wage-rates and employment from a variety of sources (including specialised industrial and technical journals). The data on which the index is based cover 137 separate products (seventy-six of them items of machinery); and these either directly or through the industry-weights assigned to them (after correcting for coverage of the industry) cover some "71 per cent of industrial output in the official index" (and some 56% of "the net-value added in industry in 1934"). This is a signal achievement. The result is to show an annual rate of growth of industrial output from 1928 to 1937 of about 14% (which, as Professor Gerschenkron comments in his Preface, is "a very high rate by any standard"), or for the decade as a whole slightly less than a fourfold increase, as against an increase of five and a half times shown by the official index.

Undaunted by the difficulties involved, the author has extended his index beyond 1937 on the basis of much more slender data (twenty-two products for 1940 and 1946-50 instead of 137; eighty-nine from the 1941 Plan but only eighteen for 1951). With gaps for 1938-39 and 1942-44, the index is continued up to 1951. Here the discrepancy between his results and the official index is somewhat larger (most of it applying to the war and the immediate pre-war years); his index showing only a doubling of output between 1937 and 1951 as against an increase of three times according to the official index.

Professor Hodgman is much less successful in the way he presents (in Chapter 2) a theoretical justification of his method than in his actual handling of the method and his careful and detailed account of it. In the form in which it is presented, at least, this prefatory justification seems to the reviewer confused. The author wisely rejects the method of valuing a country's output in the quite different price-structure of another country. But in discussing the best way of weighting Soviet output, he feels it necessary to cast the problem in terms of a contrast between an economy ruled by "consumers' preferences" and one ruled by "planners' preferences." He holds that in the former case output can be significantly valued at market prices, since "equal value units" represent "equal amounts of consumer satisfaction." Despite a passing reference to "shaky theoretical underpinnings," he adopts this view rather naïvely (*e.g.*, ignoring income-distribution difficulties when some things are consumed only by the rich), and treats it, apparently, as being true of investment as well as of consumption. He does not seem to see that this would also justify valuing Soviet output (consumers' goods at least) at retail prices (*i.e.*, including turnover tax), since the equality of the ratios of marginal utilities and of prices (for each individual) can apply at *any* set of prices provided consumers' spending is free—formally it is no more than a tangency-condition of some indifference-curve with the price-line. (If there are to be no unsold stocks or queues, then the condition is also needed that prices are responsive to demand.) The real reason for not adopting this course is that there is no comparable basis for valuing capital goods. But the author does not give this answer in so many words. Instead, he rejects valuation at market prices on the ground that "the bill of goods produced is determined by planners' preferences rather than consumers' preferences," and comes down in favour of factor cost on the ground that "factor prices are determined in a system of interlinked factor markets . . . and therefore are comparable in different industries" (in what sense comparable being left unexplained). After profits as a Soviet category and turnover tax have been excluded because they do not correspond to something called "entrepreneur-type profits," the conclusion is reached that in the circumstances salaries and wages afford the most "appropriate value-added weights for the output of a given industry." Would it not have been better to cut this sophistication and simply to say that valuation of output at wage-cost is the most practicable in view of the data available, and at least makes sense as a way of measuring the changed product of human

effort, provided that wages mean roughly the same thing (as regards effort rewarded) in different industries? We should have had no less respect for Professor Hodgman's results if he had said no more than this.

But this unhelpful excursion into index-number theory is no more than incidental. The real value of the book lies in the interest of the results obtained and in the wealth of data embodied both in the text and in the appendices (the tables embodying the basic output and wage-bill data alone occupy nearly thirty pages). Adoption of the growing American habit of relegating footnotes to the back of the book makes the checking of sources and references as one reads a tiresome, even exasperating, business; but for that presumably publisher and not author is to blame.

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Changing Melanesia. Social economics of culture contact. By C. S. BELSHAW. (Wellington and London: Oxford University Press, 1954. Pp. ix + 197. 17s. 6d.)

THIS is a book that will fascinate many kinds of readers, economists, anthropologists, social scientists generally and, of course, those concerned with the practical problems of colonial administration. It is written by a trained economist who spent a number of years in the Colonial Service in the Solomon Islands and was able to study at first hand the material on which anthropological studies are based.

Ostensibly the purpose of the book is to give an account of what happens when Western and Melanesian societies meet, how the cultures influence one another, and to trace as far as possible the interactions of social, political and economic forces. In fact, the story told is so very systematic, and so well organised with the help of theoretical concepts, that the reader cannot but be impressed by the evidence it gives of the advances that have in recent years been made in the social sciences. On the economic aspects the more senior readers of this JOURNAL, in particular, will recall the discussion of rather similar material by Malinowski in 1921 on his return from the Trobriand Islands (though he was more specifically concerned with the economics of a static primitive society). Since that date much information has been collected on the economic organisation of various primitive peoples, and this material has been compared and, to a certain extent, interpreted in a number of compendia of primitive economics, the most well known of which are by Thurnwald and Herskovits. As a result, Dr. Belshaw is able in this work to set out his findings with a notable brevity, emphasising points of general and theoretical interest, and avoiding those lengthy descriptions of canoe building, and the like, which absorbed so much space in earlier writings.

From the point of view of the general economist, anthropological studies suggest a number of questions. First, are all peoples at all times faced with an "economic problem"? The earlier view that primitive peoples lived at

a pre-economic stage has now been replaced by the view that the economic organisation of these peoples is rather more closely linked with their social and political systems than in Western societies; it is only possible to consider the economic aspects of their society by a fairly stringent process of abstraction. An important reason for this is that in a stationary economy (that is to say, stationary in both techniques and population level) the solution to the economic problem—once it has been found—will apply for all time. Economic questions, such as the number of yams to produce each year, become a matter of habit or routine and there is no need for any mechanism—such as that provided by a competitive economy—to balance more yams against fewer canoes, provided of course that tradition is exactly followed.

A second question is, to what extent is economic gain the primary purpose in the exchange of goods? Malinowski's well-known description of the highly ritualised annual exchanges among a circle of islands in the Western Pacific naturally led to a considerable discussion of this question; in his essay on *The Gift*, recently translated into English, Mauss argued, broadly speaking, that the exchange of goods may take place even though the material utility (if one can so designate the utility concept used in economic theory) of the two parties may not be improved by the exchange. The purpose of the exchange is to establish trust and confidence between the parties: the exchange is not necessarily simultaneous but may be based, to use Belshaw's term, on the "custom of ultimate reciprocity." The inference is that it is only on the basis of such material changes that societies can be founded. Particularly interesting in this connection are the reports of missionaries, quoted by Belshaw on p. 51, that before any contact on a higher level was possible the missionaries found it necessary to trade with the natives.

It is on theoretically fundamental matters such as these that the economist can derive much insight from anthropological studies. The colonial administrator, in addition, is somewhat in the position of an experimental social scientist; his decisions on the rate and methods of economic progress can be guided by theory, and their consequences may be used in constructing new theories.

In Chapter X of this book, entitled "Social Change in Theory," Dr. Belshaw sets down his views on such theoretical matters. This chapter is, more or less, an inventory of logical categories according to which data may be organised; a number of these categories—the elasticity of demand for a social end, the complementarity of social ends, etc.—are taken over from economics. It may well be that sociologists and anthropologists would benefit from the use of the logical schemes and tools that have been found useful in analysing economic problems; the case made out for their use in this chapter is, however, not entirely convincing.

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West Highland Survey. Edited by F. FRASER DARLING. (London: Oxford University Press, 1955. Pp. v + 438. 30s.)

THE crofter is bound to be a problem child of social students, as of men of affairs, because his life is essentially and inevitably unstable. He has his land holding, which is as good as his own property, though technically he is for the most part only a tenant, a fact which may matter if when he dies he has no heir to take on the hereditament. But the holding is not large or wealthy enough to maintain him and his family on even the most modest standard of living, and he usually undertakes some supplementary part-time occupation, which may be anything from weaving or fishing to acting as local agent for a cattle-food combine or as a part-time worker in a nearby factory. It is an untidy way of life, and one can understand that reformers urgently want to improve it. Equally understandably, their first reaction is to demand increased emphasis on one or other of the crofter's two types of occupation. That is to say, they are in favour either of converting the crofter into a full-time farmer, of one kind or another, or developing new industries in the Highlands and Islands (including electricity schemes and the tourist trade) so that a large part of the inhabitants can be taken off the soil. The two solutions are not, of course, incompatible; theoretically at least one could divide the population of the Highlands into two sections, one dealing with an extended range and volume of non-agricultural economic activities, while the other devoted itself to farming on a larger and more efficient scale than is the rule at present. The difficulty is that apparently most crofters, though dissatisfied with their present standard of life, are reluctant to give up altogether either their holdings or their non-agricultural work. They like having one foot in each of the two camps, and are as bitterly opposed to far-reaching change as any Russian peasant was to collectivisation.

All this is, of course, well known to Dr. Fraser Darling and his colleagues. They have produced a truly impressive conspectus of the situation as it is, area by area, even parish by parish. The problem is studied closely and understandingly from the points of view of geography and geology, population, agriculture and sociology, and its findings on the factual side are (so far as I can judge) wholly reliable. But the conclusions superimposed upon them are perhaps affected by predilections.

Dr. Darling sees the future of the Highlands in making the fullest possible use of its existing agricultural and marine resources. Under the former head he lays chief stress upon continued reafforestation (with which everyone will agree) and the increase of cattle stocks at the expense of sheep (about which there is perhaps more room for argument). He evidently dislikes the idea of bringing industry to the area (indeed, it is a surprising omission in the book that it does not survey such industrial undertakings as already exist); he does not attach much importance to tourism; he even wants to discourage the building of roads, lest it make it too easy for the crofter to visit urban centres, whereby he might lose his attachment to the croft and the local township.

Instead, he wants to build up the township as a well-equipped social and human centre offering the means for a full and happy life to the occupants of the surrounding farms. I find myself torn by conflicting doubts. First, will the crofters themselves accept this streamlining of their lives? Only, I think, if they are "feather-bedded"—offered the facilities suggested by Dr. Darling, *not* refused the improved communications which he on the whole deplures and allowed at the same time to carry on their present straddling way of life. Given that the country is prepared to face the cost involved in this programme, one can imagine that it could fulfil the hopes pinned on it by enthusiasts for the Highlands and Islands. But one can ask whether it is reasonable to expect England and Wales and the Scottish Lowlands to accept the Highlands and Islands as a permanent financial liability. If, however, this is reasonable, if we regard the area as a national asset, worth preserving even at some cost to the Treasury, then at least let us make it as easy as possible for southerners to enjoy it; in other words, let it be developed as an area for discriminating tourists. And finally, while I am among those who dislike the idea of establishing anything in the way of large-scale industry in the Highlands or Islands—a project which would, of course, do nothing to solve the crofter problem, though it might raise both the total population and the *average* standard of living in the area—yet I find it unreasonable and unrealistic when people oppose the full exploitation of the area's biggest single natural asset, its water power. I am all for hydro-electrical schemes, in spite of the pylons and the threat to some trout streams.

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London.

NOTES AND MEMORANDA

THE INDUSTRY AND THE REPRESENTATIVE FIRM

IN a recent article in this JOURNAL¹ Mr. J. N. Wolfe has made a valiant attempt to revive the concept of the "industry" as a tool of economic analysis. He defines an industry as those firms "involved in a chain oligopoly (which) operate as though their demand curves had a kink at the prevailing price."² He goes on to argue that the supply curve of such an "industry" may be drawn with reference to the costs of production of a "Representative Firm,"³ the latter being defined in Marshallian terms.⁴ Mr. Wolfe then proceeds to draw certain conclusions regarding the size distribution of firms within such an industry, which, he maintains, is governed by the output of the industry and the price at which its products are sold.⁵

Any attempt to reconcile the views of those economists who regard the "group and the industry as useless concepts"⁶ and those of businessmen, who still seem to think and act as if there were such things is to be commended. The need for a precise and meaningful definition of an industry has long been apparent to those economists interested in empirical research or in welfare economics. But Mr. Wolfe's attempt to put the clock back in economic analysis and to apply concepts once useful in a certain economic environment to an almost completely different environment raises considerable difficulties.

