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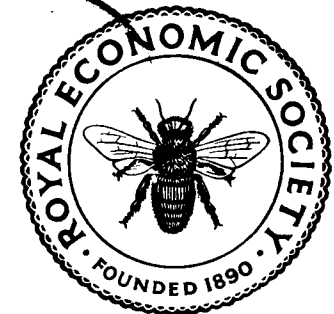
No. 265

MARCH 1957

Vol. LXVII

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THE ECONOMIC JOURNAL



THE QUARTERLY JOURNAL OF THE ROYAL ECONOMIC SOCIETY

Edited by R. F. HARROD *and* E. A. G. ROBINSON

Assisted by R. C. O. MATTHEWS

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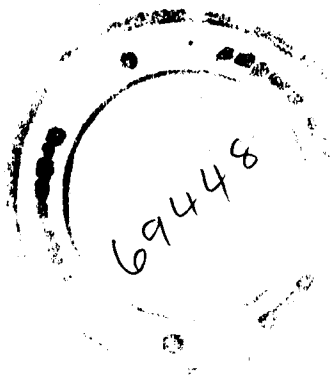
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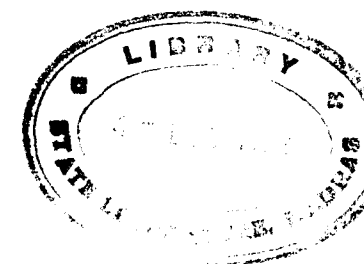


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THE SIZES OF TRADE UNIONS: A STUDY IN THE LAWS OF AGGREGATION¹

I. THE PROBLEM

1.1. It is well known that the distribution of the sizes of British trade unions is extremely skewed, with a large number of small unions at one end and most of the members concentrated in a small number of big ones at the other. In this respect unions resemble firms. This is not surprising: unions seem to grow in the same way as firms—some expand more rapidly than others, some shrink and die, some swallow others; new ones are created, big ones by amalgamations, small ones by fresh starts. The purpose of this paper is to apply to the concentration of unions the methods of inquiry which have already been applied to the corresponding aspects of the firm.²

1.2. Prima facie evidence for a marked increase in the concentration of British unionism is presented in Table I: in 1906 the six biggest unions held about a quarter of all members, in 1954 nearly a half. This change is the more significant because it has been accompanied by a rise in the proportion of the working population who belong to unions: so that in 1906 the six biggest unions contained less than 3% of the total working population, but in 1954 18%. Evidently, greater concentration may come about in various ways—by the disappearance of small unions, for instance, by the more rapid rate of growth of those that are already bigger, or by amalgamations, to name only some ways that spring to the eye. What has the actual way been?

II. THE FORM OF THE DISTRIBUTION, AND ITS MEANING

2.1. The question can be answered more easily if the sizes of the unions prove to be distributed on some principle. If we tried to draw a histogram for British unions in the usual way, and took a scale big enough to show the

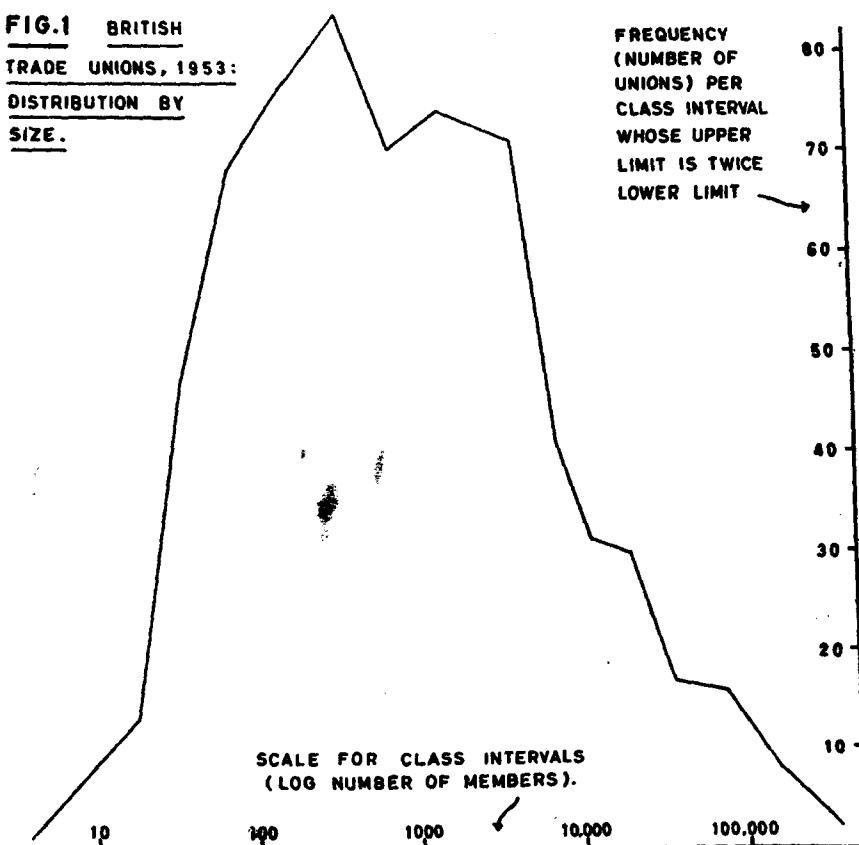
¹ The study of British trade unions in 1906, which was the starting point of the present inquiry, was made by Miss Marjorie Alderson, and the first tabulation of size distributions over the period 1906–53, and the fitting of log-normal functions to them, was carried out by Mr. F. Birch. We are especially indebted to the Ministry of Labour for the understanding and care by which the data which yield the statistical results presented were made available.

² P. E. Hart and S. J. Prais, "The Analysis of Business Concentration," J.R.S.S., 1956, Series A, 119, Part 2, p. 150.

TABLE I
Six Biggest British Trade Unions, 1906 and 1954

1906.	Members, 000's.	1954.	Members, 000's.
1. S. Wales Miners' Federation	121	1. Transport and General Workers' Union	1,240
2. Amalgamated Society of Engineers	98	2. Amalgamated Engineering Union	823
3. Durham Miners	96	3. National Union of General and Municipal Workers	787
4. Amalgamated Railway Servants	70	4. National Union of Mineworkers	675
5. Yorkshire Miners	62	5. National Union of Railwaymen	372
6. Lancs and Cheshire Miners' Federation	55	6. Union of Shop Distributive and Allied Workers	344
7. 1,150 other unions	502 1,620	7. 672 other unions	4,241 5,254
8. All unions	2,122	8. All unions	9,495
9. Total working population, United Kingdom	18,720	9. Total working population, Great Britain	23,610

FIG.1 BRITISH
TRADE UNIONS, 1953:
DISTRIBUTION BY
SIZE.



detail of the smaller unions, we should need not feet of paper merely, but hundreds of feet, to complete the figure. But if we plot not the actual memberships, but their logarithms, then we get very nearly a compact and symmetrical figure of the normal kind. Fig. 1 illustrates this. What we have done, in effect, is to consider the proportionate instead of the absolute differences in the size of unions. Similarly, Table II has been compiled with the upper boundary of each class double the lower, so that all class-intervals are the same on a logarithmic or ratio scale. The resultant distribution is not exactly normal: how far it is so we discuss in the Appendix;

TABLE II
Size Distribution of British Trade Unions, 1906-54
From data supplied by the Ministry of Labour

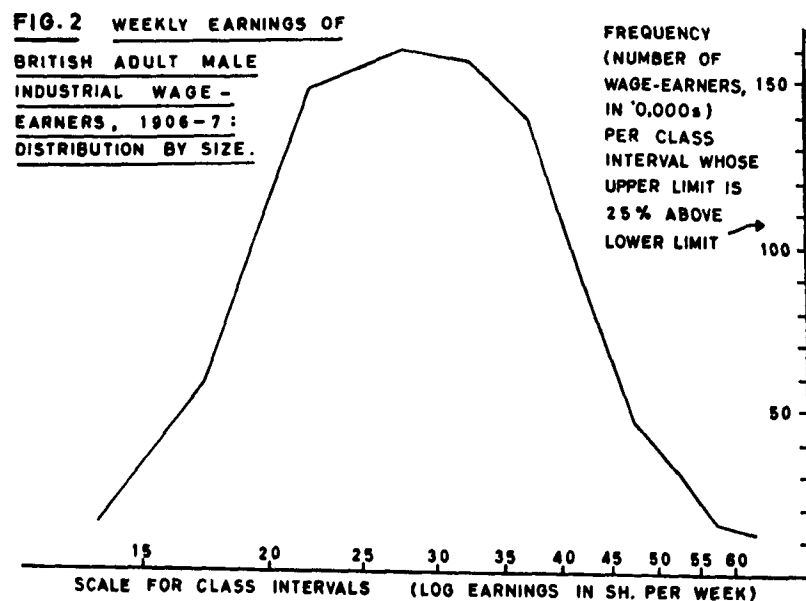
Class.	Upper limit, no. of members.	1906.	1914.	1924.	1932.	1940.	1948.	1954.
A	3	—	—	3	3	1	—	—
B	5	1	—	5	3	4	—	—
C	10	4	4	23	27	17	1	3
D	20	32	25	37	43	28	11	11
E	40	96	79	88	89	88	41	41
F	80	182	147	137	137	129	68	60
G	160	237	215	154	147	119	85	68
H	320	159	188	151	121	114	95	73
I	640	115	141	158	124	120	83	86
J	1,280	119	147	109	95	93	81	68
K	2,560	68	109	96	90	73	66	73
L	5,120	64	55	82	74	74	75	66
M	10,240	35	67	57	58	61	37	39
N	20,480	21	36	40	33	28	34	35
O	40,960	9	20	20	15	23	22	19
P	81,920	5	11	14	13	11	13	16
Q	163,840	3	8	9	6	13	10	10
R	327,680	—	1	3	3	1	5	4
S	655,360	—	—	2	1	3	2	2
T	1,310,720	—	—	—	—	1	3	4
U	2,621,440	—	—	—	—	—	1	—
V								
W								
Total no. of unions:		1,150	1,253	1,188	1,082	1,001	733	678

sufficient to say here that except for the very small unions with less than 160 members, the distribution conforms closely with the normal curve. It does so, moreover, throughout a half-century in which the number of unions has fallen by more than a third, and the total membership grown more than fourfold. This is not of mathematical interest alone, but throws new light on the growth of the unions.

2.2. For one thing, it brings them into the wide class of distributions which are already known to take the log-normal form.¹ Not British unions alone, but those of some other countries belong to it: the 156 small unions

¹ J. Aitchison and J. A. C. Brown, *The Log-normal Distribution* (Cambridge University Press, 1957), especially Chapters 10 and 11.

of Iceland, for example, all but four of them with less than a thousand members apiece, in 1955; and, at the other extreme, the few and massive industrial unions of Germany and Sweden. But perhaps these last are log-normal not so much because they are trade unions as because they are coterminous with industries whose own sizes, as measured by employment, are themselves log-normal: of the 163 British industries whose sizes are reported for 1954,¹ those having up to 300,000 employees are closely log-normal, though the fourteen that are bigger do not conform. The sizes of British firms conform closely throughout the last half-century, despite many changes in composition and scale.² We know little about the receipts of individual wage-earners, but the British wages census of 1906-7³ does



enable us to estimate the distribution of the earnings of nearly 7 million men: Fig. 2 shows this; it is closely log-normal for earnings of 20s. a week and upwards, but the number in the lowest class is greater than would have been predicted from the form of the main body. An explanation of the log-normality of earnings has been given by A. D. Roy.⁴ Not a few other data of personal incomes are known to be distributed log-normally: those

¹ Ministry of Labour Gazette, February 1955, pp. 42-3.

² P. E. Hart and S. J. Prais, *op. cit.*, pp. 157-9.

³ Board of Trade, Inquiry into Earnings and Hours of Labour: Cd. 4545 & 4844 of 1909; 5086 & 5196 of 1910; 5814 of 1911; 6053 of 1912; 6556 of 1913. There was also a report, not used here, on agriculture: Cd. 5460 of 1910.

⁴ A. D. Roy, "The Distribution of Earnings and of Individual Output," *ECONOMIC JOURNAL*, Sept. 1950, pp. 489-505.

of personal fortunes, for instance, in Basle, in 1454 and 1887.¹ The populations of the towns in a country often appear to follow the same sort of pattern.² Thus the log-normal curve is a common form of the distribution of the sizes of economic and social aggregations, just as the normal curve of natural numbers, which we may distinguish as the absolute-normal, is found frequently in nature.

2.3. Mathematical argument, moreover, has given us the conditions that will generate the one as the other. Both kinds of distribution will be set up when the variate—a man's height or the size of a union, for instance—results from the action of numerous independent factors, each tending to make it a little bigger or smaller: the difference lies only in this, that if these factors tend to make the same *absolute* difference in all the variates on which each impinges, an absolute-normal distribution will emerge, whereas if the difference is the same *proportion* of the variates' sizes, the distribution will be log-normal. Two reflections arise. One is, how great a qualitative difference in the effect arises from a quantitative difference in the cause. The difference between adding so many members to all unions, great or small, and raising all memberships by so many per cent, does not look far-reaching: but it proves to make the difference between a relatively equal and compact society, and one of great disparities and diversity. If the tallest 5% of Englishmen bore the same relation to the modal height as the biggest 5% of British unions bear to the modal membership, they would be 336 ft. tall, and upwards. The absolute-normal distribution has a predominant middle class, in the sense that the central two-thirds of its members lie within a range of size that is about a third of the range of the whole; the range over which the smaller ones extend is just as wide as that which covers the bigger ones; and the average size of them all lies within the central two-thirds, and is also the modal size, the one that is most commonly found. In all three respects the log-normal distribution is strikingly different. Among the British trade unions of 1954, for example (Table II), the central two-thirds have from about 80 to 13,000 members, and that is only about 1% of the whole range of size. The smaller unions lie within a minute range, the bigger ones extend across a vast one. The average size, over 14,000, lies outside the central two-thirds, and is far greater than the commonest size, which is between 400 and 500. We might liken the absolute normal to a Scandinavian democracy, with relatively few better or worse off than the majority, and no extremes; the log-normal to an Asian despotism, old style, with the mass of the population at the subsistence level, and no defined middle class, but a smaller number of people holding most of the wealth, some of them immensely wealthy. It is to the latter type of distribution that our trade unions belong.

2.4. Here our second reflection arises. If the mathematicians' argument

¹ R. Gibrat, *Les Inégalités Économiques* (Paris: Sirey, 1931).

² G. K. Zipf, *Human Behaviour and the Principle of Least Effort* (1949).

means what it says, the concentration of great numbers of members within a handful of unions will have come about solely under a molecular bombardment, so to speak, by a multitude of independent factors, each tending to make unions grow or shrink by some proportion of their momentary size. This alone is enough: we do not have to invoke any economies of scale enabling a union to grow faster once it is over the hump; nor any acts of policy, such as amalgamation or empire-building. But it is contrary to a strong general impression to suppose that these last have not played an essential part. Can concentration have gone so far without them? We can answer in the light of the actual course of change among British unions in the last fifty years.

III. THE SOURCES OF INCREASED CONCENTRATION

3.1. That course of change is summarised in Table III. Here the whole span is divided into six periods, and for each of these we give the number, mean size and variance, in row 1, of all the unions in existence at its opening, and in row 6, of all in existence at its close. We give the same particulars, in row 2, for such unions as existed at the opening but ceased to exist, at least as separate bodies, before the close; and similarly in row 5 for such as were not present at the opening but came into existence during the period and were present at the close. (We have no record of those which both were born and died within the period.) The remaining unions were present throughout; we call them, in a somewhat conventional sense, the "survivors," and in rows 3 and 4 we give the same particulars for them, at opening and close. With this information we can now examine in turn some possible sources of the increase in concentration that Table I exemplified.

3.2. One such source might be thought to be simply the fall in the total number of unions, from 1,150 to 678: for the biggest unions might be expected to hold a greater proportion of the whole membership whenever they form a greater proportion of the number of unions. We check this in Table IV. Row 1 shows the proportion of the whole membership which we should expect the biggest six unions to hold, in 1906 and 1954, if the distributions of those years were exactly log-normal.¹ The agreement with row 2 warrants our using the same method to calculate the expected proportions in two hypothetical cases—suppose the variance was the same in 1954 as in 1906 and only the number of unions changed (row 3)? Similarly, suppose the variance was the same in 1906 as in 1954 (row 4)? The conclusion is clear, that the decrease in numbers by itself was responsible for only part of the rise in the measure of concentration used here—five or six percentage points only, out of some twenty-one. The dominant factor has been the rise in the variance.