It seems clear from a reading of the *Principles* that Marshall's industry was based, implicitly at least, on the criterion of technological similarity. Despite Mr. Wolfe's liberal interpretation of Marshall's "free competition" as implying merely that one price shall rule for one product at a given time in any market,⁷ Marshall's industry was composed of large numbers of firms producing technologically similar products possessing high elasticities of substitution. Such a definition can be regarded only as a first approximation, and Marshall himself was not unaware of the intricacies of the concept.⁸ Where product differentiation is introduced into the analysis the criterion of substitutability is much more relevant. Here Mr. Wolfe abandons Marshall and, following Kaldor,⁹ he seems to envisage a chain of

substitutes surrounded on all sides by a marked "gap." The industry is composed of firms contained within this "gap."

The main difficulty with the substitutability criterion is that if the definition of an industry is to be at all precise, one has to define what elasticity of substitution is required before a gap may be said to be present. Mr. Wolfe fails to do this and admits the need for further research into the price policies of chain oligopolies.¹ Although business-men as a rule do not take account of the operations of the entire economy, but only of the reactions of a few dangerous rivals, it is axiomatic that in the last resort all commodities compete for a place in the consumer's budget. In the modern economy most firms are multi-product, and their operations may extend over many "industries," so that the "reaction patterns" of oligopolistic firms may cover a very wide field.

As the matter rests, therefore, neither technological similarity or substitutability present a very convincing case for the use of the "industry" as a precise tool of economic analysis. In a complex economy such as exists at the present time and with the prevailing predominance of the large multi-product firm striving to create a differentiated market for its product, economists should direct their attention to the problems and policies of the individual firm rather than to the extremely vague and nebulous concept of the industry.

It is equally useless under modern conditions to attempt to revive the "representative firm." Marshall's representative firm was devised to meet the problems encountered in the analysis of industries composed of large numbers of firms in different stages of development, managed with different degrees of ability and encountering varying degrees of uncertainty and luck.

In such a situation it is useful to postulate a sort of average firm, but it is significant that Marshall never stated clearly whether his representative firm was a business organisation or a single plant or factory. It is probable that he had in mind a small owner-managed firm producing a single product in a market where consumer preferences were evenly spread over the products of the various firms.

An oligopolistic industry, by definition, is one composed of firms large enough to exercise in themselves a positive effect on the market. Under such conditions it is difficult, if not impossible, to characterise any single firm as being representative of the industry either in theory or practice. In Appendix H, Marshall admits that "it is true that when nearly the whole of any branch of industry is in the hands of a few giant businesses, none of them can be fairly described as representative. If these businesses are joined in a trust, or even closely combined with one another, the term 'normal expenses of production' ceases to have a precise meaning."²

Marshall postulated an entrepreneur of normal or average ability. Again, this is a useful basis for analysis when the majority of firms were small owner-managed concerns. But in the large-scale corporate undertaking the "entrepreneur" as such is often difficult, if not impossible, to identify.

¹ *Op. cit.*, p. 349.² *Loc. cit.*, p. 805.¹ "The Representative Firm," *ECONOMIC JOURNAL*, Vol. LXIV, No. 254, June 1954, pp. 337-49.² *Ibid.*, p. 342.³ *Ibid.*, p. 346.⁴ A. Marshall, *Principles of Economics*, 8th Edition (London: Macmillan, 1920), p. 317.⁵ J. N. Wolfe, *op. cit.*, pp. 346-8.⁶ R. Triffin, *Monopolistic Competition and General Equilibrium Theory* (Cambridge: Harvard University, 1940), p. 89.⁷ J. N. Wolfe, *op. cit.*, p. 341.⁸ *Principles*, 8th Edition, p. 100, note 1.⁹ N. Kaldor, "Market Imperfections and Excess Capacity," *Economica*, N.S. 11 (1935), pp. 122-36.

Control of a large joint-stock enterprise may be vested in different individuals or groups at different times and at different stages in the firm's history. Some firms may even have lost control of their firms to outside financial bodies which may operate the firm on quite different principles to those normally followed. Are we to imagine a representative Board of Directors, a Representative Financier, a Representative Sales Manager, a Representative Engineer, etc.? Moreover, Marshall's entrepreneur was motivated by considerations of profit maximisation alone in his operations. One thing which oligopoly theory has taught us is that a number of non-pecuniary or semi-pecuniary motives may be equally important or even more important than that of profit maximisation. Marshall's analysis of the process of price determination was very largely mechanistic in character. The policy decisions of large oligopolistic concerns are not capable of such simplification—many more variables have to be taken into account.

Mr. Wolfe ends his article with a plea for more research into the price policies of oligopolistic firms and into the theory of the growth of firms. Such research is likely to be more hindered than helped by any attempt to apply concepts which, however useful they were in the analysis of a particular economic model, have little significance or applicability in present-day conditions. To the neo-classicists the problem of price determination was relatively simple; price was considered to be the outcome of impersonal forces. Given these assumptions, an aggregate concept such as the "industry" and an average concept such as the "representative firm" possessed some meaning. No such mechanistic analysis is possible under oligopolistic conditions. The economist studying oligopolistic situations has to estimate and appraise the *subjective* attitudes of entrepreneurs to the price and output policies of an indeterminate number of rivals and to the expected reactions of their rivals to their own price and output policies. In such conditions a more fruitful approach is to abandon the concept of the industry, and with it the need for a representative firm, and look instead at the dynamic development of the organisation of particular firms.

J. H. DAVIES

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Sheffield.*

THE INDUSTRY AND THE REPRESENTATIVE FIRM: A REJOINDER

MR. DAVIES' comments on my paper seem to me to call for an examination of the reasons for the development of a theory of the firm. There are two principal uses for such a theory. First of all, it can provide us with a picture of some aspects of the behaviour of firms under selected stimuli. In this case a considerable measure of abstraction is obviously essential. On this view of the theory of the firm the theory is only useful *because* it is a simplified account; the ease with which we can make deductions from

simple models is the justification for the theory. The amount we leave out ought to depend entirely on the sort of deductions required. This type of theory of the firm has received much attention in the last thirty years, and I have nothing to say about it here.

There is, however, another reason for developing a theory of the firm. It may be useful as "a guide to an entry on problems of life." Here the theory is not used as a basis for deduction. It is instead a means of familiarising the student with the main elements influencing the position of the firm in the real world. In an investigation of some specific case there is no substitute for a detailed examination of the facts of the situation. But it would be unnecessarily harsh to insist that each situation should be approached altogether without preparation. To descend to an analogy: the fact that every hill presents problems of its own and is slightly different from every other hill is not generally regarded as a sufficient reason for abolishing all general instruction in ski-ing. Similarly, the fact that every firm and every industry have slightly different problems to face does not make a general study uninformative. It is this type of general study which Mr. Davies and I have in mind, I think, and it may be useful to consider what characteristics it ought to have.

In selecting between competing theories at this level, the real test should not, it seems to me, be whether they introduce the greatest number of the elements of any practical problem. There is at least as much need for clarity and simplicity in our theory as for precision. Nor should we insist that there be sufficient generality in the analysis to cover all possible cases. A really general theory is always useful for categorising exceptional situations, but it is not usually very helpful when we start on a new study. It is, to return to our analogy, like insisting that our would-be skier direct all his attention to the theory of mechanics. My feeling is that what one wants is a theory that concentrates on the main features of certain typical situations in the real world. Such a theory requires amendment in most situations and amplification in all, but it does at least prepare the student for the most important difficulties he is likely to encounter.

From this point of view, the disagreement between Mr. Davies and me can be seen to be over what are the really important elements of the typical industrial situation. Mr. Davies thinks that the world has now moved on to a stage in which each industry has fallen into the hands of a very few large quasi-monopolistic firms controlled not by any one man but by a self-perpetuating board of directors. In my view this account pays too much attention to the form of industrial structure and not enough to its substance. It is by no means clear that to-day's large firms are not in competition with a considerable number of rivals (home and foreign) in most of their product lines. Nor is it clear that these large firms provide the dominant cases, or at any rate the most interesting ones, in the economist's laboratory. Nor would I agree that the board of directors has really solved the problem of the ageing entrepreneur: great corporate enterprises may seldom die, but they often stagnate, as Marshall pointed out.

Another difference between Mr. Davies and myself is over the question of the advisability of formulating "mechanistic" solutions. I do not myself think that price under oligopoly is determined in any straightforward or mechanical manner. But I think it very useful to show the elements of mechanism which enter into its determination, and to show at which points human fallibility and human discretion may move the balance in one way or the other.

I would finally call attention to the fact that Mr. Davies' appeal for further study of the individual firm comes after two decades of such study have already taken place. The existing theory of the individual firm seems to me to have failed as a guide to an entry on problems of life precisely because there has been too little study of the industry.¹ When we examine the price policies of the individual firm we almost invariably find that they are influenced chiefly by its environmental conditions—by the industry, that is, of which it is a part. Unless we study the firm as part of the industry we are apt to miss its essential character—that is something which Marshall knew but which we are only painfully rediscovering.²

University of Toronto.

J. N. WOLFE

ECONOMIC GROWTH IN TWO DOMINIONS

In an article published in the *ECONOMIC JOURNAL* in September 1952 I examined some of the characteristics of the rate of growth of labour productivity within the Canadian economy. Since then, in their respective notes in this *JOURNAL*, Mr. Lerdau claims to have applied similar methods to the New Zealand economy, and Mr. Pentland has criticised the validity of my findings on Canada.⁴ The present note is intended to defend my previous method of analysis, which has not been understood by Mr. Lerdau and is undervalued by Mr. Pentland.

¹ At one point Mr. Davies seems prepared to criticise my formulation because I do not define the size of the gap in substitutes which I regard as sufficient to mark off an industry. This raises a problem of some general interest: must there be numerical precision in the definitions used by economic theorists? I do not myself believe that it is very helpful for the theorist to give a precise definition of terms like firm or industry simply because the definition ought to depend on what the principals in the problem concerned think appropriate. Thus "the industry" will vary from time to time, and from the viewpoint of one firm or another. It seems to me to remain a useful concept, and we must beware of usurping the statisticians' task of close and arbitrary delimitation.

² It is extremely difficult in writing on the development of contemporary economic theory to do justice to all, or even most, of those who have contributed to the final shape which the theory has taken. My apologies are, therefore, due to many people. But there is one omission which cannot pass over so lightly. On p. 338 of my article I said that there had not been "any real determined opposition" to the attack on the representative firm. This does less than justice to Professor Robertson's remarkable article in "Increasing Returns and the Representative Firm" (A Symposium, *ECONOMIC JOURNAL*, Vol. XL (1930), pp. 80-9.

³ "Productivity in an Expanding Economy."

⁴ E. Lerdau, "Changing Productivity in the New Zealand Economy," March 1954, and A. C. Pentland, "Physical Productivity in Canada 1935-52," June 1954.

I

Mr. Pentland's main criticism is that my measure of productivity in the economy as a whole, *i.e.*, real G.N.P. per man hour, is subject to statistical and conceptual difficulties, which make it a misleading¹ indicator of economic progress, and he therefore prefers to abandon it and to try to assess Canadian economic growth by measuring productivity in the mining, manufacturing and agricultural sectors alone. He claims that these sectoral measures are free of the difficulties attached to the overall measures. It seems to me that he exaggerates the difficulties of overall measures, and ignores completely the shortcomings of his measures for individual sectors. He rightly points out that the G.N.P. aggregate includes sectors of the economy in which it is extremely difficult to measure output in real terms, and that it is often necessary to assume that productivity in these sectors is constant, *e.g.*, in services or construction. I do not deny that this is a difficulty, but similar assumptions often have to be made in measures to smaller sectors of the economy, and their proportionate importance in these sectors may not be much less than in the case of G.N.P. In Mr. Pentland's measure for manufacturing, for instance, 16% of the weights in the output index are made up by employment indicators,² although he does not warn his readers of this. The difficulty is therefore one of degree, and is not in itself an insuperable objection to the acceptance of either my productivity indicator or of Mr. Pentland's. There is a common form of hypocrisy about measures of output which are partly made up of employment or man-hour data or other indirect indicators. They are often accepted as a reasonable approximation, especially if such indicators form only a small part of the aggregate. However, people who accept such assumptions in output measures will often balk when they are used in measuring productivity. If the man-hour figures for the activity concerned contain additional errors, then the error in the productivity figure will be greater than in the output figure. If this is not the case, the productivity estimate will be as good as the output estimate, and if the output estimate is the best one available, then the productivity estimate has a right to similar respect.

Mr. Pentland contrasts the vagueness of the output concept of G.N.P. with the reliable and precise qualities of his indicators for particular sectors, which he describes as physical. It is difficult to see what Mr. Pentland means here, because no measure can properly be described as physical when it refers to the broad range of commodities included in, *e.g.*, "manufacturing," and the measures of "physical" output which Mr. Pentland uses in fact include two widely different concepts. His output measures for manufacturing and mining relate to flows of net value added, and corre-

¹ Incidentally his statement of my argument is to some extent misleading, particularly because of his use of my output per man and not of my output per man hour figures. Cf. Pentland, *op. cit.*, pp. 399 and 402, footnote 2. He also exaggerates the discrepancies between his findings and mine.

² Cf. *Revised Index of Industrial Production 1935-1951*, D. B. S., Ottawa, 1952, p. 28. This index became available after my original article was written.

spond closely to the concept of the industrial contribution to G.N.P.¹ These measures are extremely useful and are roughly comparable with the output concept which I used. However, the index used by Mr. Pentland to measure agricultural output is quite different, although he treats it as though it were homogeneous with those for the other two sectors. It is an index of the volume of farm output of the usual type, *i.e.*, the physical output of commodities sold off the farm (excluding inter-farm transfers), and consumed in farm homes, weighted by market prices. In fact, such an output index grossly overstates the technical progress which has taken place in agriculture, because in the period considered the input-output relations of agriculture with the rest of the economy have changed considerably.² Increased inputs of fertilisers and petroleum, etc., from other sectors have greatly contributed to the increased gross output of agriculture as measured by Mr. Pentland. If one is interested in the relative rate of progress in different sectors, and in the contributions of different sectors to overall growth, then a primary aim must be to avoid such double counting. It is paradoxical that Mr. Pentland, who seems to cherish an inverse brand of physiocratism in that he regards increases of productivity in agriculture as in some way less encouraging than similar changes in industry, should choose an indicator for agriculture which exaggerates its performance relative to industry, something he accuses me of doing—with no justification.

Apart from the incompatibility of the production concept which Mr. Pentland uses for agriculture with those for his other sectors, his employment data for agriculture are subject to much greater proportionate risk of error than those which I used for the economy as a whole, because for several of the years he covers they are based on straight-line interpolation of the decennial population census,³ and they are subject to greater relative

¹ They are derived from the new official Canadian index of production referred to in the previous footnote. This is the only official industrial production index, apart from that of Ireland, in which not only the weights but also the indicators for individual industries are made up of net output indicators. For individual industries, the index is of the form:

$$\frac{\sum Q_1 P_0 - \sum q_1 p_0}{\sum Q_0 P_0 - \sum q_0 p_0}$$

where QP refers to the gross value of output, and qp refers to the value of materials, electricity and fuel inputs.

² A study of output and labour productivity in U.S. agriculture by J. W. Kendrick and C. E. Jones, *Survey of Current Business*, September 1951, shows that U.S. farm output measured in terms of its contribution to G.N.P. (roughly the same concept as that used by Mr. Pentland for Canadian manufacturing) rose about 20% between 1910–14 and 1945–49, whereas the volume of farm output at market prices (roughly the same concept which Mr. Pentland uses for Canadian agriculture) rose 60% in the same period, *i.e.*, by three times as much. The reason for this discrepancy is that American agriculture greatly increased its dependence on other sectors of the economy in this period, so that the ratio of intermediate products consumed to total farm output rose from less than a quarter before the First World War to just under a half after the Second World War. I do not suggest that the same relation between these two concepts of output would also hold in Canada, but it seems likely that the discrepancy would be large and in the same direction. Incidentally, it seems preferable for productivity purposes to take a moving average of farm output to eliminate some of the large year-to-year variations which are due to the weather.

³ My employment figures were based on the bench-mark data of the census, which do not relate to ideal years from the viewpoint of productivity studies, but which are less likely to produce what Mr. Pentland calls “fortuitous” results than the results of interpolations.

conceptual difficulties in assessing the degree of activity of farmers' wives and children, or in deciding whether certain people are working at all.

Obviously the analysis of economic growth can be improved by productivity indicators for particular sectors, and I think that Mr. Pentland's estimates for mining and manufacturing are valuable complements to the overall measure. However, his discussion of the relative merits of these measures and of the overall measure is confusing and misleading, and his confidence in his indicator for agriculture is completely misplaced. Finally, it should be noted that the global productivity concept which I used is a good starting point for measuring economic progress because it reflects better the welfare impact of technological change than do indicators for particular producing sectors taken in isolation; as a total it can be cross-checked in several ways and, although its significance as an aggregate is still open to dispute, it has been subject to widespread discussion in recent years by welfare economists and others, so that its economic meaning is often clearer than measures for lesser aggregates of the type Mr. Pentland calls physical.

II

Mr. Lerdau claims to have followed my “method” in his study of productivity in New Zealand, with “one important difference.” The difference is that he eliminates the real-income effect of changes in the terms of trade, whereas I did not. The reason I ignored this problem is that the terms of trade had no significant influence in the period with which I was dealing. Between 1931 and 1941 the Canadian terms of trade were unchanged, and over the period 1931–49 the small improvement in the terms of trade probably raised real income by under 2%, whilst real G.N.P. more than doubled. In New Zealand foreign trade is more important than in Canada, and there has been much greater instability in the terms of trade.

It therefore seems quite appropriate that Mr. Lerdau should use a different technique in dealing with the New Zealand economy than that which I used for Canada, and he is mistaken to suggest that I would disagree with his method in this respect, although I would not attempt to make a study of year-to-year movements in a period which includes the aftermath of devaluation and the Korean wool boom.

However, Mr. Lerdau is much more mistaken in thinking that the other elements of his “method” bear any resemblance to mine. It is in fact very doubtful whether his estimates can properly be described as measuring productivity at all because of the nature of his data on employment and working hours. His figure for the civilian labour force does not seem to have been adjusted for changes in unemployment,¹ and his series for hours worked refer to hours prescribed by the Arbitration Court and not to actual working hours. As Mr. Lerdau's estimates cover the war years, in which unemployment declined, and working hours greatly exceeded those prescribed by the

¹ Lerdau, in line (3) of his Table 1, *op. cit.*, refers to real output per civilian *active*, but in fact this line is simply the quotient of the first line (real output) divided by the second (civilian labour force). This is partly disguised by what must be a misprint in his 1947 figure for G.N.O.

Arbitration Court,¹ his estimate probably grossly overstates the war-time increase in output per man-hour.

Having produced a figure for overall productivity of such doubtful meaning, Mr. Lerdau then takes an estimate of productivity in agriculture by Mr. Bray, which is essentially an index of physical productivity with labour weights, and derives a measure for productivity in the rest of the economy by a process of residualism. Mr. Lerdau's arithmetic becomes peculiar at this stage. Mr. Bray's figures show a rise of 25% in agricultural productivity between 1936 and 1941, and a 35% increase between 1936 and 1945. Mr. Lerdau takes the figure of 25% and assumes it to be valid for the period 1938-43. For some peculiar reason, however, Mr. Lerdau says he is using Mr. Bray's figure for the period 1936-45.²

Even if there had been no conceptual incompatibility between Mr. Bray's figure for agriculture and Lerdau's estimate of overall productivity, and ignoring the confusion over the time periods, the technique used by Lerdau for deriving productivity in the non-agricultural part of the economy would render this latter calculation of doubtful value.

His partition formula ignores the problem of structural shifts entirely. In fact, he does not indicate the year to which his employment figures refer, and it is not possible to deduce this, as his figure for total employment does not correspond with the data for any of the years shown in his Table I, and his figure for agricultural employment corresponds with none of the figures given by Mr. Bray. No wonder he finds his results hardly credible!

After these curious manoeuvres Mr. Lerdau ends up with a residual figure of 9.7% per annum increase in productivity in the non-agricultural sector and finds "verification" for this high figure in an estimate of Colin Clark. His logic here is extremely obscure. He accepts Colin Clark's figure of 1.3% per annum as a likely rate of growth of productivity in "tertiary industries." The high rate of increase of the non-agricultural sector must, therefore, be explained by that part of it which is not tertiary, *i.e.*, by manufacturing. Manufacturing in New Zealand was responsible for just over a quarter of non-agricultural employment, "tertiary industries" for most of the rest; therefore, if the whole of the non-agricultural sector grew at 9.7% per annum and the tertiary sector grew at 1.3%, then by applying Lerdau's own partition formula, productivity in manufacturing must have rocketed upwards at about 40% per annum—a figure quite different from that of Colin Clark!

Paris.

A. MADDISON

¹ Cf. *New Zealand Official Yearbook 1953*, p. 816, which gives a frequency distribution showing actual working hours in 1945 as derived from a special questionnaire in the census. The mean figure for actual weekly working hours was about forty-seven in a year in which the official series which Mr. Lerdau uses show a prescribed working week of about forty-one hours. It therefore seems highly likely that actual working hours were also higher than the legally prescribed hours in 1943.

² Lerdau's text only becomes intelligible if 1941 is substituted for 1945, 225 for 245, 1936 = 100 for 1938 = 100 in his table on p. 186; and if 1941 is substituted for 1945 on p. 187. Cf. F. R. Bray, "Employment, Productivity and Incomes in New Zealand Farming," *International Labour Review*, May 1950, p. 471.

STERLING BALANCES AND THE COLONIAL MONETARY SYSTEMS

THIS note is written within the context of the series of notes on colonial money and sterling balances published in this JOURNAL over the past four years.¹ My purpose is three-fold: to answer several points arising from Mr. Niculescu's note, to state and evaluate some neglected but relevant facts and to suggest a more fruitful approach.

The sterling balances in the possession of the colonial currency boards are, in part, sterling capital assets of the colonies involved, and as such contribute to any colonial net foreign investment. It is one of the principles of British colonial monetary systems that currency-fund assets should be invested in sterling securities; it has happened in fact that a major part of these investments is in United Kingdom Government securities, but this particular sterling investment is not a necessary consequence of the monetary systems, and is actually the manifestation of a balanced investment portfolio. Large sterling balances do not in themselves, then, indicate a loan to the British Government as Mr. Niculescu maintains.

Colonial monetary systems require a 100% backing, but, as the following facts indicate, the nature of the reserve system is neither simple nor uniform. The currency board of the Straits Settlements had large holdings of Straits Settlements securities until 1936, and the Malayan Currency Board held Malayan securities until 1949; Rhodesia is another exception to the general rule that currency boards are not allowed to hold the securities of their own governments. The present Malayan Currency Board possesses a house in Penang as a fixed asset; the Hong Kong Exchange Fund can, but does not, hold Hong Kong dollar assets and foreign exchange; and the Hong Kong currency funds hold local assets. It is the present working rule of the Crown Agents, who act for colonial governments and on their instructions, that at least 70% of colonial government sterling assets, including those of each currency fund, should be invested in the securities of the United Kingdom Government, leaving up to 30% to be invested in the securities of colonial and other Commonwealth governments. Thus at the end of 1953 the Malayan Currency Board held 20% of its assets in colonial and other Commonwealth sterling securities. Potentially, 30% of colonial sterling balances may become mutually available to other colonies for payment of imports.

To put the currency-reserve problem in its proper perspective, it should be recalled that currency is only part—and in economically developed colonies, a minor part—of the money supply. An increase, for example, in the money supply of a colony may be effected by a mail transfer from abroad through the facilities of a bank or by a loan made locally by a bank.

¹ The three most recent notes in the series are: "Sterling Balances and the Colonial Currency System: A Comment," Ida Greaves, *ECONOMIC JOURNAL*, December 1953, pp. 921-3; "Sterling Balances and the Colonial Currency System: A Reply," A. Hazlewood, *ibid.*, September 1954, pp. 616-17; and "Sterling Balances and the Colonial Currency System: A Comment," B. M. Niculescu, *ibid.*, pp. 618-19.

A proportion of any increase will eventually be required in legal tender, and it is against this proportion that the banks must surrender sterling to the Commissioners of Currency. This transaction does not affect the magnitude of the sterling balances of the colony. The currency notes are issued by an agency of the Colony and not by the United Kingdom Government, which neither issues the notes nor uses the surrendered sterling, unless and until the Crown Agents, acting for the Colony's currency fund, buy British Government securities on the market as part of an investment policy.¹ The purchase of currency with assets of equivalent value is normal to most monetary systems, and evidence that such a procedure places no unusual hardship on the colonial bank involved might be found in the fact that although two of the three note-issuing banks are allowed a pure fiduciary issue totalling \$12 million Hong Kong currency in that colony, they have not availed themselves of this privilege—which is, after all, an anachronism.