¹ The method of calculating expected concentration ratios from observed σ^2 and N is explained in P. E. Hart and S. J. Prajs, *op. cit.*, p. 160.

TABLE III

The Number, Mean and Variance of British Trade Unions, 1906-54

Units: N , no. of unions. $\bar{x}$ and σ^2 , logs to base 2; since the upper limit of each class interval is double the lower (e.g., Table II), the class interval in logs to base 2 is unity. $\bar{x}$ gives the geometric mean size of union as a difference from an arbitrary origin at the mid-point of class K , i.e., at $\sqrt{320 \times 640} = 453$ approx.: thus in row 1, 1906-14, $\bar{x} = -0.83$ shows that the geometric mean size was $453 \div 2^{0.83} = 255$ members approx.

	1906-14.			1914-24.			1924-32.		
	N .	$\bar{x}$.	σ^2 .	N .	$\bar{x}$.	σ^2 .	N .	$\bar{x}$.	σ^2 .
1. All in initial year .	1,150	-0.83	6.35	1,253	-0.22	7.38	1,188	-0.25	9.33
2. Unions ceasing to exist during the period, sizes at initial year .	289	-2.28	3.55	479	-1.07	6.14	250	-2.00	6.60
3. Survivors, at initial year .	861	-0.34	6.29	774	0.29	7.51	938	0.22	9.02
4. Survivors, at final year .	861	0.11	7.85	774	0.63	8.54	938	-0.09	9.18
5. Unions coming into existence during period, sizes at final year .	392	-0.94	5.55	414	-1.92	6.46	144	-2.50	7.08
6. All in final year .	1,253	-0.22	7.38	1,188	-0.25	9.34	1,082	-0.41	9.56
	1932-40.			1940-48.			1948-54.		
	N .	$\bar{x}$.	σ^2 .	N .	$\bar{x}$.	σ^2 .	N .	$\bar{x}$.	σ^2 .
1. All in initial year .	1,082	-0.41	9.56	1,001	-0.15	10.12	733	0.65	10.03
2. Unions ceasing to exist during the period, sizes at initial year .	188	-2.03	6.91	351	-1.60	8.91	83	-1.48	4.66
3. Survivors, at initial year .	894	-0.09	9.40	650	0.63	9.04	650	0.92	10.06
4. Survivors, at final year .	894	0.00	10.21	650	0.78	10.47	650	0.86	10.48
5. Unions coming into existence during period, sizes at final year .	107	-1.68	7.04	83	-0.42	5.18	28	-1.14	6.27
6. All in final year .	1,001	-0.15	10.12	733	0.65	10.03	678	0.77	10.47

TABLE IV

Expected, Observed and Hypothetical Proportions of Total Membership of British Trade Unions held by biggest six Unions, in 1906 and 1954

	1906, %.	1954, %.
1. Proportion expected on assumption that distribution is log-normal .	22	47
2. Actual proportion .	24	45
3. Proportion expected if the variance had been same in 1954 as in 1906 .	22	28
4. Proportion expected if the variance had been same in 1906 as in 1954 .	42	47

3.3. How has this rise come about? We can try to separate the effects of various processes that could have contributed to it. The first is that of "births" and "deaths," of unions coming into existence, or ceasing to exist as separate bodies. This would evidently affect the variance if, for

instance, the "deaths" were of unions nearer the average size than the "births." But Table III shows that over most of the span there was little net effect of this kind. In three out of the six periods, it is true, the actual change in the variance, between all unions in the initial year and all in the final year, was substantially different from the corresponding change in the "survivors" alone: in two of these the "births" and "deaths" reduced the rise in the variance of the whole, in one they raised it. If we cumulate the increases in the variance of the "survivors" over the whole six periods, we get a total rise of 5.41, which compares with a rise of 4.12 (from 6.35 to 10.47) in the variance of the whole. Most of the difference came about in 1940-48, the only one of our periods in which the variance of the whole diminished, and it did so here only in consequence of the "births" and "deaths." In sum, the "births" of some unions, and the generally more numerous "deaths" of others, took marked effect to reduce the rise in the variance of the union world during the period of the Second World War, but at other times they worked now this way, now that, and on balance their effect was not substantial.

3.4. A second process that may have contributed to the rise in variance is amalgamation—roughly, when small unions amalgamate, the variance will be decreased, and conversely. Whatever effect there is might be marked, for we know of nearly 1,250 unions amalgamating within our whole span. Tables V and VI enable us to see what the actual effect has been. In Table V we collect all the unions that are known to have taken part in

TABLE V

Number, Mean Size and Variance of British Unions Amalgamating, 1906-54

Units: as in Table III

	Before amalgamation.			After amalgamation.		
	<i>N.</i>	$\bar{x}$.	σ^2 .	<i>N.</i>	$\bar{x}$.	σ^2 .
1906-14	205	-0.35	7.26	65	2.54	5.63
1914-24	458	0.26	8.93	121	3.11	7.77
1924-32	134	0.05	12.69	42	3.33	12.37
1932-40	104	0.74	13.30	36	3.97	9.19
1940-48	295	-0.48	14.13	48	4.25	11.35
1948-54	51	1.71	14.76	21	5.05	10.52

an amalgamation at any time during each period, and show their number, mean size and variance, taking them as they stood in the initial year; we then give the corresponding particulars for the group of unions which would have appeared if all the amalgamations had taken place at the initial year. We see that amalgamations were most numerous in the periods that included the two World Wars: in each of these about a third of all existing unions took part in amalgamations. We see also that amalgamations not only

necessarily raised the mean size within the group concerned, but raised it very greatly: in the first four periods it went up by about 3 of our units, *i.e.*, was multiplied by $2^3 = 8$, and in the last two the multiplier was more like 16. These rises of the mean invariably went with falls in the variance, and these, too, were sometimes substantial. But all this came about only in a segregated group: how much effect did it have on unionism as a whole? Table VI gives the answer. It shows, for the initial year of each period,

TABLE VI

The Effect of Amalgamations on the Mean Size and Variance of all British Unions

Units: as in Table III

	$\bar{x}$.		σ^2 .	
	Before.	After.	Before.	After.
1906	-0.82	0.71	6.35	6.79
1914	-0.22	-0.01	7.38	7.96
1924	-0.25	-0.15	9.33	9.50
1932	-0.41	-0.37	9.56	9.71
1940	-0.16	0.25	10.13	9.66
1948	0.65	0.70	10.03	10.19

the actual mean size and variance, together with those we find if with a stroke of the pen we carry through all the amalgamations that actually came about during the period, giving them the memberships which the unions concerned actually had in the initial year. We see that amalgamation did tend to raise the mean size of all unions greatly—in fact, to multiply it by $2^{1.53}$ or about 2.9—in 1906-14, but in the other periods it contributed rises only of from 3 to 32%. Over the whole period it would have increased the mean size fivefold, if it had not been offset by the entry of new and small unions. But because we are primarily concerned with measuring concentration, our chief interest here is in the variance. It is no paradox that though amalgamation always reduced the variance of those unions alone that took part in it, in every period but one it raised the variance of unions as a whole: in a word, the participating unions came out more like one another but less like the rest. But the effect was generally modest: of the whole rise in the variance between 1906 and 1954, amalgamation on our way of reckoning would have contributed just a quarter. The main source must lie elsewhere.

3.5. We have seen, then, that "births" and "deaths" did little on balance to change the variance of the union world, and that though amalgamations did something to raise it, they leave some three-quarters of it unexplained. There remains a third possible process—simply that unions have grown at different rates, within their own skins, so to speak, and apart from amalgamations. This in turn might come about in two sorts of way. On the one hand, there might be a tendency for some particular kinds of union to grow faster than others; one form of this which can be statistically

TABLE VIII

Changes in Variance of Logs of Sizes of British Unions over Six Periods between 1906 and 1954

	1906-14.	1914-24.	1924-32.	1932-40.	1940-48.	1948-54.
1. Regression coefficient . .	1.04	1.00	0.97	1.00	1.04	1.00
2. Standard error of (1) . .	± 0.01	± 0.01	± 0.01	± 0.01	± 0.01	± 0.01
3. Residual variance (standardised to 8-year period) . .	0.98	0.87	0.72	0.81	0.63	0.64

growing faster than small; on the contrary, unions have tended to grow at the same rate whether they were big or little.

3.7. But the absence of differences correlated with size does not preclude differences of other kinds: in fact, these have been considerable, and the residual variance they have built up has been the main source of the growth of variance in unionism as a whole. They might be associated with characteristics of the union other than size: perhaps unions of the unskilled, for example, tend to grow faster than those of the skilled, or those drawing their members from one group of industries faster than those drawing from others. Our present information does not throw a direct light on this, and it would be interesting to study those unions which experienced high rates of growth, positive and negative, in order to establish the causes of the rise or fall in each particular case, and see whether there were any common features. But the fact that the actual distribution of the sizes of the unions agrees as closely as it does with the log-normal form provides indirect evidence that no one characteristic nor group of characteristics has been decisive, and that the actual influences on growth have been many and various. So we come back to the stochastic process, in which growth is the outcome of the impact of a large number of independent factors, each taking a small effect. But however differences in rate of growth have been brought about, we should expect them to be greater at some times than at others, for we know there have been some periods of turbulence, in which unions have waxed and waned rapidly and competition for members has been intense, and others when membership has been more stable. Table VIII agrees with this expectation. It shows the residual variance as lower since 1940 than in the inter-war years, and lower again than between 1906 and 1924.

IV. COMPARISON OF UNIONS WITH FIRMS

4.1. We have been treating the growth of unions as a particular process of aggregation, and tried to find why this leads to such great inequality, with a majority of the members grouped in a small minority of the aggregates. But we have remarked that in this respect the aggregation of capital or workers in firms presents the same sort of picture. Is the likeness close? Have unions and firms obeyed the same laws of growth? The already-

mentioned study of businesses quoted on the London Stock Exchange from 1907 to 1955¹ enables us to give some answer.

4.2. There are striking similarities. The distribution of the capitals of firms is as substantially log-normal as is that of the memberships of unions. In both worlds the level of concentration has risen substantially: we cannot compare the absolute levels, because we lack data for the firms not quoted on the Stock Exchange, but we do know that the variance of those quoted rose by a third between 1907 and 1955. In both worlds, again, the rise in variance has owed little to changes in the total number of aggregates, or the composition of "births" and "deaths," or to amalgamations, but has been mainly due to the divergent rates at which aggregates have grown by themselves.

4.3. These similarities go with two differences of note. The reader may have remarked one already: the rise of a third in the variance of the quoted firms contrasts with one of nearly two-thirds in that of the unions. Thus concentration has increased more rapidly among unions than among firms. This difference came about largely in the ten years following the outbreak of war in 1939, when the firms showed a marked regression, the bigger firms growing more slowly and the smaller faster, and there was no such convergence among the unions. The other marked difference is that whereas a progressive fall in the residual variance has marked an increasing stabilisation of the rank order of the unions, there has been no such stabilisation among the firms, where rates of growth have continued to differ as much as ever they did before 1914—where indeed the residual variance has if anything tended to increase.

4.4. But the differences are less striking than the similarities: and here we may draw attention finally to the significance of the negative findings in which the two studies agree. Among neither unions nor firms, it appears, has increased concentration been mainly due to the events that take the eye—the amassing of territory by some empire-builder, the coming together of smaller aggregates to form some big amalgamation. Such happenings have their part in the movement of the whole, but are only a few out of the many forces at work. The drawing of so large a part of the whole subject-matter into a few big aggregations comes about mainly through the stochastic play of a myriad of factors, each with little effect by itself. The essential seems to be only that these factors should act multiplicatively rather than additively.

V. SUMMARY

5.1. The distribution of all except the smallest of the British unions is closely log-normal. This places British unions in a wide class of social aggregations of similar inequality and concentration (2.2). To generate the

¹ P. E. Hart and S. J. Prais, *op. cit.*

striking characteristics of such distributions, it is enough that the sizes of the aggregations composing them should depend on a large number of independent factors, each of which tends to change all the aggregations it acts on multiplicatively and not additively (2.3, 2.4).

5.2. The rise in the degree of concentration of British unions, as measured by the variance, has owed little to the decline in the total number of unions (3.2) or to "births" and "deaths" of unions (3.3); and only a quarter of it can be ascribed to amalgamations (3.4). Most of it has been due simply to differences in the rates of internal growth of the unions.

5.3. Study of the matrices which summarise changes in the size of individual unions period by period (3.5) suggests that these differences in the rate of growth have not arisen from any systematic tendency of big unions to grow faster or slower than small (3.6), but from the chance concentration of predominantly expansive influences upon some unions, and contractive upon others, out of the many and various influences that play on all. The extent of these differences has progressively diminished since 1914 (3.7).

5.4. Unions resemble firms in Britain in the last fifty years in that the sizes of both are approximately distributed log-normally, and the variance of both has risen, mainly through divergent rates of growth (4.1, 4.2). But among the firms the rise in variance from end to end has been smaller, though the differences in rates of growth have not diminished as they have among the unions (4.3). Remarkable in both is the comparatively small effect that conspicuous acts of policy have had in increasing concentration (4.4).

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APPENDIX

The Fit of the Log-normal Distribution to the Sizes of Trade Unions

A.1. The goodness of fit may be judged by inspection of the kind of regression illustrated in Fig. 3. This applies Gibrat's procedure,¹ which is equivalent to plotting on log-probability paper.

A.2. It will be seen that the observations for unions of 160 members and upwards lie fairly closely about a straight line, but this line does not fit the observations for the very small unions, which include too small a proportionate frequency to lie along it, but seem to follow another line of regression of their own. A similar break, at about the same size of union, occurs in all the distributions that have been plotted in this way, over the fifty years.

We can also test the fit by calculating Fisher's g_1 and g_2 . The results appear in Table IX. If the fit were exact the values of both would be zero: it will be seen that although the deviations are small they are statistically significant. In particular, g_1 shows slight positive skewness: the very small unions are fewer than

¹ *Op. cit.*, p. 54.

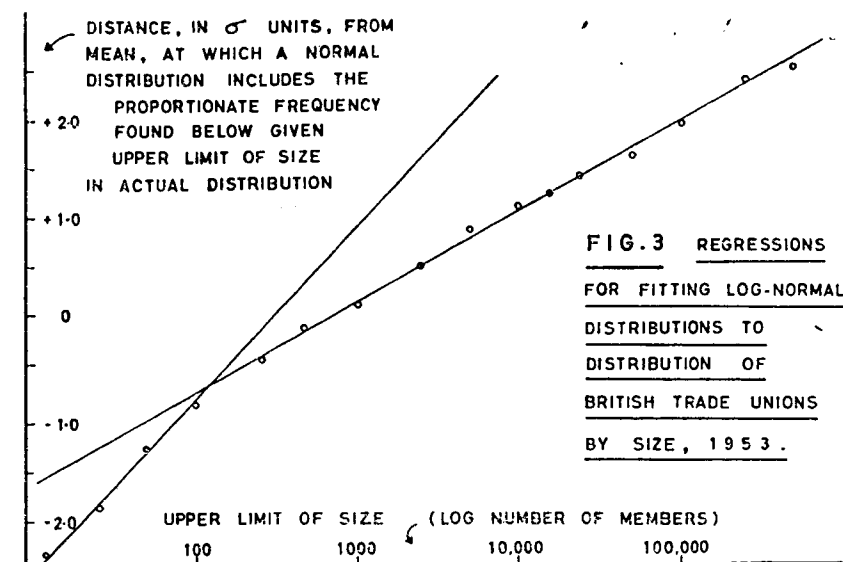


FIG. 3 REGRESSIONS
FOR FITTING LOG-NORMAL
DISTRIBUTIONS TO
DISTRIBUTION OF
BRITISH TRADE UNIONS
BY SIZE, 1953.

TABLE IX
Measures of Deviation from Log-normality of Sizes of British Trade Unions

	g_1 (skewness).	g_2 (kurtosis).
1906	0.70 ± 0.07	0.18 ± 0.14
1914	0.61 ± 0.07	0.01 ± 0.14
1924	0.42 ± 0.07	-0.02 ± 0.14
1932	0.41 ± 0.07	-0.20 ± 0.15
1940	0.50 ± 0.08	-0.09 ± 0.15
1948	0.59 ± 0.09	0.10 ± 0.18
1954	0.47 ± 0.09	-0.08 ± 0.19

they would be if they conformed with the course of the distribution that fits the larger unions.

A.3. The deviation of the smaller unions observed in these two ways prompts the suggestion that the actual distribution is a composite of parts of two log-normal distributions—we might speak of a log-binormal form. In favour of this are the consistency of the break noted in A.1 and the closeness of the fit to each regression line in its own region; and we might add the explanation, that generally unions having less than about 160 members will not have branches as the bigger unions do, so that they constitute a different species of union. As against this, the transition matrices do not suggest any obstacle to unions moving back or forth across the class boundary at 160 in the same way as across other boundaries.

A.4. Since the log-normal form is generated when a *given* number of quantities are subject to change, there is a difficulty in applying it to the actual world of unionism, in which the number of unions has changed greatly, and unions have not merely grown or shrunk, but in large numbers have come into existence and gone out of it altogether. But the "death" of one union may be a condition of the "birth" or expansion of another; and, in general, "births," "deaths," expansion, and contraction may all alike be paths of the process by which the total number of members and their distribution between unions are changed from time to time.

MARXIAN HYPOTHESES AND OBSERVABLE TRENDS UNDER CAPITALISM: A "MODERNISED" INTERPRETATION¹

USING a modern Western analytical framework, this note attempts to express and to examine the crucial Marxian hypothesis concerning future trends under capitalism.

Marx expected unfavourable trends in both wage-rates and profit-rates, even though he anticipated a rapid rate of increase in technological knowledge. Some classical writers also had expected unfavourable secular trends in wage-rates and profit-rates. Moreover, in passages the significance of which for the interpretation of classical views is doubtful, the fear had occasionally been expressed that the character of technological progress might turn out to be too labour-saving, and thus technological advance itself might exert an adverse influence on *wage* trends. But so far as *profit* rates are concerned, the classical literature typically regarded technological progress as an offset to diminishing returns. In the classical analysis, even in that of relatively pessimistic writers, unfavourable profit trends would have been the result of the quantitative insufficiency of this offset in the face of a gradually mounting pressure of diminishing returns (and, on the whole, classical expectations concerning wage trends were also more optimistic for strongly progressive phases of development with rapid technological advance than for stationary conditions). In the Marxian system, on the other hand, technological progress *does not essentially play the role of an offset* to diminishing returns. This is because *technological progress here is considered inseparable from processes by which it is accompanied and which it sets in motion, processes which Marx expected to lead to a downtrend in profit rates as well as to very unfavourable wage trends.*²

What assumptions do we have to "feed" into an analytical apparatus of the present-day Western variety to arrive at Marxian conclusions? What alternative assumptions give a better explanation of trends that have been observable in advanced Western economies?

(1) For the sake of illustration we shall write a production function of the Cobb-Douglas type: $O = bL^kC^jN^{1-k-j}$, where O is output, L labour input, C capital input, N natural-resources input; and where on any given level of technological-organisational knowledge b , k and j are constants. The argument which follows is not limited to conditions to which this specific production function is applicable. Extension of the argument to other types of production function requires merely awareness of the fact that it is generally possible to describe magnitudes, changes in which (or changes in which with specific constraints) alter the total output, for given values of L , C and N ,

¹ I am indebted to Professor James Tobin for reading the manuscript of this article and for discussing it at length with me.

² See, perhaps, mainly Chapter XIII in Volume One and Chapters XIII through XV in Volume Three of *Das Kapital*.

without altering the relative distribution of income. In our production function, b is this magnitude. A change in b , unaccompanied by a change in k or j , alters the total product but not the relative distribution of income. We shall also assume that it is always possible to describe magnitudes, changes in which (or changes in which with specific constraints) alter the relative distribution of income without changing the total product for given resource inputs. In our production function, a change in k or in j , or in both, coupled with the appropriate change in b , alters merely the relative distribution of income, although a change in k or in j , or in both, unaccompanied by a change in b , usually alters the total product as well as the relative distribution of income.¹

Later we shall suggest that it is useful to regard innovating activity as the more plentiful the more it raises the total product for given resource inputs, and to regard innovating activity as the more relatively labour-saving (or capital-saving or land-saving) the more it reduces the relative income-share or labour (or of capital or of natural resources). Given the resource inputs, more plentiful innovations express themselves in higher average productivities for all resources; the relative factor-saving effects, on the other hand, may be viewed as effects on the gap between the average and the marginal productivity of each resource.

A function of the Cobb-Douglas type will be employed here merely for illustration. The prices of resources will be equal to the respective partial derivatives of the function ($\frac{\partial O}{\partial L}$, etc.) multiplied by a term which in the limiting case of perfect competition is equal to one but is normally determined by the degree of monopoly power. This is the term by which the marginal physical products must be multiplied to give the marginal value products (or marginal revenue products). The argument will disregard the fact that as a consequence of indivisibilities we might obtain increasing returns to some factors *even on a given level of technological knowledge*. In other words, we shall assume that if over long periods historically non-diminishing returns are observed for a factor, this is (in the main) a consequence either of techno-

¹ To put it quite generally, if w stands for the real wage-rate, and for the rest the symbols of the text, *supra*, are used,

$$\frac{O}{L} \cdot \frac{Lw}{O} = w$$

Analogous identities hold for the other factors. In the Cobb-Douglas function, a change in b alters $\frac{O}{L}$ for a given $\frac{Lw}{O}$; a change in the L term's exponent (k) alters $\frac{Lw}{O}$ and usually also $\frac{O}{L}$. But it is possible to describe a change in k and an accompanying change in b which leave $\frac{O}{L}$ unchanged, while altering $\frac{Lw}{O}$. This follows from

$$\frac{O}{L} = b \left(\frac{C}{N} \right)^j \left(\frac{N}{L} \right)^{1-k-j}$$

and from $\frac{Lw}{O} = k$ (or $\frac{Lw}{O}$ equals an expression which depends exclusively on k for any given degree of monopoly). Even if we extend these propositions to conditions to which Cobb-Douglas functions do not apply, it is reasonable to assume that $\frac{O}{L}$ can change for a given $\frac{Lw}{O}$, and vice versa.

logical-organisational progress, or of the fact that the input of the other factors has been rising in a no smaller proportion than that of the factor in question.

(2) Let us assume that if the economy moves continuously at the rising capacity level of output, the saved proportion of income is such that $\frac{C}{L}$, as well of course, as $\frac{C}{N}$, is rising. So far, this has actually been the case in industrial economies. The proposition that, without thorough-going institutional change or without a very slow and painful adjustment process, savings cannot diminish more than to a limited extent at the capacity level of output (even if the maintenance of capacity production should require such a decline) implies a denial of the validity or of the significance of Say's Law. It implies either a denial of the theoretical validity of this law or the assumption that the slowness and the hardships of the process by which Say's Law might at the end come through are "prohibitive" for practical purposes. The Marxian system, in contrast to the classical, contains such an assumption. Widely used present-day systems of an otherwise very different character also do.

(3) With the supply of natural resources (N) fixed, and their productivity depending on technological-organisational knowledge, innovations must necessarily increase $\frac{O}{N}$. The more plentiful the innovations are, the more they will raise $\frac{O}{N}$ and, for any given L and C , the more they will also raise $\frac{O}{L}$ and $\frac{O}{C}$.

Given the effect of innovations on k and j in our production function (and thus given the relative income distribution) and given the trend in the degree of monopoly power, sufficiently plentiful innovating activity can always raise the total product to such an extent that neither the rate of return on investment nor the real wage-rate declines (indeed that both rise and that even the rent from natural resources rises). In the first place, if the innovations lower, for example, k , the lowering of this exponent (which is necessarily associated with the rise of at least one other exponent) may raise the total product, and it may even raise the total product so much that the marginal product of labour rises (though its relative share must, of course, decline). But even if a lowering of k should reduce the marginal productivity of labour and a lowering of j should reduce the marginal productivity of capital, the same innovations which lower these exponents can raise b sufficiently to raise on balance the marginal productivity of labour as well as that of capital. If we decide to call innovations the more plentiful, the more they raise the total

¹ $\frac{\partial O}{\partial L} = kb \left(\frac{C}{N} \right)^j \left(\frac{N}{L} \right)^{1-k}$. The effect of a lowering of k on $k \left(\frac{N}{L} \right)^{1-k}$ and on j depends on assumptions which are not decided by the statement that we are concerned here with innovations such as reduce the value of k .

output for given inputs of all resources, and to call them the more *relatively labour-saving* (or capital-saving or land-saving) the more they reduce the relative share of labour (or of capital or of land), then the following conclusion emerges. Innovating activity can be so plentiful—its overall strength can be so great—that all factor-price trends will satisfy any desirable objective for any given distribution of the labour-saving, capital-saving and land-saving effect of the innovations and for any given rise in the degree of monopoly power. Using the Cobb–Douglas function, we may illustrate this proposition by the statement that the increase in the b term can always be great enough to outweigh any unfavourable effect of other circumstances on any factor price. But the other unfavourable circumstances must then be "given." The proposition loses its general validity if certain unfavourable circumstances grow *pari passu* with the increase in the quantity of innovating activity. In the interpretation of Marxian hypotheses, it is essential to keep this qualification in mind.

Assume, for example, that the supply of capital and that of labour are rising rapidly, while the supply of natural resources stays fixed, and that the innovations are exceedingly labour-saving and capital-saving (relative to natural resources), so that k and j are progressively decreasing. Assume also that the degree of monopoly power is progressively rising, with the result that the discrepancy between the physical marginal productivity of labour and the wage-rate is also increasing.¹ Even in these circumstances, the trend in b may be such as to produce favourable trends both in wage-rates and in rates of return to investors. But this assumes that the trend in k does not become the more unfavourable for labour, and the degree of monopoly does not rise the more rapidly, the more favourable the trend in b becomes. It also assumes that the trend in j does not become the more unfavourable for investors the more favourable the trend in b becomes; and that a more favourable trend in b also does not "come in a package" with an increase in the rate of saving (i.e., with an acceleration of the rise of $\frac{C}{L}$ and of $\frac{C}{N}$) which is so great as to result, on balance, in a reduced rate of return to investors.²

(4) The crucial hypothesis in the Marxian system can, it seems to me, be expressed by the statement that more plentiful innovating activity is associated:

- (1) with a greater relative labour-saving effect of the innovations and a more rapid increase in monopoly power, so that wage-rates fall;

¹ Whether we should say that monopoly power creates an analogous discrepancy also between the marginal physical productivity of capital and the rate of return to investors is not quite clear. This is because, for the present purpose, we should presumably include quasi-rents in the return to capital (we should value capital at the cost of production of capital goods), and if this is done it is not clear at all whether in the long run monopoly power increases or decreases the rate of return at the margin of investment. The rate of return may well be increased if we include in it the predictable future formation of quasi-rents (monopoly rents).

² $\frac{\partial O}{\partial C} = jb \left(\frac{L}{N} \right)^k \left(\frac{N}{C} \right)^{1-j}$. Therefore the more capital there is in the system, the lower the marginal productivity of capital for a given b .

Current capital formation must obviously fall short of current output by an appreciable margin. Therefore, there is a limit to the quantity of innovating activity (to the output-raising effect of innovations) which is compatible with the assumption that an induced increase in $\frac{C}{L}$ and $\frac{C}{N}$ of practically possible size will lead to a downtrend in profit-rates in spite of the innovating activity.¹ Yet the favourable effect on profit-rates of a substantial quantity of innovating activity could (in principle) be outweighed by the consequences of an induced rise in the ratio of capital to the other resources.

(5) The foregoing interpretation of the Marxian system disregards lines of reasoning which emphasise structural maladjustments as the main causes of declining profit-rates. Marx expressed great pessimism with respect to the ability of the capitalist system to adjust its structure of production to the demand structure, and he believed that the immobility of resources would make it increasingly difficult to realise profits. Even the adverse effect of technological progress on the wage level is explained in the Marxian analysis with a good deal of emphasis on structural maladjustments and on the immobility of labour, so that our purely "long-run" interpretation may perhaps give rise to objections in this regard too. The Marxian long-run difficulties may in part be long-run only in terms of clock time. In part, Marx may have had in mind difficulties the analytical nature of which is "short-run," but which, according to him, would repeat themselves all the time, and thus would tend to become perpetuated. Still, when trying to get at the core of this set of hypotheses, it seems preferable to move at the genuinely long-run level of analysis and not to place the whole burden of the theory (or even most of its burden) on frictions.

Our interpretation disregards also the possibility that the Marxian analysis implied a simple underconsumptionist proposition which confuses total effective demand with consumer demand and therefore feels under no obligation to explain why a less than unitary average propensity to consume should cause stoppages. Marx's use of the labour-value theory does sometimes suggest just this naïve-underconsumptionist reasoning, but I believe that the statement in the preceding pages brings out the essence of the crucial hypothesis more adequately. The main function of the labour-value theory in Marx's work is that of linking a set of hypotheses to a "creed" in which the judgment is prominent that all non-labour income results from "exploitation," and hence is objectionable. This note is concerned with the Marxian hypotheses rather than with the creed to which they are linked. In the interpretation of the hypotheses themselves it is desirable to by-pass the labour-value theory, which, after all, is a very confusing theory.

(6) However, it is necessary to add a word about unemployment, which has not so far been mentioned explicitly. One type of unemployment

supplements the unfavourable trend in real *wage-rates*, because wages cannot decline below a floor level (and, from the present vantage point, we may also add that wages may show very little downward flexibility even at high levels). Thus, one type of unemployment may develop because, at the given wage-rates, employers find it profitable to use less than the available labour force along with all the available stock of capital or, alternatively expressed, because, at these wage-rates, employers would find it profitable to use the entire labour force only if the capital stock were greater than it actually is. This type of unemployment does not depend on the insufficiency of effective demand, but could persist even if profit-rates were high and investment were as high as it can be within the limit set by the propensity to save at the capacity level of production.¹ Another type of unemployment may supplement the unfavourable trend in *profit-rates* and in investment, if full-capacity savings exceed investment and thus small investment activity creates insufficient effective demand. It is perhaps possible to view this second kind of unemployment also as a consequence of wage rigidities, but, at any rate, this kind of unemployment deserves to be distinguished from the first type. The first type is a consequence of labour's being abundant in relation to the other factors or is a consequence of the high labour-saving effect of innovations, while the second type of unemployment is a consequence of capital's being abundant in relation to the other factors or is a consequence of a high capital-saving effect of innovations. If the crucial hypothesis of the Marxian system were accepted, there would be room for chronic unemployment of both kinds. In other words, even if capitalism did not produce the second type of unemployment, labour would still not be fully employed in the Marxian system. The first type of unemployment would still exist.

Those who are worried about excessive "automation" fear the first type of unemployment. They usually fear *only* this type, which, however, has had little significance in *advanced* economies. Keynes, in the *General Theory*, was concerned only with the second type of unemployment, which he expected to become chronic in advanced economies but which in reality has so far stayed limited to cyclical contractions.

(7) Over the century or so that has elapsed since Marx formulated his ideas, the central hypothesis of the Marxian system has proved unrealistic. Given the propensity to save of successive decades and given the rate of increase in the labour supply, the innovations have been sufficiently plentiful to raise the total output of advanced economies in a proportion no smaller than that in which the supply of the most rapidly growing factor (capital) has been increasing in them. This is another way of saying that in the countries for which we have data the capital-output ratio has shown no upward secular trend. At least in the United States, the capital-output ratio seems to have *declined* over a period including several decades, that is, the average productivity of capital seems to have risen. On balance, this

¹ Capacity production here means the output which can be produced with the available stock of capital. Where the first type of unemployment exists, this output is less than the output which would create full employment of labour.

¹ This may well be what Mrs. Robinson has in mind when arguing that implausible assumptions with respect to the steepness of the slope of capital's marginal productivity curve are required to arrive at the conclusion that a downtrend in wage-rates will be coupled with a downtrend in profit-rates. See Joan Robinson, *An Essay on Marxian Economics*, p. 37.

cannot be the consequence of shifts in the composition of output from more to less capital-intensive activities, because on balance the Western world has been getting more capital-intensive, not less so. Failure of the average productivity of capital to decline, and especially a tendency for the average productivity of capital to rise (*i.e.*, for the capital-output ratio to fall), points to the "quantitative sufficiency" of innovating activity. In the recent literature it is sometimes implied that low capital-output ratios reduce investment, but as a general proposition this is wrong.¹ On the contrary, if a rise in the ratio of capital to the other resources has *not* become associated with rising capital-output ratios (with falling average productivities of capital) then this shows that innovations have been sufficiently plentiful to give us *enough* output per unit of all resource inputs. By this I mean that it is possible to describe a distribution of the land-labour-capital-saving effects which *would have* raised all factor prices.