It is true, however, that a proportion of the sterling balances of the currency funds cannot be used for current imports by the colonial governments. It is also true that some proportion of these currency-fund assets might be so utilised without necessarily endangering the nature of the colonies' monetary relations with London. With this there seems to be little disagreement, although students of the problem have their own concepts as to what that proportion might be.²

It is wrong, in my opinion, to move directly from this general theoretical finding to a specific policy statement—that the 100% reserve system is working undue hardship on the colonies by delaying or potentially delaying development and should, therefore, be abolished. This statement is difficult to substantiate in a series of notes, and tends to be misleading. In British East Asia, at least, no government project has as yet suffered from inability to use currency-fund sterling assets. Nor is it incongruous that an area which borrows funds for one purpose—development—should lend for another—to establish currency reserves, providing both the borrowing and the lending can be justified as appropriate to their specific purpose.³

While there has been no need to use the currency-fund assets, the time may come when British territories in East Asia require sterling—in addition to what is then in their possession and at their legal disposal—to finance

¹ Cf. Niculescu, *op. cit.* Here Mr. Niculescu makes a fundamental error, for in no sense can it be said that the United Kingdom Government "issues" currency in colonies where the currency-board system exists. Mr. Niculescu's plea for "locally established" issuing institutions is hardly a plea for something new. They have existed for at least fifty years.

² Dr. Greaves, for example, states that a minimum of two-thirds sterling reserves is required to meet all possible eventualities (Ida Greaves, "The Colonial Sterling Balances," *Essays in International Finance*, September 1954, p. 14). Other estimates include the 50% for all future issues in Jamaica (A. Hazlewood, "The Economics of Colonial Monetary Arrangements," *Social and Economic Studies*, Vol. III (December 1954), pp. 291-315) and a cautious 50% under certain well-considered conditions for the British African colonies (W. T. Newlyn and D. C. Rowan, *Money and Banking in British Colonial Africa*, Oxford: at the Clarendon Press, 1954, pp. 259-61).

³ For the contrary opinion, stated without argument as a self-evident proposition, see A. Hazlewood, "The Economics of Colonial Monetary Arrangements," *loc. cit.*, and his "Colonial External Finance since the War," *The Review of Economic Studies*, December 1953, p. 49 (also appearing as No. 8 in the Oxford University Institute of Colonial Studies reprint series).

current imports. When such demand for sterling arises, a colony can borrow, as it does now, in London. While there is no *a priori* reason why a currency fund should not be allowed to purchase its own securities on the London market when marketability is assured, under the present 70% working rule there might be no net gain thereby. Local securities have been floated successfully in some colonies, but since they purposely deny themselves the advantages of the London market, their issue is limited to the anticipated capacity of colonial banks, insurance companies and public to purchase them with existing local funds.

The colonies have always been able to float their securities on the London market, and it is doubtful if the time will come when reasonable quantities of such securities will be unsaleable, providing there are the safeguards which usually attend a sound government borrowing programme and development plan. The ability of the government of an undeveloped area to buy its own securities is useful only if no one else will buy them, and it is not an essential for future development that currency-fund assets be utilised if other considerations should urge against it.

No evidence has been submitted in this series of notes which warrants the conclusion that the 100% sterling reserve system should be modified. There may be cases where such modification is appropriate, but any proposal for modification should be preceded by detailed research not only into the bare essentials of the monetary system but also into the characteristics of the entire economy for which the proposal is made.¹ For in each colony different weight must be given such factors as the increasing use of bank money, the primitive psychological factor, the temptation to use currency funds for ill-conceived development plans which have temporary political appeal and the effect of such development financing on the balance of payments. As an example of a special case, Malaya has recently converted its currency-fund holdings into longer-term securities at a capital loss, and this board at least might hesitate to urge a change in the 100% reserve system.

The objections which have been raised to colonial sterling balances in general and currency-fund sterling assets in particular are not really valid criticisms of the principles of the system. As Mr. Hazlewood himself writes, "It is not the existence of sterling balances, which play a necessary part in the economies of colonial territories, but their magnitude and their continuous increase which merit comment."² More valuable than critical, but necessarily incomplete, notes on the colonial monetary systems would be a detailed analysis of colonial development programmes and public-finance policies.

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¹ E.g., Newlyn and Rowan, *op. cit.*

² "Memorandum on the Sterling Assets of the British Colonies: A Comment," A. Hazlewood, *The Review of Economic Studies*, Vol. XVII (1) No. 57, 1954-55.

CURRENT TOPICS

THE Council of the Royal Economic Society has appointed Mr. A. Fuller to the office of Assistant Secretary, vacant through the death of Mr. S. J. Buttress. Mr. Fuller has been, and remains, Chief Clerk of St. Catharine's College, Cambridge. In future all correspondence intended for the Assistant Secretary should be directed to the Marshall Library, Downing Street, Cambridge.

WE record with regret the sudden death in Washington of Professor H. A. Shannon. Professor Shannon, who had recently been appointed to the Chair of Economics at Makerere College, Uganda, but had not yet taken up his appointment, had served in recent years on the staff of the International Monetary Fund. He was earlier on the staff of the University of Bristol and of the London School of Economics. We offer our sincerest sympathy to his wife and family.

VISITORS to the United Kingdom during the present academic year include at Cambridge Professor W. T. Easterbrook as Pitt Professor, Professor G. C. Homans as Professor of Social Theory and Professor R. H. Strotz, who is working at the Department of Applied Economics. At Nuffield College, Oxford, is Professor A. Smithies. At the London School of Economics are Professor P. W. Buck, Professor C. Kaysen, Professor L. Lipson and Professor H. Somers.

SIR DENNIS ROBERTSON writes :

"The obvious printer's error [actually, "editor's".—R.F.H.] in the penultimate line of my note on p. 410 of the September JOURNAL gives me an opportunity to ask the reader to substitute ' . . . he will get more fun (of one kind or another) out of the $(m + n)^{\text{th}}$ £ of income than he is getting now out of the m^{th} £ ' for the final words of the note."

Houblon-Norman Awards. The Trustees of the Houblon-Norman Fund invite applications for Fellowships or Grants in aid of Research into the working of industry and finance in Great Britain and elsewhere and the economic conditions affecting them. Fellowships, which are intended for experienced research workers, are awarded for full-time research for one year, which may be renewed for a second year. Grants are awarded for either full-time or part-time work. The amount of the awards, which will take effect from October 1, 1956, will depend upon the circumstances of the candidate and the probable expenses of his work. Candidates must be

British subjects normally resident in the United Kingdom. Forms of application, which may be obtained from the Secretary of the Fund, c/o the Bank of England, London, E.C.2, should be returned not later than March 1.

The Trustees, on the recommendation of their Advisory Committee, have made the following awards for 1955/56 :

Research Grants

Mr. G. Clayton, Lecturer, University of Liverpool. (Renewal).	The Present Organisation and Structure of the Swedish Banking System.
Mr. Ralph Davis, Lecturer, University of Hull.	The Organisation and Finance of the English Shipping Industry, 1660-1702.
Mrs. C. R. Fulop, Lecturer.	The Economics of the Buying Practices of Retailers.
Mr. E. L. Furness, Lecturer, Glasgow Commercial College.	20th Century Development of Scottish Banking.
Mr. R. E. George, Statistical and Administrative Assistant, South Western Gas Board. (Renewal.)	Economic Policy in the Gas Industry before Nationalisation.
Miss D. M. Knox, History Mistress, Ursuline Convent, Brentwood. (Renewal.)	London Brewing Trade 1830-1914.
Mr. R. V. Lennard, Historian. (Renewal.)	Rural England in the Feudal Age.
Mr. G. J. de C. Mead, Bank of England.	The Intendants of 18th Century France.
Mr. A. L. Minkes, Tutor, Department of Extra-Mural Studies, University of Birmingham.	The Economic Structure and Problems of the British Paint and Varnish Industry.
Mr. R. G. Opie, Lecturer, London School of Economics.	Techniques of Central Banking Control in the Federal Republic of Germany.
Mr. R. A. C. Parker, Lecturer, University of Manchester.	18th and early 19th Century Landed Estates.
Mr. H. W. Parris, W. E. A. Tutor, Northamptonshire.	Board of Trade Railway Department and its influence on the Development of the Railway System in Great Britain.
Mr. R. J. Pounce, Research Officer, Board of Trade.	Post-war Unemployment in Great Britain.
Mr. C. N. Ward-Perkins, Fellow of Pembroke College, Oxford.	An Index of Country Banks in England and Wales.
Mr. A. A. Zukowski, formerly Scientific Assistant, Commonwealth Forestry Bureau, Oxford.	Forest Policy of England in relation to her Economic Development.

THE following have been admitted to life fellowship of the Society :

Anantakrishnan, R.	Misawa, Prof. T.	Sen, S. R.
Hallinan, T.	Naik, M. C.	Teng, Q. K.
Loasby, B. J.		

THE following have been admitted to fellowship of the Society :

Adeniyi, H. O.	Chen Chen, F.	Ghosh, S. T.
Adophy, C. J.	Chew, D.	Grunfeld, Y.
Agarwala, Dr. J. S.	Chonchol, J.	Guelfat, Dr. I.
Alan, Z.	Choudhury, T.	Gupta, S. C.
Antrobus, N. L.	Chukwuka, F. O.	Hakaspi, H.
Banerjee, H.	Coward, N. J.	Harris, C. T.
Basu, P. K.	Dalton, G.	Hefebower, Prof. R. B.
Bolshaw, P. H.	Dasgupta, D.	Heron, J. P.
Brooksbank, J.	Frantzen, H. C.	Hong, E. S.
Brown, W. M.	Gavrielides, H. D.	Iengar, M. V.
Chanserker, Prof. M. A.	Ghosh, A. C.	Jacques, R.

Jao, Y. C.	Mills, J. L.	Smith, L. G.
Kimura, Prof. M.	Mittra, P. C.	Squair, C. H.
Kirthiratne, C.	Newbigging, E. L.	Staub, P.
Kwok, B. W.	Nidditch, L.	Swee, G. K.
Laxman, N. K.	Nzeribe, B. U.	Talbot, E. W.
Leakey, B. P.	Olowokere, J. A.	Tame, K-F.
Leyden, J. L.	Page, F. V.	Tarkas, A. D.
Lieu, H-S.	Pandit, S. B.	Tayab, M. S.
Lin, T. C.	Pareek, A. K.	Theocharis, R. D.
Ling, C. T.	Pattabhiraman, N.	Thong, J. K. S.
Lloyd, J. E. N.	Primus, B. V.	Tymvios, N. J.
Lustig, S.	Rodrigues, L. C.	Uzoh, L.
MacDonald, J. J. O.	Sabherwal, K. N.	Watkin, E. E.
Marshall, S. A.	Samuel, J.	White, S. N.
Millar, R. N.	Sircar, S.	Yam, R. L. K.

The following have been admitted to Library membership of the Society :

Banco de Guatemala, Departamento de Estudios Economicos.
 City College, Evening Commerce Dept., Calcutta.
 Instituto Universitario de Economia e Commercio, Venezia.
 Ministry of Economic Affairs, Djakarta.
 Seton Hall University, Patterson, N.J.

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Probleme Economice (Rumanian text)

No. 5, 1955. *Two Trends in Economic and Political Development Since the Second World War. The Reduction of Retail Prices—An Important Factor in Raising the Standard of Living of the Workers. The Nature of Tendencies in Objective Economic Laws:* H. KOHN. *Some Problems in Organising Production in Metallurgical and Engineering Enterprises:* H. STERIAN. *For a Decrease in Construction Costs:* I. VIRGIL. *The Rational Use of Tractors and Equipment on M.T.S.:* O. POPA. *Some Problems in Supplying Raw Materials to the Food Industry:* E. TRATTNER. *Some Current Aspects of Inflation in Capitalist States:* E. CASEVSCHI. *On Socialist Reproduction:* C. SABIN.

No. 6, 1955. *Socialist Competition—An Important Aid to Attaining the Industrial Plan in All Its Indicators:* M. VOICU. *Reserves for Increasing Labour Productivity in Engineering:* C. BARBU-LESCU and D. JOITA. *Some Aspects of the Regional Distribution of Agricultural Production:* V. PASCOVSCHI. *Aspects of the Subjugation of Rumania Under the Bourgeois-Landlord Regime By Means of Foreign Trade:* N. IANOVICI. *The Struggle of the Peoples of Asia and Africa Against Colonialism:* L. STROJA. *Improving the Methodology of Calculating Labour Productivity in Industry:* A. GLÜCK. *The Socialist System of Agriculture:* B. ZAHARESCU.