As for the actual distribution of the factor-saving effects, the innovations have perhaps been *somewhat insufficiently labour-saving* to prevent a mild and not very consistent downtrend in rates of return on capital (before taxes); they certainly have not been so labour-saving as to prevent a significant up-trend in real wage-rates. Which of the various magnitudes have adjusted to others and what the precise characteristics of the adjustment process have been is, of course, an exceedingly complex question. But it seems likely that the relative factor-saving effects of innovations constitute at least in part *responses* to existing relative factor scarcities. At any rate, the character of innovating activity has not been badly out of harmony with the requirements set by relative scarcities in resources. It is also likely that business savings show some tendency to adjust to investment opportunities.

Experience has shown that innovations can very well become sufficiently

¹ The proposition, while generally misleading, is correct in those cases where the average productivity of capital rises as a consequence of shifts in the composition of output from more to less capital-intensive activities. Such shifts raise the gap between average and marginal productivity of capital to such an extent that the *marginal* productivity becomes lowered for additional capital formation. But, as was argued in the text, the observable trends cannot on balance have resulted from shifts of this sort. Where a rise in the average productivity of capital is a consequence of innovations, these innovations would have to possess a very high relative capital-saving effect (a very high gap-increasing effect as between the average and the marginal productivity of capital) to lower the marginal productivity and thus *ceteris paribus* to impede investment. The "normal" assumption here is that innovations raise both the average and the marginal productivity of capital, and thus *ceteris paribus* promote investment, although it is quite conceivable that the typical innovations have increased the average productivity of capital in a higher proportion than its marginal productivity. In the United States, the joint effect of *capital formation and of innovations* seems to have been gap-raising as between the average and the marginal productivity of capital (indeed, an increase in the average productivity of capital may have been associated with a mild secular decline in the marginal productivity). Capital formation, with no innovations, would have lowered both the average and the marginal productivity of capital, but we do not know whether such capital formation would have increased the gap between the two. *If so*, there is no reason to assume that innovations have increased the gap; *if not* (as would be the answer in the Cobb-Douglas model) there is reason to assume that innovations have had a gap-widening effect. In no event is there reason to assume that innovations viewed separately (apart from capital formation) tend to lower the marginal productivity of capital while raising its average productivity. To have had this effect, innovations would have had to increase the gap between the average and the marginal productivity of capital very greatly indeed.

plentiful without becoming excessively "labour-saving" (either directly by their technological character or indirectly by their effect on monopoly power) and without inducing an excessive rate of new capital formation. To have denied this was, it seems to me, Marx's crucial misjudgment.

Practically all major writers on business cycles share the view that temporary deficiencies of the innovational process, or structural maladjustments, or both, are among the causes of periodic contractions, but the characteristics of depressions have not come to dominate the long-run sweep of events in industrial economies. It is to be hoped also that in the future monetary-fiscal policy will prove more successful in its efforts to reduce the amplitude of cyclical fluctuations without causing chronic inflation.¹

(8) Finally, on a somewhat different level of discourse, the question may be asked whether the difference between the actual record of Western economies and the record predicted by Marx is not the result of the equalitarian tendencies of the post-Marxian decades. If so, it could be argued that the labour movement, and thus perhaps indirectly Marx himself, deserve credit, at least in part and in some countries, for whatever favourable trends have become established.

It is unlikely that the labour movement should have led to a lesser degree of monopoly power than would otherwise have been observable (that is to say, to a smaller discrepancy between marginal physical product and marginal value product). Neither economic theory nor common observation create a presumption to this effect. The labour movement may have decreased the effective monopsony power of producers, but it is very unlikely that long-run monopsony power in the labour market should have become a significant factor in any circumstances. This is why we omitted the monopsony problem from the formulation which we used in the main sections of this note. It is true that the equalitarian tendencies of relatively recent decades may well have diminished the saved proportion of output and thus also the innovational requirements for maintaining the economy at the capacity level, but it is not safe to assume that these tendencies made it easier for our economies to stay at or near full capacity. These social trends have tended to reduce not merely the amount of investment needed for keeping the economy at the capacity level but also the willingness to engage in investment: they have reduced the propensity to save primarily by way of tax policies which are very likely to produce a disincentive effect on investors. While the equalitarian policies of recent decades presumably have diminished the degree of cyclical instability around the long-run path of the economy,² economic analysis provides no basis for a similarly favourable or secure evaluation of the effect of these policies on the long-run path itself.

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¹ Here we have "discretionary" policies in mind. For "automatic" stabilising effects, see Section 8, and footnote 2, below.

² This is the problem of the "automatic stabilisers" which should be distinguished from the problem of discretionary monetary-fiscal policies. See end of Section 7.

THE SCOPE OF AUTOMATION

WITH the accelerated growth of automation in recent years a new set of prophets has appeared predicting the future, but, in fact, obscuring the economic significance of automation. Ready-made suppositions are being propounded, such as:

- (1) The scope of automation is limited to a small range of industries, firms and products.
- (2) Automation will not bring any fundamental change in industrial organisation, as it represents only a continuation of mechanisation, rationalisation and scientific management as practised during the last fifty years. Automation will advance at the ordinary rate of technical progress.
- (3) Automation will lead to a higher degree of centralisation and strengthen monopolistic tendencies.

An attempt is made in this article to examine the extent to which automation will affect industry. Some of the confusion which has arisen over the issue of automation can perhaps be explained by the vagueness of the term used and by the wide range of its interpretation. Automation may be interpreted as covering the first automatic devices of the eighteenth century as well as the latest near-automatic factory. Sometimes it is used referring to the "automatic handling of parts between progressive production processes," sometimes to the automatic control systems based on "feedback"¹ and similar mechanisms. At other times it may mean the electronic computing and data-processing machines.

Each one of these categories can be claimed to have evolved over decades or centuries.² But what distinguishes to-day's automation from past developments is the combination of the various modern techniques which yields a "break-through" in production methods. Owing to special circumstances—the defence efforts of the last fifteen years—technological developments which might have taken generations to mature were concentrated in a short space of time.

As a result, industry of to-day has at its disposal mechanisms which can count, remember, measure, compare, inspect, test, correct, start, stop, slow down and accelerate production. The newest devices are claimed to control not only output down to the smallest detail but also to check the health of the machine, to replace worn-out parts and to choose between

¹ "Feedback" implies that production at an early stage of output is fed with information about output at a later stage, and, if necessary, corrects itself according to the information received.

² Babbage's calculating machine was developed round 1835 and the Hollerith machine was already employed in the U.S.A. census of 1890.

alternative courses of action. They seem able to measure the dimensions of time, space, heat and sound.

It has been said that the effect of automatic tools should not be exaggerated because they are applicable in certain sections of manufacturing industry only, and long runs and large-scale production are essential for the necessary economies to be obtained. As manufacturing accounts for only one-third to one-fourth of total economic activity, and as large-scale production and long runs represent only part of all manufacturing, it would follow that the scope of automation should remain rather limited for some time to come.

WHICH SIZE OF FIRM

With regard to size two questions arise, which are closely interrelated: How far does automation influence the size and the growth of firms? How far is the use of automatic devices limited to or favoured by any particular size of firm?

The literature dealing with the relation between automation and size of firm avoids defining what is meant by "firm" or how "large," "medium" and "small" size is to be measured.¹ Moreover, the influence of automation on factors determining size, such as capital, turnover and employment (as well as the influence of these factors on automation), depends on market conditions.

Automation may reduce a firm's labour force and leave sales unchanged; or it may lead to a higher turnover in spite of an unchanged or even smaller labour force; or a still higher turnover may be produced by an increased labour force. Automation may thus reduce size as measured by number of employees yet increase size as measured by capital used or by turnover. In this case a firm will benefit from the various advantages arising from the economies of larger turnover (buying and selling), as well as from the benefits of a smaller labour force (managerial capacity; lines of communication; workers' "sense of belonging," etc.).

Wherever automation makes it possible for a firm to grow in terms of capital or of turnover without an increase in the number of employees the benefits of larger turnover can be reaped without the employment of additional man-power and, where factory space is limited and fully used, without recourse to the building of new premises. In this way, automation can by-pass one barrier limiting the growth of firms, bringing benefits of larger size (measured by capital or turnover) to firms which would otherwise have been excluded from them. Instead of being eliminated by automation, this type of firm may actually benefit.

¹ The statistical snags in comparing the size of different firms either by capital employed, by value of output, or by manpower employed need not be elaborated here. Conditions of monopoly or competition and elasticities of demand would largely determine how far automation would lead to a reduction in price for a given product so that value of output would not be a function of size alone.

On the whole, automation is likely to reduce size-determined differences in efficiency of work, quality of output, overheads, and therefore in manufacturing costs per unit. It seems that devices for automatic inspection and quality control can be designed for any quantity of output. Furthermore, labour efficiency in an automated factory is determined not so much by the superior technique of supervision to be found in large-scale enterprise as by the smooth feeding and working of the automated machine.

The advantages arising out of larger size lie rather in the field of business finance and of sales pressure and in the superior opportunities for training and attracting new skills. Still, it seems that the new industries developing in connection with automation, such as the electronics and the plastics industries, demand and react to the flexibility and enterprise of the innovator of moderate financial strength.

At the same time, "large-scale enterprise" is no longer identical with the centralisation of a large labour force in a few giant production units; it can also mean the duplication and multiplication of a production process spread over a number of smaller production units.¹ In fact, observations made in recent years support the view that automation does not require "large size."²

D. S. Harder, Vice-President of the United States Ford Motor Co., an expert in automation and co-creator of the term "automation," has stated³ that automation might be used in all types and sizes of industrial concerns. "The idea that only the very large, mass-producing industry could successfully use it, has been disproved again and again. . . . Automation is more than transferring material from machine to machine, it is a new concept of manufacture. . . . Instead of smaller plants going out of business, they will use more automation." Diebold, another American expert, co-author of the term "automation" and author of the standard book on the subject, stated⁴ that the appearance of flexible automatic equipment on the market would make it possible for smaller concerns to operate on an automatic basis and in many fields to compete with larger firms. New materials, such as plastics and light metals, will favour this process. Application of the new processes in small establishments ranges from fully automatic lines to partial automation of a single machine.⁵

Many examples can be given to support these claims. The manufacture of automatic control equipment, a new and expanding industry, is well suited for the small and medium-sized firm. In the United States, for instance, some thousand firms share in a market valued at present

¹ See also p. 30.

² In the absence of any definition one might assume that the term has been used for firms which, in their respective industries, were considered large whether measured in terms of capital, output or manpower.

³ Automation Conference, Davenport, Iowa, August 1954.

⁴ Diebold, *Automation*, p. 137.

⁵ *American Machinist*, February 28, 1955.

at some \$3,000–3,500 million a year. Most of the 55,000 varieties of components produced in the electronics industry are supplied by small companies, each one specialising in some field and achieving production at a cost sufficiently low not only to compete with larger companies but also to prevent larger companies from competing.

To give another example of the role the small firm can play in industry as a result of automation: General Mills Inc. brought out the well-known "Autofab," a large-size machine for the automatic assembly of electronic components. ("Autofab" requires also two or three auxiliary machines for preparatory work.) The company expects to sell \$30 million worth to large firms, \$30 million worth to medium-sized firms, and \$40–45 million worth to small-sized firms. The company are now developing cheap models costing \$3,000–\$15,000 apiece, depending on the proportions of manual and automatic operations, specially suited for the small manufacturer.

On the other hand, certain sections of industry will leave little or no scope for small-scale enterprise. For instance, industries based on the "flow-concept" of automation are best suited for the large firm. These industries working with liquids, pulped solids, gases and energy, such as the oil industry, the electricity industry, modern breweries, paper, textile and flour mills, and certain sections of the chemical industry, require plant which is far beyond the means of the small firm.

Automation will not lead to the extinction of the small firm, but it will accentuate the division of industry into two sections, one where the very nature of the manufacturing processes leaves the field to the large-scale enterprise—the "Sector of the Guards"—and the other where there is still room for the small and medium firm. Wherever automatic equipment is so expensive that it is beyond the financial strength of the small and medium firm to replace their old equipment and plant by new automated machines and plant, the small firm will die out. But as a species it will survive and spread, at least for some time, in the remaining automated and non-automated sectors of industry.

EFFECT ON LOCATION OF INDUSTRY

When using such terms as "large-scale" and "small-scale" one has to keep in mind that in the age of automation measuring size by the volume of employment or by factory space, may become a statistical procedure even less reliable than now (see also p. 27). Employment and volume of output will frequently move in opposite directions. The reduction in labour force and factory space needed for a given volume of output will exert a considerable influence on the location of industry. Production can take place on a smaller floor area, as less space is wanted for the movement and general comfort of workers. An American firm, for instance¹

¹ Eberhard Manuf. Division of Eastern Malleable Iron Co.

needed for two new automatic moulding lines an area of 100×72 ft., compared with an area of 450×72 ft. for conventional foundry practice.¹

The smaller labour requirements of automated factories coincide with a tendency of large-scale enterprise towards decentralisation. In recent years many of the industrial giants of the United States, General Electric, General Motors, Du Pont, U.S. Rubber, Alcoa, Philco, U.S. Steel, etc., have aimed at the construction of relatively small plants.² While one of G.E.C.'s old plants employs some 20,000, employment in their new plants ranges from 50 to 1,500. Managerial efficiency, production costs, flexibility and industrial morale all seem to point towards this range for obtaining the optimum size.

One of the larger automated firms in the United States, the Sylvania Electric Products Inc., aims at a size of 600–700 employees per plant; correspondingly, they have spread their 26,000 employees over forty-three plants. With a relatively small labour force per plant they are able to decentralise production and to move to smaller towns, since they are no longer dependent on the vicinity of large urban conurbations for their labour supply. The firm adjusts working hours to local needs, so that, for instance, in farming areas workers starting work at 7 a.m. have, if they so desire, still time left for farm work. In this way, automation and, connected with it, decentralisation can contribute to geographical re-distribution of industry away from the congested areas, and to a better diversification of occupations in less-industrialised areas. (This factor may be of special significance in the development of under-developed areas.)

Automation will, however, also cause movements in the reverse direction. Industries and firms which have until now preferred to operate in regions with relatively low labour costs will find less incentive to stay in or to move into these regions when automation leads to a lower labour content in the value of the final product, and when the labour force has to include a growing proportion of well-paid, highly skilled workers. Other locational factors, such as proximity to sources of supply, to markets, to social and educational facilities, will gain in weight.

The change-over to automation may induce many a firm to close down old, non-automated plant if a new plant is expected to be, in the long run, more efficient and profitable than the modernisation of the old plant. If there has been no reason for carrying on production at the location of the old plant except continuation of the past, other factors will determine future location. Automation—with the change in the labour content of output, with the smaller requirements for labour and floor space, together with the trend towards decentralisation of manufacture by large firms—will thus greatly change the relative weight of the locational factors and influence the future location of industry.

¹ *Steel*, March 28, 1955. ² J. M. Blair, "Technology and Size," *Amer. Econ. Review*, May 1948.

LONG RUNS AND SHORT RUNS

According to the mythology of automation, not only large-scale enterprise and centralised production but also "long runs" are required for automation to spread. This belief is not supported by available evidence. With automation the individual, independently operated, multiple-purpose machine has become possible; replacing a series of machines it can produce a wide range of products by a mere change and adjustment of the fixtures. A British automation expert¹ came to the same conclusion: in due course automation would be used for making complicated pieces in small lots.

New developments of revolutionary significance have been made possible by the tape control of machine tools, a device specially suited for the production of short runs. After one batch of an article or of a component part has been produced, the tape containing the instructions which controls the operations of the machine tool is withdrawn, stored and used again when new orders, replacements or spare parts, etc., require this. The momentum which this invention will give to the spread of automation can be gauged when it is realised that the bulk of American production, for instance, has been stated to take place in runs of less than twenty-five items of the same kind at one time.² The working of the tape requires a "methods engineer," a "programmer" for developing the instructions, a clerk for punching the instruction card and an unskilled operator—who replaces highly skilled machine-tool personnel—inserting the tape.³

Tape control of machine tools is still in its infancy, but it should, in the not too distant future, greatly enlarge the scope of automation. Of course, the economies of long runs will apply to the automatic machine not less than to more traditional machine tools. The costs of production per unit of output are likely to decline if one type of product can be kept on the production line; fewer adjustments will be needed, less time will be wasted in changing the production line, fewer losses will occur from changing the stocks of raw materials and components needed for obtaining a different product.

Although these advantages of a long continuous run for a product of specific design remain or increase under conditions of automation, considerable economies can still be achieved if orders are executed not in one long continuous run but in instalments so that the long run consists of a series of short runs. With automation this broken long run for orders to be executed in relatively small lots to be repeated as occasion demands is likely to grow in importance.

The introduction of automation, together with firms' desire to reduce costs per unit to a minimum, will speed up the much-needed progress in

¹ F. G. Wollard, "Automation," L.P.E. Papers Nr. 1, p. 10.

² Diebold, Hearings before U.S.A. Sub-Committee on Econ. Stabilization, p. 45.

³ *American Machinist*, August 1, 1955.

the standardisation and simplification of products which has been advocated so often—already in the Balfour Report—for the purpose of cost reduction. The case of a firm manufacturing domestic cookers will illustrate this point. The firm sold sixteen varieties at three different price levels; most of the types were produced at a weekly rate of 800–900, with a maximum number of 2,000–3,000. The runs were, on the whole, considered too short to justify automation. A redesign of the cooker aimed at producing a basic standard unit around which the various additional components and gadgets could be grouped in various combinations. In this way long runs of 8,000–9,000 units per week were made possible, an output which justified the introduction of automatic processes and at the same time reduced costs and prices.

The Productivity Team which, on behalf of the Anglo-American Productivity Council, reported on "Simplification in Industry" mentioned many cases where, independent of automation, efficiency had been greatly increased by simplification and standardisation. The Team expressed their conviction "that an organised and determined effort to reduce our manufacturing variety still further could make a rapid and major contribution to increasing productivity and lowering costs in British industry." The Committee for Standardisation of Engineering Products, appointed by the Ministry of Supply in 1948 and working under the Chairmanship of Sir Ernest Lemon, came to similar conclusions.

Since simplification and standardisation are essential for obtaining long runs of production and as automation profits from long runs, the two developments are complementary. Thus, automation will not only enter the field of short-run production but will also stimulate and, at the same time, be stimulated by the drive for greater efficiency by means of standardisation and long runs.

INDUSTRIES AFFECTED BY AUTOMATION

It may be argued that even if all manufacturing, and not only large-scale and long-run production, could be automated, this would still affect only slightly more than one-third of national output. The present-day fashion of reducing major problems to minor ones by measuring them against some global entity—income, output, exports, etc.—seems specially out of place here. In view of present-day rigidities of the factors of production, one should examine, sector by sector, what influence automation is likely to have on industry. The fact that all of a sector's output may, sooner or later, be affected by automation is important even if this sector represents only 10% or less of total economic activity. Moreover, the idea of automation affecting only manufacturing industry does not accord with what evidence we possess.

When trying to forecast what industries are the most likely to introduce or expand automation within the next two decades, one has to bear in mind

that different industries will introduce automation at different times and in different degrees according to technological developments and to economic conditions. Some industries are particularly suited, such as the "continuous-flow" industries mentioned above. Others are, at least for the time being, outside the scope of automation, such as the professions, personal services, agriculture, small-scale retailing, advertising, specified construction projects. Then there are those industries where full automation would technically be possible, but where, at present, only partial automation proves profitable, for instance, in furniture, packaging, large-scale retailing, transport, telephone. (In the United States the automation of telephone services is making rapid progress. Bell's Telephone used 9% dial-telephones in 1924, 55% in 1939 and 84% in 1954.)

Automatic assembly by means of the "printed circuit" which has come into use during the last few years,¹ has brought many assembly industries, such as wireless, television and electronic equipment, within the scope of automation.² This development, together with the replacement of the traditional vacuum tube by the transistor, which is more durable, much smaller, and more economical in power consumption, should greatly reduce costs and prices of these industries' output and should result in a considerable expansion of their markets. In the case of the electronics industry, the use of these two inventions—printed circuit and transistor—will accelerate the pace of automation, while with television and wireless new wants will be created and satisfied. (In the United States living-room radios now represent no more than a quarter of all wireless sets in use. Portable and clock radios and sets in other rooms account for the rest.)

Although manufacturing industry will take the brunt of the coming wave of automation, other fields of economic activity will probably soon be affected, such as building, shipbuilding and transport. In shipbuilding a trend towards pre-fabrication can be observed, towards the transfer of more operations from the slipway to the workshop, where automatic devices, especially with regard to welding, can be employed. The building industry is just now emerging from the experimental stage of pre-fabrication. In the United States some 125,000 pre-fabricated houses were built in 1955. One of the largest pre-fab building firms, Price Brothers, work with conveyor belts, automatic "jig-tables," hammers and saws; window openings are "sliced out" in 35 seconds, continuous spray guns apply paints. "Pre-fabrication may be said to have arrived in Wall Street."³ Other countries as well, especially France, Germany, the Soviet Union, Italy, Norway and Sweden, have stepped up the building of pre-fab houses. The methods of

¹ Britain's first fully automatic assembly of wireless sets was organised in 1948, by H. A. Sargrove.

² An important new stage in automation has now been reached: automatic assembly is spreading to the metal-working industry and is to be applied to the assembly of products ranging from small electric motors to cylinder heads and engine blocks. (*American Machinist*, Sept. 10, 1956.)

³ "Barron's," March 14, 1955. Refers to the introduction of pre-fab stocks.

pre-fabrication have by now become so adjustable that buildings can be produced in a wide variety, without the austerity features of the earlier types. As a result of automation, the era of protection for traditional building may be drawing to a close. (In the field of building materials, an American firm has recently introduced an electronically controlled mixer which can produce 1,500 different mixtures.)

As to transport, recent information given by one of the large industrial combines suggests great possibilities for automatic warehousing. After the introduction of "palletisation" warehouse labour costs are said to have been reduced by 60%, and man-hours required for the movement of one ton of goods to have been cut from 1.22 to 0.44.¹ The cost of constructing these pillarless warehouses has been reduced by some 40%.

In rail transport, the first experiments with automatic yards have proved successful. In the United States the Pennsylvania Railroad expect, from their new \$34 million Conway yard near Pittsburgh, with automatic handling and dispatching of freight cars, an annual saving in operating expenses of \$11 million.² At present, a daily volume of 1,500–2,000 wagons is considered sufficient for automation to be economical. (An increase in labour costs would shift this range downwards.) Expenditure for freight cars is greatly reduced, as fewer wagons are needed owing to the greater speed with which they are handled, an interesting example of a reduction of secondary investment by automation. How far automatic trains will prove an economic proposition—they are technically possible already—is difficult to judge at present.

THE ELECTRONIC COMPUTER

If one is inclined to speak of a second industrial revolution, it will apply at least as much—if not more—to the office as to the factory. To argue that Babbage's calculating machine has been invented more than 100 years ago, and that the process of mechanisation of office work with electric typewriters, dictaphones, punch-card systems, etc., has been going on for a long time, is to overlook that with the electronic computer something different in kind has arrived, which will greatly influence industrial, commercial and governmental administration, as well as social and industrial research.

True, automation in the office is still in the experimental stage, with relatively few machines performing everyday tasks. However, progress in this field is rapid; an electronic computing machine brought out in 1953 has been claimed to have 25–35 times the speed of the first machine of this type introduced by the same company in 1948.³ Since then further progress has been made. However, comparisons of these computers with

¹ Sir Geoffrey Heyworth at Annual General Meeting of Unilever Ltd., May 26, 1955.

² *Wall Street Journal*, June 29, 1955.

³ *Monthly Labour Review*, June 1955, p. 640.

the human brain will lead only to miscalculations about both their possibilities and their limitations. They are infinitely inferior in some respects, greatly superior in others. The artistic, creative, sensitive, unpredictable working of an individual's brain and the mechanistic, automatic working of the computer are not really comparable phenomena. The revolutionary significance of the electronic computer lies in its speed, its precision, its reliable memory for a selected field of facts and its capacity for long, uninterrupted work. It can, faced with a series of alternatives and combinations of alternatives, make the right choice in a short time. (As much of human "originality" consists in a new combination of various known factors, there is no reason why, in selected fields, the electronic computer should not excel in this quality as well.)

The electronic computer's usefulness stretches over a wide field of production, distribution, administration and research. In certain production processes it is essential to compute the results of a process quickly enough to influence the next stage, but traditional methods of computing have been too slow. In one chemical process, for instance—the conversion from natural gas to acetylene—a computer is needed which produces results in less than 1.3 seconds. Here again, automation emerges as something more than a mere continuation of mechanisation.

The computers can also be used for engineering calculations—General Electric of the United States installed the first large electronic computer in 1952 for this purpose, and, by the end of 1956, eight of this type are expected to be in operation, in addition to 120 small and medium-sized computers. The larger part of computing time is to be used for engineering calculations. The extent of, and the skill in the use of, these computers should considerably influence the rate of invention and innovation and the competitive strength of firms.¹

The suitability of the computers for extensive input-output analysis makes it possible to calculate the optimum combination of the factors of production in a multiple-product firm for any given sales volume. Any adjustment in stocks required for a change in the production programme can be easily calculated. Financial burdens and losses arising from overstocking can thus be greatly reduced; on the other hand, interruptions of production owing to shortages in some material or components can be avoided. Once this new type of stock-control has become general, investment in stocks and the needs for working capital should decline (another example for a reduction of secondary investment through automation).

Costs per unit of output, profits and losses can also be calculated in great detail, at frequent intervals, and with the results quickly available. Scientific management, until now mainly a slogan, well-meant and much misunderstood, has moved much closer to being established in industry;

¹ The I.C.I. have recently ordered five large electronic computers of different types (*British Chemical Engineering*, September 1956).

supported by the new computing capacity, management can plan production schedules, establish optimums, discover margins. The electronic computer may bring the economic theoretician and the industrialist closer together; it can, no doubt, substantially contribute to higher efficiency.

THE SCOPE OF OFFICE AUTOMATION

There is little danger of the new computers displacing clerical labour when used for industrial purposes; most of this type of computing work has not, or not frequently, been done in the past. Still, the effect of automation on general office work should be of a high order. The electronic computers can replace the ordinary clerk in his task of calculation, accountancy, invoicing and costing, they can type, sort and file at extreme speed—the filing being carried out on tapes or in tubes. A large insurance company which used to occupy fifteen floors for housing its files now needs only one medium-sized room for storing a few hundred spools of magnetic tape containing the same quantity of information.¹ (Yet another example for automation reducing secondary investment.)

Automation, in the form of the electronic computer, will affect banks, insurance offices, Government Departments, Local Authorities, mail-order houses, public corporations and the offices of industrial and commercial firms. Here, a new feature of automation emerges. The large electronic computers are expensive, and they possess a great capacity for work. To make them pay their way, firms will be inclined to keep them as fully occupied as possible. This can be achieved only if the machines established at headquarters are fed with information provided by a number, or by all, of a firm's branches.

Thus the Bank of America's "Erma" computer, which is expected to handle some 50,000 bank accounts with the help of nine operators, serves a group of bank-branches in California. Sylvania Electric Products Inc., which believes in de-centralisation of manufacturing, is, at the same time, constructing a centralised data-processing system. Headquarters will, by means of a 12,000-mile private electronic communication system, be connected with all the company's plants, laboratories, offices, warehouses, etc., in fifty-one cities. At headquarters a Univac computer will be installed which will digest all the information fed over the system and work out production, marketing and research problems for all managerial levels. Thus, just when manufacturing has reversed its trend towards ever-larger production units and tends towards de-centralisation in smaller-sized units, the introduction of the electronic computer brings about more centralisation of administrative work.

Here, too, the field is not entirely left to the large firm. Smaller electronic computers are available costing only between one-twentieth and

¹ Diebold, *Automation*, *op. cit.*, p. 94.

one-third of the large computers.¹ The difference is to be found mainly in the speed of operation, the number of operations per second varying between 500 and 5,000. With recent developments of valves being replaced by transistors, small and even portable electronic computers can be envisaged. For the more ordinary type of sorting, adding and tabulating, electronic computers are, of course, no paying proposition, and traditional equipment will remain in use. There is also the possibility of hire and hire-purchase. In the United States as well as in this country, electronic-computer services can be rented at hourly rates, together with specialists who convert the firms' problems into equations to be fed into the computer. The cost of hiring a computer in Britain seems to be in the neighbourhood of £25–35 per hour, representing about two years' work of conventional calculating methods. Monthly rent in the United States varies from \$2,000 to \$20,000. So many types of computer are now being developed that soon a "custom-made" computer service will be available to any firm willing to make use of it.

Government Departments, too, are likely to use the electronic computer for digesting the vast quantities of information at their disposal. It will become possible to carry out censuses and sample inquiries more frequently and in greater detail. (The time may not be far off when even the Patent Office—once the records have been adjusted to the needs of the system—may be able to catch up with new inventions coming in ever faster.)

Public Authorities will be able to calculate the lowest tender, taking into account transport costs and differential rebates. Losses suffered by the Armed Forces as a result of surplus and badly balanced stocks, as recently reported in the United States and in this country, can be avoided by electronic stock control. Logistic problems can be quickly calculated. On the whole, what is true of the private sector of the economy may apply equally to the public sector: a greater quantity and a higher quality of the product—in this case, of information—will be provided, the field for human error and ignorance will correspondingly shrink, and efficiency will generally improve (if the machines are asked the right questions for the right purpose).

Statements to the effect that heavy cost will prevent a rapid development of automation need to be qualified. First, as already mentioned, the possibilities of hire and hire-purchase will help to bring automation to the financially weaker firm. Secondly, not all automatic equipment involves heavy initial expenditure. Third, where equipment is expensive, capital costs may not greatly exceed that of corresponding non-automatic machines, while running costs, by the very nature of automation, are bound to be cheaper.

What really matters is the relation between capital costs and operating costs of old and new equipment, and the rates of depreciation and obsoles-

¹ The Manchester University computer cost £90,000, the British Tabulating Machine Co's "Hea" cost £23,000.

cence. Frequently, full automation will not, but partial automation will be an economic proposition.

Estimates of the reduction in calculating costs achieved by the use of electronic computers vary from one-twentieth to one-thousandth of the cost with conventional methods. One has also to consider that automatic manufacturing equipment can reduce operating costs to such an extent and in so many ways that initial capital cost becomes less important: automatic inspection and feed-back systems ensure higher quality, less sub-standard output, fewer hold-ups and greater speed of machines, while less factory space and office space, less lighting and heating, per unit of output is required, and overhead costs are reduced correspondingly.

As to depreciation, the machine-preserving and protecting features of automation should tend to reduce costs. It has been estimated¹ that, owing to the increased efficiency of automatic equipment, expenditure on large automatic installations can be recovered in about three years (on average), while the period for smaller automatic equipment would sometimes be as short as a few months or even weeks.

The impact of all these advantages of automation will soon force non-automated firms in industries suitable for automation to follow their more enterprising competitors. Until now, technically backward firms could compete with newly equipped firms as long as they were content with smaller profit margins. They could work with machines which had already paid their way, and they had to shoulder mainly current costs, whereas the modernising firms had to carry the heavy capital burden of their new equipment. Now, however, the automatic plant produces not only more output per unit of capital but also better-quality output. It is no longer competition in cost only, which, to some extent is adjustable, but competition in quality, which cannot be met except by acquiring the new automatic production technique.

Of the two forces, resistance to change and, on the other hand, the drive for change and innovation, the latter is, in the case of automation, likely to prove stronger. (At a machine-tool show held at Chicago in the autumn of 1955 it could be claimed that the past eight years had brought more innovations than the eighty years before.²)

Whilst technical progress in the first half of the century was limited to certain fields of manufacture, above all to engineering and vehicles, and directed largely towards the production of new consumer goods, such as the motor car, the wireless and other semi-durables, where a reduction in cost and price led to a great expansion of markets and employment, the automatic-electronic developments of the second half of the century will spread over a much wider field of manufacture, to construction, transport,

¹ F. Garner, Director of Joseph Lucas Ltd., *Report at Conference on The Automatic Factory*, issued by the Institution of Production Engineers, June 1955, p. 43.

² *American Machinist*, September 18, 1955.

commerce, distribution and administration, and as far as output is concerned will affect mostly producer goods.

CONCLUSION

Surveying what has been achieved through automation, one wonders how far it is still possible to envisage the limits of its potential. The rate of further development of automation will depend not only on technical possibilities but also on the attitudes of governments and of industrial and labour leaders. They will have to decide whether the process of automation should be slowed down in order to reduce the difficulties of adjustment, or should be speeded up in order to remain competitive.

The choice is more apparent than real. It will be imposed upon this or any one country by developments in other countries which are forcing the pace of automation, partly because it plays so great a role in the output of defence equipment, partly because of its superiority in peace-time production.