No. 7, 1955. *The Lenin Theses on the Improvement of Goods Exchanges Between Town and Country in the Period of Transition from Capitalism to Socialism:* C. FLORESCU and L. DEAK. *The Rumanian State Budget in the Service of Building Socialism:* A. GHEORGHIU. *The Rationalisation of Fuel Consumption:* I. SAFIR. *Some Problems in the Development of Local State Industries:* O. DOBRESCU. *The Importance of the Systematisation and Organisation of the Conditions Created for Small Scale Commodity Production in Agriculture and the Possibilities of Expanding Production in This Sector:* D. MARIN. *Commodity Production and the Law of Value Under Socialism:* A. NEGREA.

Ekonomist (Serb text)

No. 1, 1955. *A Means of Remedying Agrarian Overpopulation:* K. MILJOVSKI. *A Projection of the Structure of the Yugoslav Labour Force and Population:* M. MACURA. *Problems of Dwelling Construction and Finance in Yugoslav Towns:* D. STEFANOVIĆ. *Marx's Law of Value:* Z. PJANIĆ.

NEW BOOKS

British

BANKS (J. A.) and OSTERGAARD (G. N.). *Co-operative Democracy. Co-operative College Papers, No. 2.* Loughborough: Co-operative Union (Stanford Hall), 1955. 9". Pp. 63. 1s.

[The subject of this study is the problem of membership apathy in the Co-operative Movement. The authors undertook two inquiries. The first was concerned with a group of societies for which comparison with 1933 was possible. It is found that the average proportion of members at ending general meetings fell from 1.53% in 1933 to 0.25% in 1954. There was also a fall, though not such a large one, in the proportion of members voting in elections of Management Committees. A number of changes since 1933 in methods of conducting business are described. The second inquiry was a more intensive case study of elections in an individual Society in the Midlands. Statistics relating to these elections are examined from various standpoints. The intention was to supplement the statistical data by a questionnaire issued to the voters, but unfortunately only a small proportion of the questionnaires were returned, and the results could therefore be taken at best no more than an indication of views held by the more active members. The authors point out that relatively little empirical work of the type represented by their inquiries has hitherto been done on the Co-operative Movement, and they conclude by indicating some further subjects of research that are suggested by their findings.]

BENHAM (F.). *Economics.* Fifth edition. London: Pitman, 1955. 9". Pp. 568. 18s.

[To be reviewed.]

BENNETT JONES (R.). *The Pattern of Farming in the East Midlands.* Loughborough: University of Nottingham School of Agriculture (Department of Agricultural Economics, Sutton Bonington, Loughborough), 1955. 9½". Pp. 174. 6s.

[This contains a comprehensive classification of farms by size, type, etc., based on information taken from official agricultural returns for the region. These returns are complete, so the result is not a sample survey. Classification in such detail has not often been attempted before in this country. The author supplements his statistics by a series of maps.]

BISSET (G. B.). *Financial Results on Farms in the Southern Province in 1951-52 and 1952-53. Farm Management Survey Report No. 4.* Reading: University of Reading Department of Agricultural Economics, 1954. 9½". Pp. 31. 5s.

[This is the fourth in a series of reports prepared by the Department of Agricultural Economics at Reading University. The statistics shown relate to production, expenditure, capital investment, output per unit of different inputs, and net income. Average net income per 100 acres in the farms in the sample fell from £397 in 1951/52 to £295 in 1952/53, because of poorer crop yields and rises in costs.]

BURNSIDE (E.) and STRONG (W. M.). *An Economic Study of Pig Production in South West England, 1953-4.* Newton Abbot: Department of Agricultural Economics, University of Bristol, 1955. 9". Pp. 40. 2s. 6d.

[The chief conclusion reached is that costs of feeding were of paramount importance in determining the financial results of the farms studied. An analysis is given of the main factors affecting feeding costs per unit of output. Attention is also paid to the quality of pig produced, which, it is suggested, is likely to become more important as free market conditions come to be fully restored.]

CHANDRASEKHAR (S.). *Population and Planned Parenthood in India.* London: Allen & Unwin, 1955. 9". Pp. vii + 108. 12s. 6d.

[The first two chapters provide a summary of the facts relating to the growth of India's population during the present century and a lucid brief discussion of the causes affecting fertility and mortality. Most of the rest of the book is concerned with the prospects of extending the practice of birth control in India. The author discusses the difficulty of evolving reliable contraceptive techniques appropriate to Indian conditions and of educating people in their use. After describing the work at present being done in India to spread knowledge of birth control, he ends with a plea for intensification of effort in this direction.]

Colonial Students in Britain. A Report by P.E.P. London: Political and Economic Planning (16 Queen Anne's Gate, S.W.1), 1955. 9". Pp. 257. 21s.

[This is based on systematic fieldwork amongst colonial students in Britain, including a large-scale sample survey. Quotations from the actual words of the students' replies are much used. Only about a third of the students were at universities; the remainder were studying at Inns of Court, technical colleges and other institutions. The disappointments and frustrations experienced

by so many of the students make this a rather depressing study, although it must be remembered that some of these difficulties are experienced by other overseas students as well, and even by British ones—for example the loneliness of many students in lodgings in London. The authors make a series of recommendations designed to enable the colonial student to profit more from his stay in this country. They attach much importance to the proper selection of students and to adequate preparation and advice being given before they leave their homes.]

DAVISON (R. B.). *Migrant Labour in the Gold Coast. A pilot survey.* Achimota: Department of Economics, University College of the Gold Coast, 1954. 13". Pp. 41. 3s. 6d.

[This report describes the findings of a survey undertaken in March 1954 at one of the major ferries across the Volta. Information was sought on the number of travellers northwards, their characteristics (age, nationality, tribe), employment while in the south, frequency and duration of migration, and a number of other points. All those buying ferry tickets for the northward passage were interviewed. Some valuable results were reached, but a fair amount of the data collected had to be rejected, because the five different interviewers obtained such divergent results that fatal biases in observation had to be inferred. This applied especially to questions relating to time (e.g., age, duration of stay in the south), which evidently presented great difficulties to illiterate migrants.]

DONALD (M. B.). *Elizabethan Copper. The history of the Company of Mines Royal, 1568–1605.* London: Pergamon Press, 1955. 9". Pp. 405. 60s.

[The Company of Mines Royal was the first company formed in England for purposes of production as distinct from commerce. Professor Donald, who is Professor of Chemical Engineering in the University of London, here provides a detailed narrative of its history. With the aid of much quotation from the contemporary sources, he describes the personalities involved in the enterprise, the financial and technical difficulties that were faced and the company's ultimate decline. He attributes this decline chiefly to failure to train English workers in the skills of the German technicians who were introduced to manage the work at the beginning. "When the Germans died their skill died with them and at the end of the Elizabethan period the mines languished."]

EASTHAM (J. K.) (Ed.). *Economic Essays in Commemoration of the Dundee School of Economics, 1931–1955.* London: The Economists' Bookshop (11 & 12 Clement's Inn Passage, W.C.2.) for the School of Economics, Dundee, 1955. 10½". Pp. 103.

[The Dundee School of Economics was founded by a private benefaction in 1931 and was run as an independent institution under the trusteeship of the Dundee Corporation until this year. The recent reorganisation of university education in Dundee and St. Andrews has led to the disappearance of the School as a separate body and its incorporation into Queen's College, Dundee, one of the two constituent colleges of the University. The present volume of six essays by distinguished economists who have at one time or another been on the staff of the School is published "in commemoration of an educational experiment which has achieved the first objectives of its founder and is about to embark on a further stage of development." The six essays are: "Wicksell's Principle in the Distribution of Taxation," by Duncan Black; "The Postal Monopoly in Great Britain: an historical survey," by R. H. Coase; "A Redefinition of the Boundary between Interest and Profit Theories," by J. K. Eastham; "Professor Hayek's Contribution to Trade Cycle Theory," by J. C. Gilbert; "Scottish Trade with the Baltic, 1550–1560," by S. G. E. Lythe; and "Advertising Costs in Monopolistic Competition," by T. H. Silcock.]

FRANKEL (H.). *Controls and Subsidies on Agricultural Products and Requisites: Wool, 1939–54; Barley, Oats, and Rye 1939–54. Supplement to the Farm Economist, Vol. VII, No. 9.* Oxford: Agricultural Economics Research Institute, 1954. 8½". Pp. 54. 2s.

[This is the last of a series of papers by Mr. Frankel on controls and subsidies on agricultural products and requisites since 1939. The previous papers were reviewed by Mr. C. H. Blagburn in the *ECONOMIC JOURNAL*, September 1955, pp. 531–3. It gives a detailed account of the supplies and prices of the four products named and of the associated legislation, controls and subsidies. Special interest attaches to the case of wool, since policy in regard to it has had certain unusual features. Notable among these was the practice of calculating a subsidy estimate by comparison with the equivalent prices of imports. Wool is the only commodity for which this was done.]

GILBERT (M.) and STONE (J. R. N.) (Eds.) for the International Association for Research in Income and Wealth. *Income and Wealth, Series IV.* London: Bowes & Bowes, 1955. 9". Pp. 386. 42s.

[To be reviewed.]

HAGUE (D. C.) and STONIER (A. W.). *The Essentials of Economics. An introduction and outline for students and for the general reader.* London: Longmans, 1955. 9". Pp. ix + 173. 12s. 6d.

[To be reviewed.]

HAWTREY (R. G.). *Cross Purposes in Wage Policy.* London: Longmans, 1955. 7½". Pp. 148. 7s. 6d.

[To be reviewed.]

HAYCOCKS (H. W.) and PERKS (W.). *Mortality and other Investigations, Volume I.* London: Cambridge University Press, 1955. 9". Pp. vii + 164. 20s.

[This is published as an officially prescribed text-book for the examinations of the Institute of Actuaries. It describes the procedures adopted by actuaries for the calculation of rates of mortality and sickness and similar purposes.]

HOBSON (O. R.). *How the City Works.* Revised edition. London: News Chronicle, 1954. 7½". Pp. 160. 6s.

[This extremely lucid and readable introduction to banking, finance and the other activities of the City of London was first published in 1938. The present edition has been completely revised, but the author suggests that with the progressive relaxation of controls the principles on which the City operated before the war have now come increasingly into their own again.]

HOFFMANN (W.). *British Industry 1700–1950.* Translated from the German by W. H. Chaloner and W. O. Henderson. Oxford: Basil Blackwell, 1955. 9". Pp. xx + 338. 35s.

[To be reviewed.]

JÖHR (W. A.) and SINGER (H. W.). *The Role of the Economist as Official Adviser.* Translated from the German by J. Degras and S. Frowein. London: Allen & Unwin, 1955. 9". Pp. v + 150. 15s.

[To be reviewed.]

KENDALL (M. G.). *Rank Correlation Methods.* Second edition, revised and enlarged. London: Charles Griffin, 1955. 9". Pp. 196. 36s.

[This is a second edition of a now well-known book; the first edition was reviewed by Mr. R. C. Geary in the *ECONOMIC JOURNAL* of December 1949. The new edition has been revised extensively, though the original plan is unchanged. New material has been introduced and a new chapter added, dealing with advances in ranking theory and a review of recent developments in its application. There is also a new table of random permutations of the first twenty natural numbers.]

LEWIS (W. A.). *The Theory of Economic Growth.* London: Allen & Unwin, 1955. 9". Pp. 453. 30s.

[To be reviewed.]

LITTLE (L. T.). *A Handbook for Economics Students.* London: Jordan & Sons, 1955. 7½". Pp. 181. 7s. 6d.

[To be reviewed.]

LYDALL (H. F.). *British Incomes and Savings.* Oxford University Institute of Statistics, Monograph No. 5. Oxford: Basil Blackwell, 1955. 10". Pp. 274. 32s. 6d.

[To be reviewed.]

MATHER (L. C.). *The Lending Banker. A review of the principles of bank lending, unsecured advances and balance sheets and the banker.* London: Waterlow & Sons, 1955. 9½". Pp. 99. 8s. 6d.