Automation will spread, and so will its influence on the future structure of industrial organisation: size and location of firms, the growth of new industries, employment and investment, rate of technical progress, the division of labour, the distribution of income, wage-differentials and working conditions, managerial functions, time-and-motion study, cost accounting, especially with regard to overheads. Traditional percentages added to labour costs will no longer provide a workable formula, while the relative importance of depreciation and obsolescence will, for a considerable stretch of time, be reversed. A new balance between centralisation and decentralisation of industry will emerge from the pull of forces moving in opposite directions, and at the same time the relative strength of competitive and monopolistic elements in industry will change.

Automation will also bear upon such matters as the balance of payments, the development of underdeveloped areas, technical education, defence expenditure and principles of taxation, especially of depreciation. There is opening up before the present generation of economists a wide and rewarding field for research. The sooner economic analysis based on factual information can replace highly speculative and often ill-informed opinion, the better.

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The completion of this article has been made possible by a grant of the Research Fund Committee of the Durham Colleges.

INDUSTRIAL DEVELOPMENT CORPORATIONS IN INDIA AND PAKISTAN

I. INTRODUCTORY

THE establishment of industrial development corporations in the post-war world has brought a new institutional pattern to the fore in the economies of under-developed countries. With the avowed objective of accelerating the rate of industrial growth and of overcoming the initial hesitancy of private enterprise, particularly in the launching of large-sized basic and key industries, these corporations have come to be regarded as an important step in bringing about a "balanced economy." The accent of such corporations is on "enterprise," whether private or public. As such, they are looked upon as a vital agency whose mission it is to reconcile the conflicting claims of the public sector and the private sector.

II. IN PAKISTAN

It was to overcome the shyness of private enterprise that the Pakistan Industrial Development Corporation (PIDC) was established in Pakistan. The PIDC started functioning on January 12, 1952. It is doubtlessly a pioneering enterprise, unique in several respects. First, the Corporation was established by an Act of the Central Legislature of Pakistan. Secondly all the directors of the Corporation were appointed by the Central Government. Thirdly, these directors were taken in as whole-time officers. In all these three respects the PIDC resembles the pattern of the British public corporations that grew up during the six years of socialist rule (1945-51) under the Labour Party.

Of course, there are important structural differences which create a gulch between the public boards of Great Britain and the PIDC. The latter, like joint-stock companies, was registered with an authorised capital of Rs. 100 crore (about £750,000 according to the post-devaluation value of the Pakistani rupee). In contrast to this, a public corporation has no share capital. Moreover, a public corporation of the British pattern is a statutory monopoly dealing with only one industry, but having full control over it. The PIDC on the contrary, commands monopoly rights in neither the ownership nor the management of any industry. It is expected to deal with a multitude of diverse industries which the Government of Pakistan consider vital for industrial progress.

The function of the PIDC is to establish those industries specified by its charter, viz.: (1) jute mills; (2) paper mills and allied paper products; (3) fertiliser plants; (4) heavy engineering industries, including iron and steel; (5) shipbuilding; (6) cement plants; (7) textiles; (8) sugar; (9)

natural gas; (10) heavy chemicals; (11) chemicals, pharmaceuticals and dyestuffs; and (12) development of power from Sui gas.

While basic industries certainly dominate the list, consumer-goods industries, such as paper, textiles and sugar, also figure prominently. The obvious reason for this is that Pakistan is almost equally backward in the sphere of light industries. At the time of the partition of India in 1947 those areas now known as Pakistan had hardly any industrial activity worthy of the name. Though West Pakistan was an area rich in raw cotton, in the whole of Pakistan there were only a few cotton mills with a total strength of 177,418 spindles and 4,824 looms. By the end of June 1954 their number had risen to 923,876 and 14,484 respectively. By the end of June 1955 there had been another remarkable rise in the installed capacity, the number of spindles increasing to 1,565,552 and that of looms to 22,633.¹ Within a year the output of cotton cloth rose by about 26%, from 306 million yards in 1953-54 to 386 million yards in 1954-55. The quantity of surplus yarn actually spun rose by more than 74% during the same period, from 74 million to 128 million lb.²

It is not suggested that the entire credit for this progress is attributable to the PIDC. In fact, in the domain of cotton textiles the PIDC has not much to take credit for. But it may be pointed out that the Government of Pakistan have found in the PIDC an agency that furnishes help through all difficulties. To take only one instance, the Government of East Pakistan started the construction of a cotton mill with a capacity of 4,000 spindles in Kaliganj in Dacca district. Finding themselves embarrassed, they requested the PIDC to take over this project and to carry out its management, even though a large part of the share capital was held by the East Pakistan Government.

By the end of June 1955 the PIDC had completed, in all, as many as nineteen projects, of which no fewer than fifteen were accomplished during the year 1954-55 alone. These fifteen projects include four jute mills in East Pakistan, one cotton mill at Dacca, two woollen mills at Harnai and Bannu, one sugar mill at Jauharabad, one caustic soda plant and one D.D.T. factory at Nowshera and one sulphuric acid plant at Lyallpur. In addition to this, four model ginning factories have been set up by the PIDC with a view to improving the standard of cotton ginning.

Over and above the nineteen projects already completed by the PIDC, twelve more are on the anvil. These include four new jute mills in East Pakistan, the Qaidabad woollen mills, two cement factories at Hyderabad (Sind) and Daudkhel, a high-grade paper mill at Amargarh, a straw-board mill at Rahwali, the Sui-Karachi gas pipe-line, the ammonium sulphate plant at Daudkhel and two sugar mills at Rangpur and Charsadda. The PIDC has also in view the setting up of a newsprint factory with an annual production capacity of 30,000 tons, an integrated iron and steel plant at Multan and a 100,000-kilowatt power-station also at Multan designed for the utilisation of Sui gas.

¹ W. A. Robson, *Problems of Nationalized Industry*, 1952.

² *Report on Currency and Finance for 1954-55*, State Bank of Pakistan.

³ *Ibid.*

The institutional climate has apparently proved highly conducive to rapid industrial growth in Pakistan. The index of industrial production (1950 = 100) rose from 125 in 1951 to 160 in 1952, 235 in 1953 and 285 in 1954.¹ The PIDC is responsible in no small degree for this rapid progress. The most noteworthy development was in jute goods, the output of which rose from 40,150 tons in 1953-54 to 77,423 tons in 1954-55 (an increase of about 93% in one year). The output of different varieties of paper was more than doubled, reaching 20,898 tons in 1954-55, as against 9,495 tons in 1953-54. Certain items, such as D.D.T., sulphuric acid and caustic soda, were produced in Pakistan for the first time during the year 1954-55.

It may, however, be added that certain sectors of the industrial economy seem to have been neglected. For example, the production of steel ingots in Pakistan, which stood at the palpably low figure of 10,782 tons in 1953-54, actually declined to 9,455 tons in 1954-55. In the case of cement the output rose only from 618,000 to 681,000 tons during this period, registering a comparatively low rate of progress, viz., about 10%. Likewise, the increase in the production of sugar from 76,458 to 78,176 tons represented a rise of only about 2%. The increase in the generation of electrical energy from 447 million kilowatts in 1953-54 to 504 million kilowatts in 1954-55 amounted to an annual increase of a little less than 13%. This rate of growth in the generation of electrical power, though inadequate to meet the rising tempo of industrial activity in Pakistan, compares favourably with the 6% rise in coal production (from 562,000 tons in 1953-54 to 595,000 tons in 1954-55) and with an identical 6% increase in the output of crude petroleum (from 1,642,000 barrels in 1953-54 to 1,740,000 barrels in 1954-55).

The rising imports of machinery into Pakistan are evidence, first, of the fast pace of industrialisation, and secondly, of Pakistan's total backwardness in the sphere of capital-goods industries. The imports of machinery aggregated Rs. 13.68 crores (about £10 million)² in 1952-53, Rs. 16.60 crores (over £12 million) in 1953-54 and Rs. 31.85 crores (about £24 million) in 1954-55.

In the period since the establishment of the PIDC capital issues by industrial companies have stood at a fairly high figure. For the period 1947-52 the average annual rate of capital issues works out at Rs. 10.58 crores (£8 million). During the years 1953-55 capital issues have been sanctioned at an annual rate of over Rs. 25 crores (£19 million). However, on analysing the figures year by year for the period 1953-55, it will be seen that the curve of capital issues has definitely flattened. Capital issues amounted to Rs. 27.28 crores for 1953, Rs. 26.78 crores for 1954 and Rs. 12.86 crores for the first six months of 1955.

This suggests that the financial burdens of the new industrial projects are falling increasingly on the PIDC. The total capital outlay on all the pro-

¹ "White Paper on 1955-56 Budget," *Pakistan Trade*, May 1955, p. 15.

² In all these calculations the value of the Pakistani rupee has been taken as equal to the Indian rupee (which is the present position), even though, before the recent devaluation of the Pakistani rupee on July 31, 1955, the value of the Pakistani rupee was higher than that of the Indian rupee by about 44% (i.e., 100 Pakistani rupees = 144 Indian rupees).

jects sponsored by the PIDC is estimated at Rs. 65.42 crores (£49 million). More than half of this amount, viz., Rs. 33.56 crores (£25 million), represents investment by the PIDC. The balance of Rs. 31.86 crores (£24 million) is accounted for as follows:

- (i) private-enterprise contributions, Rs. 19.15 crores (over £14 million);
- (ii) foreign aid Rs. 6.42 crores (£5 million);
- (iii) World Bank loan for the Sui Gas Project Rs. 4.62 crores (£3½ million);
- (iv) contribution of provincial governments Rs. 1.68 crores (£1¼ million).

The fact that the PIDC's contribution has aggregated Rs. 33.56 crores, whereas the Corporation's capital is only Rs. 1 crore, is an anomaly accounted for by the large grants budgeted every year by the Central Government of Pakistan. During the fiscal year 1955-56 the Central Government has provided for a sum of Rs. 15.10 crores (£11 million) for the PIDC. The revised budget estimates for 1954-55 showed an investment of Rs. 9.67 crores.¹

The underlying objective of the PIDC is to encourage private enterprise and to work in collaboration with private capital wherever possible. The Corporation "sponsors public limited companies in which participation of private capital is attracted to the maximum possible extent. The objective is to see that mills and factories are set up . . . so essential to balance the economy of Pakistan, and wherever private capital is not forthcoming the Corporation gets the total capital from the Government to establish the industry, without loss of time."²

It is thus clear that the PIDC has no intention of extending the scope of nationalised industry in Pakistan. Even when an industry is established with the major part of the capital coming from Governmental contributions, the step is a matter of expediency rather than one based on socio-economic logic. It would not be surprising if many of the industrial units now floated by the PIDC with the active assistance of the Government are ultimately transferred to private enterprise at a later stage (when the solvency of such industrial units is clearly established and private industrialists are willing to take them over). Such an institutional pattern would be comparable to the industrial system of Japan as it evolved soon after the Meiji Restoration—where industrial units were initially sponsored through state initiative, but were gradually handed over to private entrepreneurs.

III. IN INDIA

The birth of industrial development corporations in India is a later event. This is obviously attributable to the comparatively high level of industrial activity obtaining in India even before the era of economic planning actually set in. Moreover, in recent years the Government of India, has embarked on

¹ *Report on Currency and Finance for 1954-55*, State Bank of Pakistan.

² Cf. the speech of Mr. M. A. Ispahani, director PIDC, broadcast from the Dacca Station of Radio Pakistan on October 21, 1954.

an extension of the field of state enterprise, not on grounds of expediency, but on the basis of a doctrinaire belief in the inherent superiority of a socialised industrial system.

It was not until India's First Five Year Plan, initiated in 1951, had proceeded more than half-way that the inadequacy of public investment (for meeting the requirements of planned targets) was realised. This brought home to the industrial planners the urgent necessity of yoking private enterprise, with its full strength, in the service of economic planning.

The Committee on Finance for the Private Sector, appointed by the Reserve Bank of India under the chairmanship of Mr. A. D. Shroff, a well-known industrial magnate, submitted its report in 1954. The Committee's findings were that during the past few years the socio-economic climate in India has tended to discourage and discredit private enterprise. It strongly expressed itself in favour of an assurance from the Government granting immunity from nationalisation for scheduled industries for a reasonable period.¹ The Committee deprecated the growing tendency to grant unfair concessions to publicly-owned industrial units. It also felt that private investment had been delayed and retarded by the bewildering complications in the procedure for granting licences to private enterprises. It suggested that Government Departments should have technical specialists whose duty it would be to help private entrepreneurs in the completion of details and in fulfilling statutory requirements. While expressing the view that the mere multiplication or strengthening of agencies will not add to the country's industrial development, the Shroff Committee recommended the establishment of three development corporations²:

- (1) a state-owned Industrial Development Corporation;
- (2) a privately-owned Industrial Development and Finance Corporation;
- (3) a special Development Corporation for Small Industries.

All these three Corporations have since been established. The first one, styled the National Industrial Development Corporation Ltd. (NIDC), was established on October 20, 1954. The second was registered on January 5, 1955, under the name of Industrial Credit and Investment Corporation of India Ltd.³ And finally, the National Small Industries Corporation Ltd.

¹ The importance of such an assurance can possibly be better appreciated now after the nationalisation of the entire life-insurance business in India on January 19, 1956, under the Life Insurance (Emergency Provisions) Ordinance, 1956, issued by the President. No opportunity was given to the Parliament to debate this issue before a decision was arrived at.

² The Shroff Committee also recommended that a Central Organisation for technical and managerial assistance to industries should be set up jointly by the Government, special financial institutions like the Industrial Finance Corporation and private industries.

³ For want of space, discussion in this paper will be confined to the publicly-owned Industrial Development Corporation (NIDC). The Industrial Credit and Investment Corporation of India Ltd. is a privately-sponsored institution registered under the Indian Companies Act. The authorised capital of the Corporation is Rs. 25 crores (£19 million), though the issued capital is only Rs. 5 crores (about £4 million). The shares of the Corporation were granted the status of "approved investment" for the purpose of § 27-A of the Indian Insurance Act, 1938.

Of this amount a sum of Rs. 1 crore (£750,000) was subscribed by the British Eastern Exchange Banks and certain British and other Commonwealth insurance companies, and other British

was established in February 1955, with a view to assisting, financing and protecting small industries in India, and also to secure co-ordination between large-scale and small-scale industries so as to enable the latter to manufacture ancillaries, components and other articles required by the former.¹

The structural pattern of the National Industrial Development Corporation (NIDC) differs materially from that of the Pakistan Industrial Development Corporation (PIDC). The PIDC was established under an Act of the Legislature. But the NIDC, though owned entirely by the Government of India, is merely a *private company* registered under the Indian Companies Act.

Both the PIDC and the NIDC have an authorised capital of Rs. 1 crore (£750,000) each, though in the case of the NIDC the paid-up capital is only Rs. 10 lakhs (£75,000). In both the cases the Board of Directors are nominated by the respective Governments. In both the cases seasoned industrialists have found a place on the Boards.

The NIDC will give priority to the manufacture of capital goods, machinery and equipment for other industries, and take up the study and investigation of industrial schemes. In implementing them it will try to secure, where possible, the maximum use of the industrial equipment, experience and skill available in the private sector. It might even set up industries which would in their turn lead to the growth of ancillary industries in the private sector.² The basic purpose of the NIDC is to encourage and aid medium- and large-scale industries, the development of which is necessary to fill in the gaps and thus make for the harmonious development of both the public and the private sectors in a planned economy. In broad outline the aims of the NIDC are "the promotion and establishment of industries for the manufacture and production of plant, machinery, implements and goods of any

companies. Certain nationals and corporations of the United States purchased shares of the value of Rs. 50 lakhs (£375,000). Thus 30% of the subscribed capital of the Corporation came from foreign sources. Out of the remaining, shares worth Rs. 2 crores (£1,500,000) were taken up by several Indian banks and insurance companies, and certain directors of the Corporation and their friends and associates. Shares worth Rs. 1.5 crores (£1,125,000) were offered for public subscription in India, and a prospectus was issued for the purpose in February 1955. This issue was oversubscribed. The shares were allotted on a fully-paid basis.

In March 1955 the Government of India advanced to the Corporation a sum of Rs. 7.5 crores (£5,625,000) free of interest repayable in fifteen equal annual instalments. About the same time, the International Bank agreed to lend to the Corporation an amount in various currencies equivalent to \$10 million for the purchase of imported material, equipment and service. The repayment of the principal, interest and other charges on the loan has been guaranteed by the Government of India.

The Corporation commenced business on March 1, 1955, and its Statutory Report, published in July 1955, revealed that it had offered to provide substantial financial aid for two propositions—one of a new industrial venture and the other for the expansion of an existing industry. The Corporation's activities are confined to the private sector (mainly large- and medium-sized units).

Speaking at the statutory meeting held on July 28, 1955, Sir Ramaswami Mudaliar, Chairman of the Corporation, observed: "... the most tangible proof... of the intentions of the Government to see that private sector develops *pari passu*, and perhaps in a complementary way, with the public sector is in the co-operation that they have extended in a very substantial manner to the establishment of the Corporation."

¹ *Report on Currency and Finance*, Reserve Bank of India, Bombay, 1954-55, p. 51.

² *Ibid.*, p. 50.

description likely to promote the industrial development and to aid and assist any industrial undertaking owned by private companies also with capital and other resources for establishing new industries or for running their existing business."¹

There is a striking similarity between the objectives of the NIDC and those of the PIDC. Both of them aim at encouraging private enterprise wherever possible. Moreover, the list of industries selected of its own volition by the NIDC for investigation and promotion partly overlaps the list of industries given in the charter and taken up by the PIDC. The NIDC has selected fourteen items, viz.: (1) manufacture of machinery and equipment; (2) ferro-alloys, ferro-manganese and ferro-chrome; (3) aluminium; (4) copper, zinc and other non-ferrous metals; (5) diesel engines (marine), locomotives and generators; (6) heavy chemicals; (7) fertilisers; (8) coke-oven and coal-tar products; (9) methanol formaldehyde; (10) carbon; (11) wood pulp for use in the manufacture of newsprint and other paper, rayon, etc.; (12) synthetic drugs, vitamins and hormones; (13) X-ray and medical equipment; and (14) hardboard, insulation board, etc.

The NIDC is expected to assume special responsibility for laying the foundations of heavy industry in forgings and fabricated steel structurals. It has undertaken the investigation of a scheme in this connection. The project, however, will lie in the public sector, and will be financed out of the sum of Rs. 70 crores (£53 million) allotted to the NIDC by the Planning Commission.² Thus the financial structure of the NIDC may be very similar to that of the PIDC, which depends for its working on annual allotments by the Government of Pakistan.

The Government of India are not only to provide finance; they may also procure for the NIDC foreign collaboration on the lines of the Rourkela Steel Project (where, by virtue of an agreement arrived at in December 1952 the German firm of Krupps and Demag is to assist the Government of India in

¹ *Commerce* (Bombay), October 30, 1954, p. 827.

² Disclosed by Mr. T. T. Krishnamachari, Union Minister for Commerce and Industry, while speaking at the meeting of the National Development Council held in New Delhi on January 21, 1956. Out of Rs. 70 crores provided in the draft of the Second Five Year Plan (1956-61) for the NIDC a sum of Rs. 25 crores (£19 million) had been earmarked for the rehabilitation of jute and cotton textile machinery. "It has been suggested that the amount might be stepped up so as to enable us to establish those very necessary units for the purpose of building heavy machinery during the second plan."

"The idea is," Mr. Krishnamachari observed, "that we should start three big forges and foundries and ancillary equipment for the purpose alongside with the three steel plants [which the Government are planning to establish with the technical co-operation of the Germans, the Russians and the British respectively]. If a change of venue is desirable, it can be considered, but the board of directors of the National Industrial Development Corporation felt that these plants must be located near the steel plants and that they should not be far away."

Mr. Krishnamachari indicated that India might be able to manufacture 60-70% of her heavy machinery (fabrication plants) requirements by the beginning of the Third Five Year Plan (i.e., 1961). He expressed the hope that the state-owned steel plants would start working in the middle of 1959, though "we will not be able to achieve full production until we are right on to 1960."

Out of 1 million tons of "fabricated produce" that India expects to produce, the expansion in the private sector may account for 450,000-500,000 tons, while the public sector may account for something between 500,000 and 550,000 tons.

establishing a state-owned steel plant to be situated at Rourkela in Orissa state).

It is estimated that during the Second Five Year Plan (started on April 1, 1956) the demand for castings will be at least 17,000 tons; while the demand for structurals—needed for the building of workshops, power-houses, hangers, bridges, wagons, coke-oven plants, etc.—may stand at 450,000 tons per year.¹ At present India is woefully deficient in respect of these items. The establishment of new capacity for producing castings, forgings and fabrications will also help to develop industries like heavy machine tools, printing machinery, diesel engines, heavy electrical equipment, steel plants, cement and sugar machinery and heavy earth-moving machinery.

At the first meeting of the Board of Directors of the NIDC it was decided that the Corporation should have a nucleus of three or four general engineers with wide experience who would advise the Corporation on all technical problems coming before them and also on the choice of suitable consulting and design engineers for preparing specific projects to be undertaken by the Corporation. The Board also felt that there was a need in India for a competent firm of consulting engineers whose services could be utilised not only by the Corporation but also by private industry whenever required. The only way this could be arranged, in their view, was to invite a firm of international repute to open their offices in this country. In the initial stages it might be necessary to offer a minimum retainer fee, as the work of such a firm of technical advisers might not be commercially profitable at the outset. To begin with, the services of a German expert have been procured by the Corporation to start investigation on the wood-pulp industry.

In respect of the industries chosen by the Corporation, its line of action will be first to examine the progress made so far, then to consider their immediate needs and, finally, to forecast their future potentialities. In the case of those industries where adequate progress has already been recorded by private and public enterprises, e.g., aluminium and fertilisers, the Corporation will not compete or interfere. It will step in only if any further assistance or action is required. The ferro-manganese industry is another instance where the Corporation will not interfere if the propositions submitted by private enterprise (and approved by the Government) mature.

The NIDC is to lay special emphasis on the utilisation of waste products and the development of resources in raw materials. This will require high-level technical investigations and scientific researches. The Corporation has rightly included coke-oven and coal-tar products, and wood pulp for use in the production of rayon, paper and newsprint in its list for study.

In short, the functions of the NIDC, may be classified as four-fold. In the first instance, the Corporation will study, investigate and formulate projects either for the establishment of new undertakings or for starting fresh lines of production in existing undertakings. Secondly, it may co-operate with private enterprise in launching new industries or in embarking on fresh productive lines in existing industries. Thirdly, the Corporation is to act as

¹ The United Commercial Bank Limited, Calcutta, *Fortnightly Business Letter*, January 16, 1956.

a reservoir of technically trained staff to serve as technical consultants for Indian industries. Lastly—and possibly this is the most difficult part—the Corporation may set up new industrial enterprises on its own account.

The last function of the Corporation merits some discussion. Will the Corporation own and manage such industrial units permanently? If so, will not this entail locking up its resources in a few enterprises and then bringing its activities to a standstill? Moreover, is the Corporation in any position (with its present resources in men and finance) to start and run any of the big industrial projects? Experience so far merely goes to show that the NIDC—unlike the PIDC—is just an arm-chair body with little executive enterprise. Of course, the period of its existence has been too short to warrant any sweeping assertion.

Nevertheless, it is interesting to speculate about some of the diverse alternative courses which the Corporation may adopt to manage its newly-sponsored enterprises. It may, as the line of least resistance, negotiate with the Ministry of Production, Government of India, to take over such enterprises (to be managed departmentally, like the Sindri Fertilizers and Chemicals Ltd.). If that be so, the Ministry of Production might as well promote such new enterprises, and there would obviously not be much point in having a separate development corporation like the NIDC.

There are two alternatives definitely more practical than the above. For each of its babies, the Corporation may either create a subsidiary company or, through the good offices of the Government of India and the Parliament, succeed in creating a public corporation for each undertaking or set of undertakings. In either case, the new industrial units have a greater chance of being managed efficiently and independently (even though under public ownership). The creation of subsidiaries is easier, though it would make the Corporation, as a holding company, a very cumbersome institution. The creation of public corporations is preferable, but the Government, for political reasons, may stand in the way of multiplying their number.

The last alternative before the NIDC is the one that the PIDC obviously has in view, viz., the ultimate handing over of newly established industries to private enterprise. But it may be pointed out that in view of the prevailing socio-economic ideologies such a course has little chance of acceptance by the party in power. The transference of publicly sponsored enterprises to private hands may easily become a political scapegoat in India. Moreover, such a step may not be commercially feasible. Private entrepreneurs may readily take over the highly profitable enterprises. But the less-paying or non-paying propositions would be the prodigal sons of the Corporation whom no entrepreneur would want to adopt. If the Corporation retains all the enterprises—profitable ones and unprofitable ones—it can at least bring about a balance. But if it decides to part with the profitable ones, it will saddle itself with the burden of recurring deficits. The situation would be less difficult if in the Corporation's portfolios, the more profitable enterprises are predominant.

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OM PRAKASH

DEVALUATION, A MARRIAGE OF THE ELASTICITY AND THE ABSORPTION APPROACHES¹

1. Engagement But Not Yet Marriage

THE elasticities and the absorption approaches to international-trade theory have been engaged but not yet married. Recent model builders of great prominence² have made import demand a function of two things, i.e., the level of real output and the *ratio* between the price of imports and the price of domestically-produced goods. This is a great advance compared with the pure elasticities or the pure absorption approaches, but for the following reason it cannot be considered a final marriage. Compare the situation in which the price of domestically-produced goods drops by 1% with the situation in which the price of imports rises by 1%. Unquestionably the new ratio between the prices of imports and domestically-produced goods will be the same in both situations, but with unchanged real output and factor prices, real income is up in the former case but down in the latter. Recently, criticism along such lines has been very well made by Beckerman in Britain and Machlup in this country.³

Inspired by Beckerman's and Machlup's criticisms and the lack of response to them, the present paper attempts to take another step toward the final wedding ceremonies. A two-country model is set up in which each country produces only one commodity and in which output in each country is determined by effective demand originating at home and abroad for that country's commodity. To keep the presentation simple, employment ceilings, a constraint on any effective-demand model, are ignored. Where the

¹ Howard S. Ellis (California) encouraged my work on this problem. Sven Danö and Arne Nielsen (both of Copenhagen), and J. M. B. Moss (Cambridge, England) checked my mathematics. Mr. J. Black, Magdalen College, Oxford, rechecked it and offered substantial suggestions for improvement. For all this, I express my sincere thanks.

² This group includes Arnold C. Harberger, "Currency Depreciation, Income, and the Balance of Trade," *The Journal of Political Economy*, Vol. LVIII, No. 1 (February 1950), pp. 47-60, but cf. his appendix; Svend Laursen and Lloyd Metzler, "Flexible Exchange Rates and the Theory of Employment," *The Review of Economics and Statistics*, Vol. XXXII, No. 4 (November 1950), pp. 281-99; J. J. Polak, *An International Economic System* (The University of Chicago Press, 1953), particularly pp. 37 and 52; and Harry G. Johnson, "Increasing Productivity, Income, Price Trends and the Balance of Trade," this JOURNAL, Vol. LXIV, No. 255 (September 1954), pp. 462-85.

³ G. L. Rees, "Price Effects and the Foreign Trade Multipliers," *The Review of Economic Studies*, Vol. XX (3), No. 33 (1952-53), pp. 228-31, had unsuccessfully tried to give a literary exposition of the problem of price effects upon the trade balance. He made a major analytical error in using the problem of price effects upon the trade balance. As pointed out by W. Beckerman, "real income" very loosely in a model in which prices are variable. As pointed out by W. Beckerman, "A Note on Variable Prices and Foreign Trade Multipliers," *The Review of Economic Studies*, Vol. XXI (2), No. 55 (1953-54), pp. 162-4, real income depends upon the relative price of imports and upon the weights given to import prices and home prices. Criticising S. S. Alexander, "Effects of a Devaluation on a Trade Balance," *International Monetary Fund Staff Papers* (April 1952), II, p. 266, Machlup, "Relative Prices and Aggregate Spending in the Analysis of Devaluation," *The American Economic Review* Vol. XLV, No. 3 (June 1955), pp. 268-9, made a similar statement.

employment ceiling is felt to be important, the traditional full-employment elasticities approach will do. By distinguishing between a business sector selling goods and a household sector selling factors it becomes possible for us to distinguish between money income, which is factor input times the price of factors, and real income, which is money income divided by the price of goods demanded. Import demand as well as demand for domestically-produced goods are made a function of real income. The model has been simplified and brought somewhat closer to reality by not making the ubiquitous assumption of pure competition. This removes supply curves entirely and makes room for the notion that prices are administered and can be taken for parameters. Firms (and countries) simply produce whatever is demanded at the going price. Once the solution of the system has been established, the effect of price and exchange-rate changes can be studied as a matter of simple calculus.

2. The Model

Apply the distinction between *ex ante* and *ex post* to a six-sector Leontief model whose variables are:

X_j = output of goods produced by sector j , in physical number of goods per unit of time.

x_{ij} = purchase of product or factor of sector i by sector j , in physical number of goods or factors per unit of time.

σ_{ij} = sale of product or factor of sector i to sector j . Dimension: same as x_{ij} .

An asterisk preceding a variable means that the value of that variable is the *ex-ante* value. Absence of an asterisk means that the value is the *ex-post* value. The subscripts f, g and h referring to domestic firms, government and households, respectively, and the subscripts F, G and H referring to foreign firms, government and households, respectively, we have the ten transactions of goods and factors tabulated in Table I. International purchases other than those made by households from firms are ignored. Government purchases goods from the firms of its own country and receives the proceeds of tariff duties. The latter are not included in Table I, because they do not represent transactions of goods or factors.

TABLE I
Planned Purchase of Goods and Factors

Purchasing from:	Purchases planned by:	Domestic firms.	Domestic government.	Domestic households.	Foreign firms.	Foreign governments.	Foreign households.
Domestic firms	.	$*x_{ff}$	$*x_{fg}$	$*x_{fh}$	—	—	$*x_{fv}$
Domestic government	.	—	—	—	—	—	—
Domestic households	.	$*x_{hf}$	—	—	—	—	—
Foreign firms	.	—	—	$*x_{Fh}$	$*x_{FF}$	$*x_{FG}$	$*x_{FH}$
Foreign government	.	—	—	—	—	—	—
Foreign households	.	—	—	—	$*x_{HF}$	—	—

Of the ten transactions, two are intra-sector, eight are inter-sector transactions. As to the former, in good Keynesian tradition the investment volumes at home and abroad, $*x_{ff}$ and $*x_{FF}$, respectively, are used for parameters. The same is true of government expenditure on goods at home and abroad, $*x_{fg}$ and $*x_{FG}$. In good Leontief tradition, the factor demands at home and abroad, $*x_{hf}$ and $*x_{HF}$, respectively, are assumed to be in direct proportion to planned output at home and abroad, respectively. This leaves us with four transactions representing household demand for goods. In our four demand equations, money illusions have been purged. And now for the details. A complete list of all parameters used below is found in the appendix.

3. Planned Purchases, Domestic Behaviour Equations

There are three behaviour equations determining domestic planned purchases. First, planned purchases of domestic factors by domestic firms are assumed to be in direct proportion to planned domestic output:

$$(1) \quad *x_{hf} = a_{hf} *X_f$$

Turning to demand, planned purchases of domestic goods by domestic households are the following function:

$$(2) \quad *x_{fh} = a_{fh} \left[\frac{* \sigma_{hf} \pi_h}{\pi_f} \right]^{e_{fh}} \left[\frac{* \sigma_{hf} \pi_h}{\pi_f \rho t} \right]^{E_{fh}}$$

where the elasticity of domestic demand for domestic goods is e_{fh} with respect to expected, real, personal, domestic income in terms of domestic goods, and is E_{fh} with respect to expected, real, personal, domestic income in terms of foreign goods. The elasticity with respect to expected, money, personal income is, then, $e_{fh} + E_{fh}$, which we shall assume to be equal to unity.

Third, planned purchases of foreign goods by domestic households are assumed to be the following function:

$$(3) \quad *x_{Fh} = a_{Fh} \left[\frac{* \sigma_{hf} \pi_h}{\pi_f} \right]^{e_{Fh}} \left[\frac{* \sigma_{hf} \pi_h}{\pi_f \rho t} \right]^{E_{Fh}}$$

where the elasticity of domestic demand for foreign goods is e_{Fh} with respect to expected, real, personal, domestic income in terms of domestic goods, and is E_{Fh} with respect to expected, real, personal, domestic income in terms of foreign goods. The elasticity with respect to expected, money, personal income is, then, $e_{Fh} + E_{Fh}$, which we shall assume to be unity.

The result that the money-income elasticity is the sum of the two real-income elasticities in terms of domestic and foreign goods, respectively, is a consequence of our purging the money illusion. To make this consequence perfectly clear, the reader might, perhaps, be asked to perform the following three hypothetical operations.