[This is a reprint of articles that have appeared in *The Bankers' Magazine* over the last two years. It is designed for the guidance of bank managers and prospective bank managers in the principles of lending. It will, however, also be of interest to economists, as an indication of the practices and procedures which banks currently adopt.]

MILLER (J.). *Soviet Russia. An introduction.* London: Hutchinson, 1955. 7½". Pp. 185. 8s. 6d.

[This book is not primarily intended for economists, but it contains much valuable information on the Soviet economy. Mr. Miller has made good use of his wide knowledge of Russian history and institutions and the unusual opportunities he has enjoyed of studying the working of the Soviet system at first hand. His style is informal and discursive—sometimes, perhaps, excessively so—and his ideas are stimulating. The treatment of economic, social and political factors is closely interwoven throughout.]

MORGAN (E. V.). *A First Approach to Economics*. London: Pitman, 1955. 9' Pp. 456. 20s.

[To be reviewed.]

MORRIS (S. T.), LUXTON (H. W. B.) and BEYNON (V. H.). *Farm Organisation and Incomes in South West England, 1953*. Newton Abbot: Department of Agricultural Economics, University of Bristol, 1955. 9". Pp. 91. 5s.

[This bulletin is the sixth in a series of reports on the Farm Management Survey for the South west. It describes the natural and economic environments of farming in a sample of farms for the 1953 crop year. A general chapter is included on the ways in which data of this kind can be used to assess the performance of individual farms.]

MUSSON (A. E.). *The Congress of 1868. The origins and establishment of the Trade Union Congress*. London: Trades Union Congress, 1955. 8½". Pp. 48. 2s.

[This is the first detailed study that has been made of the origins of the Trades Union Congress. Mr. Musson provides much interesting information, without altering in general outline the conclusions reached in the Webbs' brief treatment of the subject in their *History of Trade Unionism*. The idea of a Trades Union Congress originated with the Manchester and Salford Trades Council and it was at first received with suspicion by the leaders of the trade-union world in London—the Junta—as a possible rival to their own authority. The first Congress took place in 1868, but was not until sectional differences were overcome by the need to resist the Trade Union Bill of 1871 that the Junta gave sufficient support to the Congress to make it a truly representative assembly. One of Mr. Musson's most interesting findings is that both the name of the Congress and the original notion of the form it should take probably derived from the annual meetings of the Social Science Association and of the British Association for the Advancement of Science. It was dissatisfaction at the omission from the Social Science Association's published *Transactions* of an address given by a trade-union spokesman at the Association's Ninth Congress that originally suggested the idea of a Trades Union Congress to one of the officials of the Manchester and Salford Trades Council. If trade unions could not get a fair hearing from middle-class organisations like the Social Science Association, he remarked, "why not have a congress of our own?"]

PAGE ARNOT (R.). *A History of the Scottish Miners, from the earliest time*. London: Allen & Unwin, 1955. 9½". Pp. v + 445. 30s.

[To be reviewed.]

ROSS (J. F. S.). *Elections and Electors. Studies in democratic representation*. London: Eyre & Spottiswoode, 1955. 9". Pp. 480. 42s.

[To be reviewed.]

SILBERSTON (A.). *Education and Training for Industrial Management. A critical survey*. London: Management Publications, 1955. 9". Pp. v + 101. 12s. 6d.

[To be reviewed.]

THISTLETHWAITE (F.). *The Great Experiment. An introduction to the history of the American People*. London: Cambridge University Press, 1955. 9". Pp. ix + 331. 25s.

[To be reviewed.]

Transport. London: Unilever Limited, 1955. 8½". Pp. 15.

[The subject of the address delivered at the 1955 Annual General Meetings of Unilever Limited and Unilever N.V. was the transport of finished products. The Chairman describes how methods of transport, handling and distribution adopted within the Unilever group vary according to the product and according to the conditions prevailing in different countries. The speaker concludes by discussing why it is that, despite important recent advances, "the world of transport, which should be one of mobility, is to a certain extent characterised by a rigidity of outlook and policy."

Indian

AROKIASAMY (M.). *A Textbook of Indian Economic History*. Tiruchirapalli: published by the author at St. Joseph's College, Tiruchirapalli, 1954. 7½". Pp. 430. Rs. 4/12.

[This volume, designed as an elementary text-book of Indian economic history, takes the various industries and activities of India and studies their development, mainly during the present century. The chief emphasis is on legislation and administrative changes. While a useful source of detailed information, it is less successful in presenting a broad and coherent picture of Indian economic development as a whole and its effects on the standards of life of the people.]

BALAKRISHNA (R.). *Studies in Indian Economic Problems. Selected Essays*. Madras: published by the author at the University of Madras, 1954. 9". Pp. 463. Rs. 17/8.

[This volume contains essays published during the past ten years in a variety of journals, some of them academic, some financial and some of a more political and popular character. They cover topics which for publication have been grouped under the general heads of Finance, Trade and Tariffs, Industry and Labour, Economic Planning, International Economics and Economic Policy. A number of the essays have obviously dated. But a proportion are of a more permanent character. The latter include papers on tax incentives in India, on the role of tariffs in economic expansion and on the limitations of deductive theories of economic location.]

MEHTA (M. M.). *Measurement of Industrial Productivity*. Calcutta: The World Press, 1955. 9". Pp. 98. 10s. 6d.

[This book examines some of the conceptual and statistical problems of the measurement of input, of output and of productivity.]

American

BARATZ (M. S.). *The Union and the Coal Industry*. New Haven, Connecticut: Yale University Press (London: Geoffrey Cumberlege), 1955. 9½". Pp. 170. 30s.

[The author sees the underlying policy of the United Mine Workers—John L. Lewis' union—as essentially a response to problems of depression. Not merely did the bituminous coal industry suffer along with the rest of the American economy in the 1930s, but the demand for its product has been subject to long-term pressure because of economies in fuel use and the competition of other fuels. In consequence there has been little upward trend in output over the last thirty years. Despite this, wages have risen by more than in most other industries. The union has been determined to prevent a recurrence of the inter-regional price- and wage-cutting which the highly competitive structure of the industry brought about in the past. It has accordingly taken upon itself the task of restricting output to the extent needed to keep prices and wages up. A long-run contraction of employment is one of the chief aims of its strategy. After analysing the effect of the union's policy on wages, technique, the structure of the industry and the allocation of productive resources generally, Mr. Baratz can find no clear case either for or against the union's policies on the grounds of their economic effects. He maintains, however, that economic considerations are not the only ones that should govern public policy towards unionism in this industry or in industry as a whole.]

BARKER (C. A.). *Henry George*. New York and London: Oxford University Press, 1955. 9½". Pp. vii + 696. 57s. 6d.

[To be reviewed.]

BECKWITH (B. P.). *Marginal-cost Price-output Control. A critical history and restatement of the theory*. New York: Columbia University Press (London: Geoffrey Cumberlege), 1955. 9½". Pp. 283. 45s.

[To be reviewed.]

A Bibliography on South American Economic Affairs. Articles in nineteenth-century periodicals. Compiled by T. B. JONES, E. A. WARBURTON and A. KINGSLEY. Minneapolis: University of Minnesota Press (London: Geoffrey Cumberlege), 1955. 11". Pp. 146. 44s.

[A classified bibliography of over 6,000 distinct items. The authors have methodically worked through the files of several hundred periodicals—all those available that were known to contain relevant material. It was originally intended that the work should cover the whole of Latin America, but the bulk of the material made division essential, and the present bibliography covers South America only.]

BOULDING (K. E.). *Economic Analysis*. Third, Revised Edition. New York: Harper & Brothers (London: Hamish Hamilton), 1955. 9½". Pp. xv + 905. 35s.

[Since its first appearance in 1941, Professor Boulding's text-book has always had a strong claim to be considered one of the two or three best general-purpose American-style text-books. The concentration on analysis means that a much smaller proportion than is usual in American text-books is confined in usefulness to the American reader. Parts of the book are not exactly elementary, and if this may sometimes discourage the beginner, there is the advantage that the student who acquires it in his first year will continue to find himself referring to it at intervals until his final examination. The greatest alteration in the present edition is the section on macro-economics, which has been completely rewritten and now covers the field very comprehensively.]

BOWEN (H. R.). *The Business Enterprise as a Subject for Research*. Social Science Research Council, Pamphlet No. 11, prepared for the Committee on Business Enterprise Research. New York: Social Science Research Council, 1955. 9". Pp. 103. \$1.25.

[The author writes: "The purpose of this report is to delineate the field of research on the business enterprise, to provide a general view of past and projected research in this field, and to offer recommendations for its future advancement." He starts by examining the way in which research on the business enterprise provides a point of convergence of economics, social psychology and other disciplines. He then sets forth a general framework within which aspects of the theory of the firm can be classified, and in the final chapter enumerates research topics in more detail within this framework. A bibliography is appended, listing and classifying upwards of four hundred relevant books and articles.]

Business Concentration and Price Policy. A Conference of the Universities-National Bureau Committee for Economic Research. Princeton, New Jersey: Princeton University Press for the National Bureau for Economic Research (London: Geoffrey Cumberlege), 1955. 9½". Pp. 511. 72s.

[To be reviewed.]

DISSLIN (H. G.). *Agricultural Equipment Financing*. National Bureau of Economic Research, Occasional Paper 50. New York: National Bureau of Economic Research, 1955. 9". Pp. 91. \$1.25.

[This is part of the Agricultural Finance Project of the National Bureau's Financial Research Program. It describes the history and present situation in the United States with regard to types of facilities available for farm equipment financing, the relative importance of different credit agencies, the terms on which credits are granted and experience of losses. As recently as twenty years ago a substantial part of the financing of farm-equipment sales at the retail level was done by manufacturers, but now this function has been practically wholly taken over by other agencies.]

EDDISON (J. C.). *A Case Study in Industrial Development—the Growth of the Indian Pulp and Paper Industry*. Cambridge, Mass.: Center for International Studies, Massachusetts Institute of Technology, 1955. 11". Pp. 337.

[The author describes in some detail the structure and organisation of the industry, its technology, and the present and likely future state of demand for its products. The industry is one in which the economics of scale are pronounced, and problems of management consequently assume especial importance. Much of Dr. Eddison's space is therefore taken up with discussion of entrepreneurship and in particular with discussion of the managing agency system, under which most of the Indian paper industry is organised.]

FABRICANT (S.). *Government in Economic Life*. National Bureau of Economic Research, Thirty-fifth Annual Report. New York: National Bureau of Economic Research, 1955. 11". Pp. 78.

[This year's report of the National Bureau appears in a new double-column format. This enlargement makes it possible to give an account of the Bureau's activities that is a model of fullness and clarity. The descriptions of the many research projects in hand or recently completed do more than indicate the topics under study: they contain also provisional statements of findings, and include numbers of tables and charts. Dr. Fabricant's introductory essay discusses various aspects of government participation in economic life in the United States and elsewhere as they appear in the light of some of the National Bureau's recent work.]

GALENSON (W.). *Labor Productivity in Soviet and American Industry*. A research study by the RAND Corporation. New York: Columbia University Press (London: Geoffrey Cumberlege), 1955. 9½". Pp. 273. 45s.

[To be reviewed.]

GORTER (W.). *United States Merchant Marine Policies: some international economic implications*. Essays in International Finance, No. 23. Princeton, New Jersey: International Finance Section, Princeton University, 1955. 9". Pp. 16.

[The author describes the various forms of protection that American shipping enjoys against foreign competition. His view is that "from a purely economic standpoint, all the policies considered together are to be condemned but some deserve more condemnation than others." This is partly because the shipping conference system in any case restricts some forms of competition between the merchant fleets of different countries. Professor Gorter considers that one of the most effective and therefore harmful forms of restriction is the so-called cargo preference system under which not less than half of goods shipped on account of the United States Government or financed by it must be carried in American-flag vessels.]

GRAYSON (H.). *The Crisis of the Middle Class*. New York: Rinehart, 1955. 8½". Pp. ix + 172. \$2.75.

[The author uses the term middle class in a peculiar sense to include anyone, whatever his present social or economic status, who directs his energies towards the improvement of his individual status within society. Ambitious people of this class are in his view responsible for most economic and social advance. The author traces the part played by this class in different countries and epochs within the framework of a general historicist theory that he expounds. According to this theory a wide range of social conditions have to be fulfilled if the leavening activities of the middle class are to be properly realised. The crisis referred to in the title is the danger that social development in the United States and elsewhere may for various reasons take a retrograde form. Most prominent among these reasons is the increasing power enjoyed by persons and groups in an entrenched position of privilege.]

HOLTZMAN (F. D.). *Soviet Taxation*. The fiscal and monetary problems of a planned economy. Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1955. 8½". Pp. xvii + 376. 52s.

[To be reviewed.]

KRAUSE (W.). *The International Economy*. New York: Houghton Mifflin (London: Constable), 1955. 9½". Pp. 434. 30s.

[This is designed as a text-book for students taking courses in international economics in American universities. With the needs of these students in mind, the author has deliberately emphasised "problems and policies" rather than theory. Indeed, a comparatively small part of the book is devoted to pure theory, and the consequent lack of rigour is inevitably reflected at some points in the treatment of practical problems. The historical background material is also brief and confined chiefly to very recent times. The author's expository style is clear and the price of the book is reasonable, but its usefulness to the British student is probably rather limited.]

LEFTWICH (R. H.). *The Price System and Resource Allocation*. New York; Rinehart, 1955. 8½". Pp. 372. \$4.50.

[To be reviewed.]

LOMBARD (G. F. F.). *Behavior in a Selling Group*. A case study of interpersonal relations in a department store. Boston, Mass.: Harvard University Graduate School of Business Administration (London: Bailey Bros. & Swinfen), 1955. 8½". Pp. ix + 359. 32s.

[This is a study of the behaviour of salesgirls selling children's clothes in a department store in an eastern city in the United States. The fieldwork for it was done in 1940. The author analyses how the interaction between the aims and values of the salesgirls and those of their supervisors led to the establishment of norms of behaviour and affected the well-being of the salesgirls and their efficiency in selling.]

McNAIR (M. P.). *Operating Results of Department and Specialty Stores in 1954*. Boston, Mass.: Harvard University Graduate School of Business Administration (London: Bailey Bros. & Swinfen), 1955. 11". Pp. 66. 32s.

[This is the thirty-fifth report in the annual series published by the Harvard Business School. In arrangement and contents it closely resembles last year's issue. Despite the general recession, the operating results of department stores in 1954 were very similar to those of 1953. In recent years department stores have been accounting for a slightly diminishing proportion of retail sales, largely because of the switch of expenditure away from apparel towards cars and household goods. In 1954 this trend was reversed, and department stores increased their share of total retail sales. A feature of the year was that the larger stores enjoyed notably better results than the smaller ones.]

MARCUS (E.). *Canada and the International Business Cycle 1927-1939*. New York: Bookman Associates, 1954. 9". Pp. 211. \$3.75.

[This book, "a case-study in the international transmission of the business cycle," traces cyclical and secular changes in the Canadian economy in great detail but without the use of sophisticated methods. The author stresses the relative independence of Canadian developments, in the sense that they can only be explained by special factors affecting particular markets. The argument for independence is a trifle Humpty-Dumptyish, but the concentration on major staples as against trade aggregates is commendable as is the attention paid to factors influencing the capital account. An interesting feature of Canadian experience was the relative absence of balance-of-payments difficulties, due to the high import-content of investment and the close linking of Canadian and American securities markets.]

Partnership for Freedom. Proposals for world economic growth. Washington, D.C.: Union for Democratic Action (1341 Connecticut Avenue, N.W.), 1955. 9". Pp. 52. 25c.

[A discussion of the contribution that the United States can and should make to assist the economic and social advancement of backward countries—an aim which the authors believe to be of the utmost importance in preventing the further spread of Communist power.]

SAMUELSON (P. A.). *Economics*, an introductory analysis. New third edition. New York and London: McGraw Hill, 1955. 9½". Pp. 753. 41s.

[Professor Samuelson does not allow his text-book to rest on its laurels. The second substantial revision incorporates numerous alterations in emphasis, detail and arrangement, as well as new chapters on the economics of war and on development. The stress has been shifted somewhat away from the problems of inflation that received special attention in the second issue, and instead repeated insistence is now placed on what the author calls a "grand neoclassical synthesis": "Solving the vital problems of monetary and fiscal policy by the tools of income analysis will validate and bring back into relevance the classical verities." The inclusion of the Marshallian time-period analysis in the section on value and distribution brings the treatment there more into line with what is usual in elementary courses in this country. The new material is presented with all the author's energetic clarity. More pronounced than ever is the jauntiness of style, which endears the author to some of his readers and has the opposite effect on others. Additional insight into economic theory as well as into the personality of the author is furnished by the quotations that now adorn the chapter headings.]

TARSHIS (L.). *Introduction to International Trade and Finance*. New York: John Wiley (London: Chapman & Hall), 1955. 9". Pp. v + 536. 48s.

[To be reviewed.]

TRUED (M. N.) and MIKESSELL (R. F.). *Postwar Bilateral Payments Agreements*. Princeton Studies in International Finance, No. 4. Princeton, New Jersey: International Finance Section, Princeton University, 1955. 9". Pp. 92.

[The authors describe and classify the major provisions and types of agreements, particularly with regard to the currency and credit arrangements and the means of settling excess balances. The West German experience is taken as a case study for more intensive treatment. They arrive at some interesting conclusions on the purposes which these agreements have served and the extent to which their provisions have been carried out in practice. In most cases, the target trade levels set in the agreements have not been reached, often because of the high prices of one country's exports, and the arrangements for settlement and credit have frequently had to be made less strict. The authors find it difficult to distinguish between commercial policy and balance-of-payments considerations in seeking the reasons for which bilateral agreements have been concluded, the two being closely connected. Bilateral agreements have often been a means of implicitly devaluing a currency or altering prices, and countries have often used a strong bargaining position in one commodity in order to buy or sell on better terms other commodities in which their bargaining position was weaker.]

WOLF (C.) and SUFRIN (S. C.). *Capital Formation and Foreign Investment in Underdeveloped Areas*. An analysis of research needs and program possibilities prepared from a study supported by the Ford Foundation. Syracuse, New York: Syracuse University Press, 1955. 9½". Pp. 134. \$3.00.

[This report consists of two main parts. The first is a continuous text enumerating the chief problems in the field and describing the lines of approach to them adopted in current research. The problems are discussed under three headings: entrepreneurship and the demand for capital; technological alternatives and the optimum use of capital; and foreign investment and capital formation. This part of the report is interesting to read and provides a valuable guide and summary of ideas advanced in recent literature (chiefly American literature). The authors recognise that capital formation is only one aspect of the problem of economic development, and they make no attempt to survey other parts of the field systematically. A further and more regrettable limitation is that they appear to have decided that the experience of capital formation in Communist countries falls outside their scope. Most of the remainder of the report consists of an annotated bibliography of recent publications, the majority of which appeared between 1949 and 1954.]

German

PAULSEN (A.). *Neue Wirtschaftslehre. Einführung in die Wirtschaftstheorie von John Maynard Keynes und die Wirtschaftspolitik der Vollbeschäftigung*. 3. neugefasste und erweiterte Auflage. Berlin: Franz Vahlen, 1954. 8½". Pp. 387. DM. 18.80.

[This is the third edition of Professor Paulsen's introduction to Keynesian economics.]

SÖZERI (S.). *Der Wirtschaftsaufbau der Türkei nach dem Zweiten Weltkrieg*. Kiel: Institut für Weltwirtschaft an der Universität Kiel, 1955. 9½". Pp. 128. DM. 10.

[This concise account of the recent economic history of Turkey shows how the process of industrialisation has passed from state to private initiative. In the post-war period Turkey has considerably expanded its exports of cereals and cotton, and so has been able to pay for its imports of capital goods. This study suggests, however, that there is still considerable scope for foreign capital.]

Italian

BRESCIANI-TURRONI (C.). *Corso di Economia Politica*. Vol. I. *Teoria generale dei fatti economici*. Milan: Guiffre, 1953. 10". Pp. 434. Lire 2000.

[In this second edition the author has added some sections on statistical methods in economics and a fuller treatment of the Pareto curve in the theory of income distribution, as well as making a number of detailed improvements and additions.]

COSCIANI (C.). *Principii di Scienza delle Finanze*. Turin: Unione Tipografico-Editrice Torinese, 1953. 10". Pp. 587. Lire 3000.

[This is a comprehensive text-book on the theory of public finance. In the course of the work the author covers a wide range of more general economic theory.]

Teoria e Politica dello Sviluppo Economico. A symposium, with an introduction by G. U. PAPI. Milan: Antonino Guiffre, 1954. 10". Pp. 567. Lire 3000.

[This volume is the result of a series of meetings held in the Istituto di Economia e Finanza della Facoltà Giuridica Romana. It contains seventeen papers by Italian economists on problems of economic development. Each paper is accompanied by a summary in English.]

Swiss

HEUSS (E.). *Wirtschaftssysteme und internationaler Handel*. Zürich and St. Gallen: Polygraphischer, 1955. 9½". Pp. 224. Fr. 21.85.

[This exposition of the pure theory of international trade concentrates on the influence of "market organisation"; about a half of the book is devoted to international trade under conditions of monopoly and socialism as compared with competitive conditions. The treatment is rigorous, but the more mathematical parts have been conveniently segregated into appendices.]

STAUB (H. U.). *Reden schweizerischer und britischer Bankpräsidenten 1927-1950*. Zürich: University of Zürich, 1955. 9". Pp. 215.

[In this dissertation Dr. Staub has compared the speeches of the chairmen and presidents of the main banks in Switzerland and the United Kingdom. The result is a not uninteresting account of events in the period 1927-50 as seen from the world of high finance.]

Swedish

HANSEN (B.). *Finanspolitikens Ekonomiska Teori*. Penningvärdeundersökningen: Del II. Statens Offentliga Utredningar 1955: 25. Uppsala: Almqvist & Wiksell, 1955. 9½". Pp. 403.

[To be reviewed.]

Dutch

DREES (W.). *On the Level of Government Expenditure in the Netherlands after the War*. *Aspetten der Economische Politiek*, No. III. Leiden: Stenfert Kroese, 1955. 9". Pp. 135. f. 10.50.

[In the Netherlands as elsewhere, concern has been felt in recent years at the high level of government expenditure. Total government expenditure in the Netherlands (three-quarters of which is expenditure by the central government) comprises about one-third of the national income. The question to which Dr. Drees addresses himself is whether the level of this expenditure is as irreducible as is often made out. His answer, broadly, is in the negative. His essay is in three parts. The first analyses the chief headings of expenditure, and considers amongst other things the effects on government spending of a rising price-level. In so far as a rise in the price-level is caused by inflation in the outside world, the author argues (as Professor Hawtrey and others have done in this country) that there is a case for neutralising it by appreciating the currency. The second part of the essay describes budgetary procedures in the Netherlands and concludes that

weaknesses in co-ordination have tended to bring about "a struggle for high expenditure." Representatives of different departments and interests all press for high expenditure in their own spheres and do not oppose the claims of the others. In the final part Dr. Drees sets forth two alternative programmes for central government expenditure in 1960, one assuming continuation of present trends, the other involving certain moderate economies. The difference between the two amounts to some 4% of the projected national income.]

KLEIN (L. R.) and GOLDBERGER (A. S.). *An Econometric Model of the United States, 1929-1952. Contributions to Economic Analysis, IX.* Amsterdam: North Holland Publishing Company, 1955. 9". Pp. 165.

[To be reviewed.]

Greek

METAXAS (B. N.). *Political and Social Struggles during the Persian and Peloponnesian Wars.* Athens: Archives of Economic and Social Sciences, 1955. 10". Pp. 82.

[This contains a fairly detailed account of the part played by party conflict (stasis) in the domestic and external policies of the various city states of Greece up to the end of the fifth century B.C. The author develops his narrative with the aid of extensive quotations from the standard classical authors, especially Thucydides, who is his main source. While not especially original, the essay is lucid and well arranged.]

Egyptian

HAYEK (F. A.). *The Political Ideal of the Rule of Law. National Bank of Egypt Fiftieth Anniversary Commemoration Lectures.* Cairo: National Bank of Egypt, 1955. 10". Pp. 60.

[In these lectures Professor Hayek returns to the legal studies in which he started his career. With a wealth of learning he traces the origins of the idea of the Rule of Law and its evolution in the last two centuries. Its decline in modern times he regards as one of the chief causes of our present discontents. To Professor Hayek the Rule of Law means rather more than that laws should apply impartially to all individuals and that their application should be controlled by the courts rather than by administrative discretion. It includes also the doctrine that certain individual rights, including the right to own property, are basic and may not be infringed except in a real emergency, like a war, and then only with compensation. He recognises that equality before the law is inconsistent with the attainment of equality in a more general sense, since it prevents the State from acting to redress existing inequalities. He does not shrink from this conclusion. The last lecture is devoted to discussion of the attack on the Rule of Law conducted by lawyers of Harold Laski's school. Here the author is content to show the potentially far-reaching implications of this attack, without debating its underlying assumptions. From the lines that Professor Hayek's argument follows, it would appear that the limitations on state power implied by the Rule of Law depend for their justification on value judgments about the sanctity of property and the unobjectionableness of inequality in relation to the paramount need to avoid the exercise of arbitrary power. Professor Hayek also places reliance on competition to prevent arbitrary coercion by private individuals or groups endowed with economic power, once the State has been duly shackled.]

Official

BRITISH

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD. *Domestic Food Consumption and Expenditure, 1953. Annual Report of the National Food Survey Committee.* London: H.M. Stationery Office, 1955. 9½". Pp. 104. 4s.

[The general scope and arrangement of this report is similar to that of the report for 1952 (noticed in the *Economic Journal*, March 1955, p. 193). 1953 is found to have been a year in which the improvement in food supplies led to a reversion towards the pre-war pattern of diet, with an increased proportion of expenditure devoted to meat, eggs, butter, sugar and tea. New features of this year's report include a section on food consumption and expenditure in Scotland and a section on differences between urban and rural diets.]

HICKS (J. R. and U. K.). *Report on Finance and Taxation in Jamaica.* Kingston, Jamaica: The Government Printer; London: Crown Agents for Overseas Governments and Administrations (4 Millbank, S.W.1), 1955. 8½". Pp. 171. 3s.

[To be reviewed.]

ROYAL COMMISSION ON THE TAXATION OF PROFITS AND INCOME. *Final Report.* London: H.M. Stationery Office, 1955. 9½". Pp. 487. 12s. 6d.

[To be reviewed.]

WRIGHT (F. C.). *African Consumers in Nyasaland and Tanganyika. An enquiry into the Distribution and Consumption of Commodities among Africans carried out in 1952-1953. Colonial Research Studies, No. 71.* London: H.M. Stationery Office for the Colonial Office, 1955. 9½". Pp. 117. 12s. 6d.

[This inquiry was prompted by the commonly held opinion that the incentive to Africans in Nyasaland and Tanganyika to acquire cash income is impaired because too narrow a range of goods is offered for sale to them through the present system of distribution. Dr. Wright's interesting report does not give much support to this thesis. While not denying that the range of goods on sale is fairly narrow, he finds that, with a few exceptions, most of the commodities that traders have been criticised for not supplying would be in little demand. Severe limitations are imposed by the general pattern of tribal life as well as by the low level of cash incomes. Dr. Wright also provides much useful information and many shrewd judgments about distribution generally in the territories and about the effects of the government regulation it is subject to. The readability of his report suffers a little from its unduly Latinised vocabulary and syntax.]

AUSTRALIAN

BUTLIN (S. J.). *War Economy, 1939-1942. Australia in the War of 1939-1945, Civil Series, Volume IV.* Canberra: Australian War Memorial (London: Angus & Robertson), 1955. 9½". Pp. xi + 516. 25s.

[To be reviewed.]

CANADIAN

RESTRICTIVE TRADE PRACTICES COMMISSION, DEPARTMENT OF JUSTICE, OTTAWA. *Report Concerning an Alleged Combine in the Manufacture, Distribution and Sale of Beer in Canada.* Ottawa: Department of Justice, 1955. 9½". Pp. 104.

[The situation dealt with in this report has arisen from a long series of acquisitions of other brewing companies by Canadian Breweries Ltd. and its subsidiaries. Many of these acquisitions were followed by the closing down of the plants acquired. Till 1943 the activities of Canadian Breweries Ltd. were confined to Ontario, but since then they have begun to extend to other provinces. The Commission find that the Company has not so far succeeded in gaining complete or substantial control of the industry, even in Ontario. They hold, however, that control might well be established if the company continues to expand in the way it has been doing. They therefore recommend that further acquisitions of competing breweries by the company should be prevented.]

RESTRICTIVE TRADE PRACTICES COMMISSION, DEPARTMENT OF JUSTICE, OTTAWA. *Report on an Inquiry into Loss-leader Selling.* Ottawa: Department of Justice, 1955. 9½". Pp. v + 278.

[The scope of this report makes it of more general interest than most of the publications of the Canadian Restrictive Trade Practices Commission. The word loss-leader was found by the Commission to be very loosely used, and a good many of the business representatives who complained about it seemed to think of it in the terms made explicit by one of their number: "If you sell below the manufacturer's suggested price, I think you could very well say you are cut-pricing or loss-leadering." If a loss-leader is defined as a sale of an article at a price below its cost to the retailer, the practice is not at all a usual one (apart from such recognised exceptions as sales of discontinued lines or bankrupt stocks). But this definition is rather arbitrary, and there is more evidence that some retailers are accustomed to sell certain lines at an unusually low profit margin. The Commission hold, however, that this should be regarded as a form of advertisement not fundamentally different in its competitive effect from other types of advertisements, though more beneficial to the customer. There is no ground for believing that it is specially connected with attempts to establish a monopoly, and it is, incidentally, by no means confined to branded goods. Although the recent prohibition of resale price maintenance in Canada has no doubt had some influence on the situation, the Commission maintain that the difficulties recently experienced in some branches of retail trade are not due primarily to the selling of individual articles at very low prices: they are due rather to keener all-round competition and lower costs, associated in some instances with partial saturation of the market. Accordingly, they do not find any reason to recommend legislation against loss-leaders.]

AMERICAN

UNITED STATES DEPARTMENT OF COMMERCE. *National Income, 1954 Edition. A supplement to the Survey of Current Business.* Washington, D.C.: Office of Business Economics, Department of Commerce, 1954. 11½". Pp. 249. \$1.50.

[This replaces the 1951 edition as the official compendium of United States national-income statistics. The data have been revised and a number of new tables added. The statistical section is preceded by 158 pages of text. Part I reviews trends and fluctuations in national income and output since 1929. Parts II to IV contain an extremely useful detailed account of the conceptual framework of national-income statistics and of the sources and methods used to arrive at them.]

INTERNATIONAL

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT. *The Economic Development of Syria. Report of a Mission organised by the Bank at the request of the Government of Syria.* Baltimore, Maryland: Johns Hopkins Press for the International Bank for Reconstruction and Development (London: Geoffrey Cumberlege), 1955. 9½". Pp. 486. 60s.

[Like other recent reports of International Bank Missions, this contains a comprehensive survey of the economy of the country as well as detailed policy recommendations. Syria has experienced remarkable economic expansion in the last two decades, despite its relative lack of resources other than land (no oil has so far been discovered). It is not over-populated by the standards of other Asian countries, and the availability of idle land has made possible a doubling of the area under cultivation since before the war. There has also been very rapid industrial growth, and the real national income is reckoned to be nearly twice pre-war. Domestically financed capital formation has been at a surprisingly high level in relation to income. So far the government has contributed relatively little to this growth, and even irrigation schemes have been carried out chiefly by private enterprise. Satisfactory as the recent record is in many respects, the Mission suggests that the time has now come for the Government to take a more active part. This applies particularly in agriculture, since there is now much less idle land available for cultivation without prior investment. The irrigation schemes needed at present are beyond the means of private enterprise. The Report also puts forward proposals for a number of other important measures by which the Government could help to raise production in agriculture and other sectors of the Syrian economy. The whole programme would involve annual government expenditure in the region of \$100 million between now and 1960. It is suggested that about a tenth of this might be raised by borrowing abroad.]

INTERNATIONAL MONETARY FUND. *Sixth Annual Report on Exchange Restrictions, 1955.* Washington: International Monetary Fund, 1955. 9½". Pp. 391.

[The bulk of this report consists of detailed descriptions of the restrictions in force in different countries. A brief introductory section reviews in more general terms the progress made in 1954 towards the relaxation of restrictions.]

INTERNATIONAL TIN STUDY GROUP. *1955 Statistical Supplement to the Statistical Year Book, 1954.* The Hague: International Tin Study Group, 1955. 10½". Pp. 92. 12s. 6d.

[The International Tin Study Group publishes a *Year Book* and a *Supplement* in alternate years. The present *Supplement* brings up to date (in somewhat less detail) the information given in the 1954 *Year Book*. This issue of the *Year Book* was noticed in the *ECONOMIC JOURNAL*, March 1955, p. 194.]

UNITED NATIONS. *Economic Developments in the Middle East, 1945 to 1954. Supplement to the World Economic Report, 1953-54.* New York: United Nations Department of Economic and Social Affairs, 1955. 10½". Pp. 236. 17s. 6d.

[An introductory chapter surveys the recent development of the region in general terms, and the remainder of the report deals with the chief countries one by one—Egypt, Iran, Iraq, Israel, Lebanon, Syria and Turkey. The great amount of detailed information contained makes the report a useful source of reference.]

UNITED NATIONS. *The Quest for Freer Trade.* New York: United Nations Department of Economic and Social Affairs, 1955. 9". Pp. 59. 3s.

[This contains an examination of the recent history and present state of the various obstacles and restrictions on free international trade that have been imposed in pursuit of national commercial policies or because of balance-of-payments difficulties. The scope of the survey includes tariffs, preferences, export subsidies, international commodity agreements, state trading monopolies, quantitative restrictions and exchange control. An account is also given of attempts such as E.P.U. to solve the payments problem on a regional basis.]

UNITED NATIONS. *Review of Economic Activity in Africa, 1950 to 1954. Supplement to World Economic Report, 1953-54.* New York: United Nations Department of Economic and Social Affairs, 1955. 10½". Pp. 146. 11s.

[This well-arranged survey is mostly factual rather than analytical in character. Economic developments in Africa during the five years concerned are described under the headings: production (agricultural, mining and mineral, fuel and power, secondary industries), labour, foreign trade, fiscal developments and investment.]

UNITED NATIONS. *Scope and Structure of Money Economies in Tropical Africa.* New York: United Nations Department of Economic and Social Affairs, 1955. 10½". Pp. 52. 3s. 9d.

[This is an analysis of the flow of money income derived from exchange as distinct from subsistence activities in tropical Africa. The national-income estimates that have been prepared for the several countries of the region are drawn upon in order to show the size of the money income flow, its industrial origin, its division between indigenous and non-indigenous enterprises and recipients and between wages, corporate profits and other categories, together with statistics on expenditure on domestic and imported products and on capital formation. The next chapter treats in detail the two major sectors from which money income originates, the export sector and the public sector. The final chapter contains an attempt to summarise the relative orders of magnitude of the chief determinants of income (exports, foreign investment, transfers and "autonomous," i.e., production and exchange within the domestic market) and to outline some of the implications of the results arrived at in relation to prospects of economic development.]

UNITED NATIONS COMMISSION ON INTERNATIONAL COMMODITY TRADE. *1955 Survey of Primary Commodity Markets.* New York: United Nations, 1955. 10½". Pp. 122. 12s. 6d.

[The bulk of this report consists of detailed accounts of the behaviour of individual commodity markets in the course of 1954. All principal commodities are included, with the exception of wheat, sugar, tin and coffee, which were dealt with in another recent United Nations document.]

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANISATION. *International Bibliography of Economics. Volume I (works published in 1952).* Prepared by the Fondation Nationale des Sciences Politiques (Paris) with the assistance of the International Economic Association and the International Committee for Social Science Documentation. Paris: Unesco, 1955. 9½". Pp. 429. 42s.

[This is the first instalment of what will be an annual publication if sufficient support is forthcoming. Some seven thousand titles of books and articles published in 1952 are listed, classified and indexed. It is safe to say that this is bibliography on a larger scale than has ever been attempted before in economics, and it is likely to become an important tool of research. The coverage is world wide, and attempts to be fairly comprehensive, though the compilers have, reasonably enough, drawn the line at articles in the daily or weekly Press. (One important omission is the *Bulletin of the London and Cambridge Economic Service*.) The method of classification is easily understood, and with a little practice the reader should be able to find what he wants without too much difficulty. Classification is easiest for contributions to clearly defined fields of empirical study, and a certain amount of hunting may be needed to track down all the items bearing on more general or theoretical topics. There are three indexes, by author, subject and country. The country index is very elaborate, but some important headings are not included in the subject index—e.g., inventories—and this might with advantage be enlarged.]