First, reduce the price π_f of domestic goods by 1%. Domestic, real, personal income in terms of domestic goods will then have risen by 1%. According to (2), domestic demand for domestically-produced goods, $*x_{fh}$, will then change by $e_{fh}\%$, and according to (3), domestic demand for foreign-produced goods, $*x_{Fh}$, will change by $e_{Fh}\%$.

Second, reduce the price π_F of foreign goods by 1%. Domestic, real, personal income in terms of foreign goods will then have risen by 1%. According to (2), domestic demand for domestically-produced goods, $*x_{fh}$, will then change by $E_{fh}\%$, and according to (3), domestic demand for foreign-produced goods, $*x_{Fh}$, will change by $E_{Fh}\%$.

Third, suppose that we had not taken steps Number One and Two but had instead raised domestic, money, personal income by 1% and kept all prices constant. According to (2), domestic demand for domestically-produced goods, $*x_{fh}$, would then have risen by $e_{fh} + E_{fh}\%$, and according to (3), domestic demand for foreign-produced goods, x_{Fh} , would have risen by $e_{Fh} + E_{Fh}\%$.

Our real income elasticities are, of course, nothing but price elasticities (including income effects) with opposite signs. For example, if domestic demand elasticity of import with respect to domestic real income in terms of foreign goods is defined, as we have done, as E_{Fh} , then we can write the simple price elasticity of domestic demand for imports as $-E_{Fh}$; likewise, we can write the cross elasticity of domestic demand for imports with respect to the price of domestic goods as $-e_{fh}$. When aggregation has been driven to the point where there are only two commodities, domestic and imported, the income effects of a change of the price of any of the two commodities must be substantial. Hence our use of the term "real-income" elasticities rather than "price" elasticities.

4. Planned Purchases, Foreign Behaviour Equations

There are three similar behaviour equations determining foreign planned purchases. First, planned purchases of foreign factors by foreign firms are assumed to be in direct proportion to planned foreign output:

$$(4) \quad *x_{HF} = a_{HF} *X_F$$

Second, planned purchases of foreign goods by foreign households are assumed to be the following function:

$$(5) \quad *x_{FH} = a_{FH} \left[\frac{* \sigma_{HF} \pi_H}{\pi_f \frac{T}{\rho}} \right]^{e_{FH}} \left[\frac{* \sigma_{HF} \pi_H}{\pi_F} \right]^{E_{FH}}$$

where the elasticity of foreign demand for foreign goods is e_{FH} with respect to expected, real, personal, foreign income in terms of domestic goods, and is E_{FH} with respect to expected, real, personal, foreign income in terms of foreign goods. We assume that the money income elasticity $e_{FH} + E_{FH} = 1$.

Third, planned purchases of domestic goods by foreign households are assumed to be the following function:

$$(6) \quad *x_{fH} = a_{fH} \left[\frac{* \sigma_{HF} \pi_H}{\pi_f \frac{T}{\rho}} \right]^{e_{fH}} \left[\frac{* \sigma_{HF} \pi_H}{\pi_F} \right]^{E_{fH}}$$

where the elasticity of foreign demand for domestic goods is e_{fH} with respect to expected, real, personal, foreign income in terms of domestic goods, and

is E_{fH} with respect to expected, real, personal, foreign income in terms of foreign goods. We assume that the money income elasticity $e_{fH} + E_{fH} = 1$.

To domestic and foreign consumers alike, domestic and foreign goods are assumed to be substitutes. Consequently, the elasticities e_{fh} , E_{Fh} , E_{Fh} and e_{fH} are always positive, for the income and substitution effects pull in the same direction. As to the elasticities E_{fh} , e_{Fh} , e_{Fh} and E_{fH} , they may be positive or negative; here, income and substitution effects pull in opposite directions. But to some extent we have already committed ourselves: from our assumption that income elasticities are always unity it follows that only if e_{fh} , E_{Fh} , E_{Fh} or e_{fH} are in excess of unity will E_{fh} , e_{Fh} , e_{Fh} or E_{fH} , respectively, be negative. And now four parameters.

5. Planned Purchases, Parameters

Planned purchases of domestic goods by domestic government, as well as planned purchases of foreign goods by foreign government, are assumed to be parameters:

$$(7) \quad *x_{fg} = \text{a parameter}$$

$$(8) \quad *x_{FG} = \text{a parameter}$$

6. Expected Investment, Parameters

Expected gross private investment by domestic firms, as well as expected gross private investment by foreign firms, are assumed to be parameters, too:

$$(9) \quad *x_{ff} = \text{a parameter}$$

$$(10) \quad *x_{FF} = \text{a parameter}$$

7. Purchase Plans Are Always Realised

In a buyer's market plans made at the beginning of the period are carried out during the period. For each of our eight inter-sector transactions we can express that planned purchases equal realised purchases:

$$(11) \text{ through } (18) \quad *x_{ij} = x_{ij}$$

where ij represents fh , fH , hf , fg , Fh , FH , HF and FG respectively.

8. Production Plans Are Always Realised

In a buyer's market it can also be assumed that well-planned production processes will be realised:

$$(19) \quad *X_f = X_f$$

$$(20) \quad *X_F = X_F$$

9. What Is Purchased Is Sold

Any sector's realised purchases from another sector constitutes the latter's realised sales to the former. This is true of any of our eight inter-sector transactions:

$$(21) \text{ through } (28) \quad x_{ij} = \sigma_{ij}$$

where ij has the same alternative meanings as in Section 7.

10. *Equilibrium Conditions*

If equilibrium is to prevail, the activity of the two economies must be self-justifying in the sense that any sector's expected sales to another must equal realised sales. This is true of any of our eight inter-sector transactions:

$$(29) \text{ through } (36) \quad {}^* \sigma_{ij} = \sigma_{ij}$$

where ij has the same alternative meanings as in Section 7.

11. *Definitional Equations*

By definition, domestic expected gross private investment is that part of domestic output that domestic firms do not expect to sell to domestic or foreign households or governments.

$$(37) \quad {}^* x_{ff} = {}^* X_f - ({}^* \sigma_{fh} + {}^* \sigma_{fH} + {}^* \sigma_{fg})$$

Also by definition, foreign expected gross private investment is that part of foreign output that foreign firms do not expect to sell to foreign or domestic households or governments.

$$(38) \quad {}^* x_{FF} = {}^* X_F - ({}^* \sigma_{FH} + {}^* \sigma_{Fh} + {}^* \sigma_{FG})$$

12. *Solutions*

Our unknowns are: two expected investments ${}^* x_{ff}$ and ${}^* x_{FF}$; eight planned purchases ${}^* x_{ij}$; eight realised purchases x_{ij} ; eight expected sales ${}^* \sigma_{ij}$; eight realised sales σ_{ij} ; two planned outputs ${}^* X_j$; and two realised outputs X_j . To determine these thirty-eight unknowns we have now written down thirty-eight equations. Before solving the system we shall introduce six convenient agglomerations of our parameters, i.e.,

$$\begin{aligned} m_1 &= 1 - a_{fh} a_{hf} \pi_h [\pi_f]^{-e_{fh}} [\pi_F \rho t]^{-E_{fh}} \\ m_2 &= a_{fH} a_{HF} \pi_H \left[\pi_f \frac{T}{\rho} \right]^{-e_{fH}} [\pi_F]^{-E_{fH}} \\ m_3 &= a_{Fh} a_{hF} \pi_h [\pi_f]^{-e_{Fh}} [\pi_F \rho t]^{-E_{Fh}} \\ m_4 &= 1 - a_{FH} a_{HF} \pi_H \left[\pi_f \frac{T}{\rho} \right]^{-e_{FH}} [\pi_F]^{-E_{FH}} \\ m_5 &= \frac{E_{fh}(m_1 - 1) - E_{Fh} m_1}{m_1 m_4 - m_2 m_3} \\ m_6 &= \frac{e_{fH} m_4 - e_{FH}(m_4 - 1)}{m_1 m_4 - m_2 m_3} \end{aligned}$$

Using these expressions we can solve for national outputs:

$$\begin{aligned} X_f &= \frac{m_2({}^* x_{FF} + {}^* x_{FG}) + m_4({}^* x_{ff} + {}^* x_{fg})}{m_1 m_4 - m_2 m_3} \\ X_F &= \frac{m_1({}^* x_{FF} + {}^* x_{FG}) + m_3({}^* x_{ff} + {}^* x_{fg})}{m_1 m_4 - m_2 m_3} \end{aligned}$$

13. *Economic Interpretation of the Constants m_1 through m_4*

Fortunately, very simple interpretations of the m s are possible. First m_1 . From equations (1), (2), (13), (23) and (31) we get

$$m_1 = 1 - \frac{{}^* x_{fh}}{{}^* X_f}$$

or One minus planned purchases of domestic consumers' goods by domestic households per unit of domestic planned national output.

Next m_2 . From equations (4), (6), (17), (27) and (35) we can get

$$m_2 = \frac{{}^* x_{fH}}{{}^* X_F}$$

or simply planned purchases of domestic consumers' goods by foreign households per unit of foreign planned national output.

Next m_3 . From equations (1), (3), (13), (23) and (31) we can get

$$m_3 = \frac{{}^* x_{Fh}}{{}^* X_f}$$

or simply planned purchases of foreign consumers' goods by domestic households per unit of domestic planned national output.

Finally, m_4 . From equations (4), (5), (17), (27) and (35) we can get

$$m_4 = 1 - \frac{{}^* x_{FH}}{{}^* X_F}$$

or One minus planned purchases of foreign consumers' goods by foreign households per unit of foreign planned national output.

14. *The Signs of the Constants m_5 and m_6*

The constants m_5 and m_6 are agglomerations of the first four m s, and no simple economic interpretation is possible for them. But for our policy conclusions their signs will turn out to be of crucial importance, so let us examine them closer.

The first thing we notice is that the two constants have the same denominator. The denominator is $m_1 m_4 - m_2 m_3$, and this magnitude can be shown to be normally positive. Temporarily, let us introduce two new ratios

$$\begin{aligned} n_2 &= \frac{{}^* x_{fH}}{{}^* X_f} \\ n_3 &= \frac{{}^* x_{Fh}}{{}^* X_F} \end{aligned}$$

From the definitions of n_2 , n_3 , m_2 and m_3 it follows that

$$m_2 m_3 = n_2 n_3$$

Now express

$$m_1 - n_2 = 1 - \left(\frac{{}^* x_{fh}}{{}^* X_f} + \frac{{}^* x_{fH}}{{}^* X_f} \right)$$

If domestic autonomous investment, ${}^* x_{ff} + {}^* x_{fg}$, whether private or government, is positive it follows from equation (37) that ${}^* x_{fh} + {}^* x_{fH}$ is

less than $*X_f$. Consequently, $m_1 - n_2$ is positive, and $m_1 > n_2$. Then express

$$m_4 - n_3 = 1 - \left(\frac{*x_{FH}}{*X_F} + \frac{*x_{FG}}{*X_F} \right)$$

If foreign autonomous investment, $*x_{FF} + *x_{FG}$, whether private or government, is positive it follows from equation (38) that $m_4 - n_3$ is positive and that $m_4 > n_3$. But if $m_1 > n_2$, then $m_1 n_3 > n_2 n_3$, and since $m_4 > n_3$ we have

$$m_1 m_4 > n_2 n_3 = m_2 m_3$$

In other words, the common denominator, $m_1 m_4 - m_2 m_3$, of the constants m_5 and m_6 is positive. Next let us look at the numerators, first m_5 .

Beginning with the last term of the numerator of m_5 , we know that m_1 and E_{fh} are always positive. Turning to the first term, we also know that m_1 is positive and less than one. Consequently, $(m_1 - 1)$ is negative. E_{fh} can be positive or negative, and here is where our difficulties begin. Let us assume, very realistically, that in both countries neither imported goods as a whole nor domestically-produced goods as a whole are inferior. Let us furthermore assume, also quite realistically, that in both countries imported goods as a whole are mildly substitutable for domestically-produced goods. In that case our discussion of signs can very conveniently be cast in terms of the Hicksian income and substitution effects. If in the domestic market for consumers' goods the income effect is large relative to the substitution effect, E_{fh} would be positive. This would mean that a rising price of foreign-produced goods would *reduce* domestic consumption of domestically-produced goods, cf. Fig. 1. In such circumstances the entire numerator of m_5 would be unequivocally negative, and since the denominator is always positive, m_5 would be unequivocally negative. On the other hand, if the income effect were small relative to the substitution effect, E_{fh} would be negative. A rising price of foreign-produced goods would, then, *increase* domestic consumption of domestically-produced goods, cf. Fig. 2. Here, m_5 could, but would not have to, be positive.

Next, the numerator of m_6 . We know that e_{fH} and m_4 are always positive, so the first term is always positive. Since m_4 is less than One, $(m_4 - 1)$ is negative. When discussing the sign of e_{FH} we again run into our difficulties. If in the foreign market for consumers' goods there is a large income effect relative to the substitution effect, e_{FH} would be unequivocally positive. This would mean that relative cheapening of domestic goods would *raise* foreign consumption of foreign-produced goods. Hence the entire numerator of m_6 would be positive. Since the denominator is positive, m_6 would be unequivocally positive. Vice versa, if the income effect were small relative to the substitution effect, m_6 could be, but would not have to be, negative.

15. Application of the Model to Public Policy

In the following sections we shall study the effects upon international trade, all international repercussions taken into account, of manipulating

the domestic parameters of the model. The effects will be described in the following terms. First, we shall find the elasticity, call it (I), of the value $\pi_f m_2 X_F / p$ of domestic export in foreign monetary units with respect to any

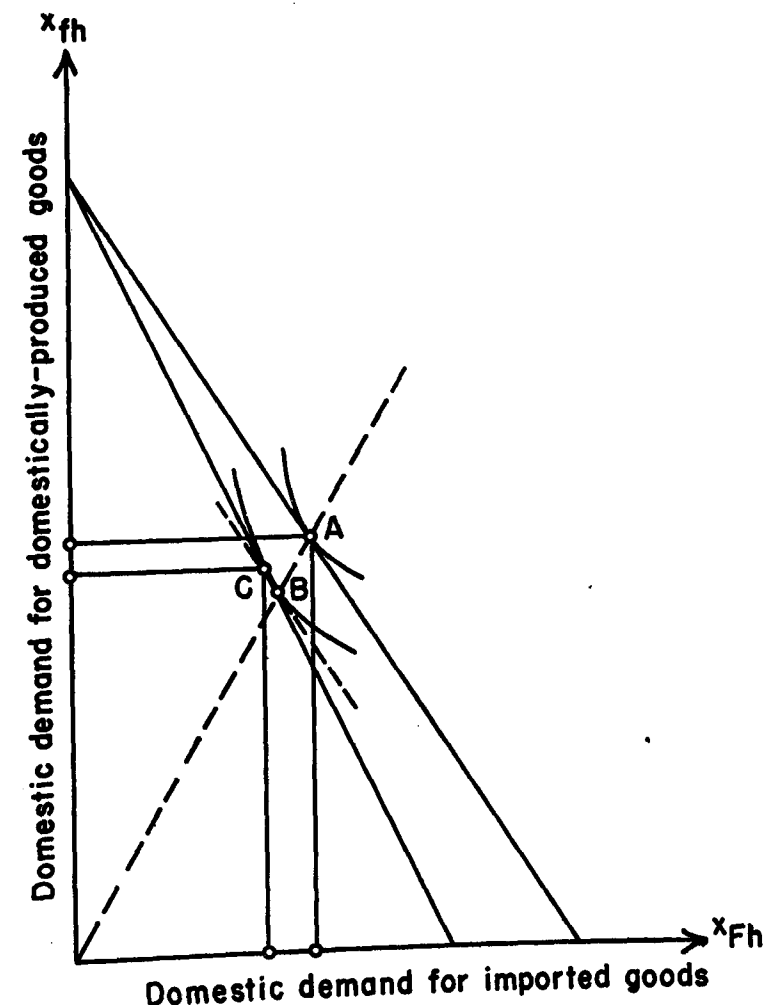


FIG. 1.—The effect of raising the price of imported goods. Optimum point moves from A to C. The domestic demand for domestically-produced goods is reduced, so E_{fh} is positive. Since the goods are relatively poor substitutes, the income effect AB is large compared to the substitution effect BC.

parameter, say t . Next we shall find the elasticity, call it (II), of the value $\pi_f m_2 X_F$ of domestic import in foreign monetary units with respect to the same parameter. Finally we shall define the ratio

$$R = \frac{\pi_f m_2 X_F / p}{\pi_f m_2 X_F}$$

i.e., the ratio between export value and import value. We shall then find the elasticity of R with respect to the parameter, say t . According to the

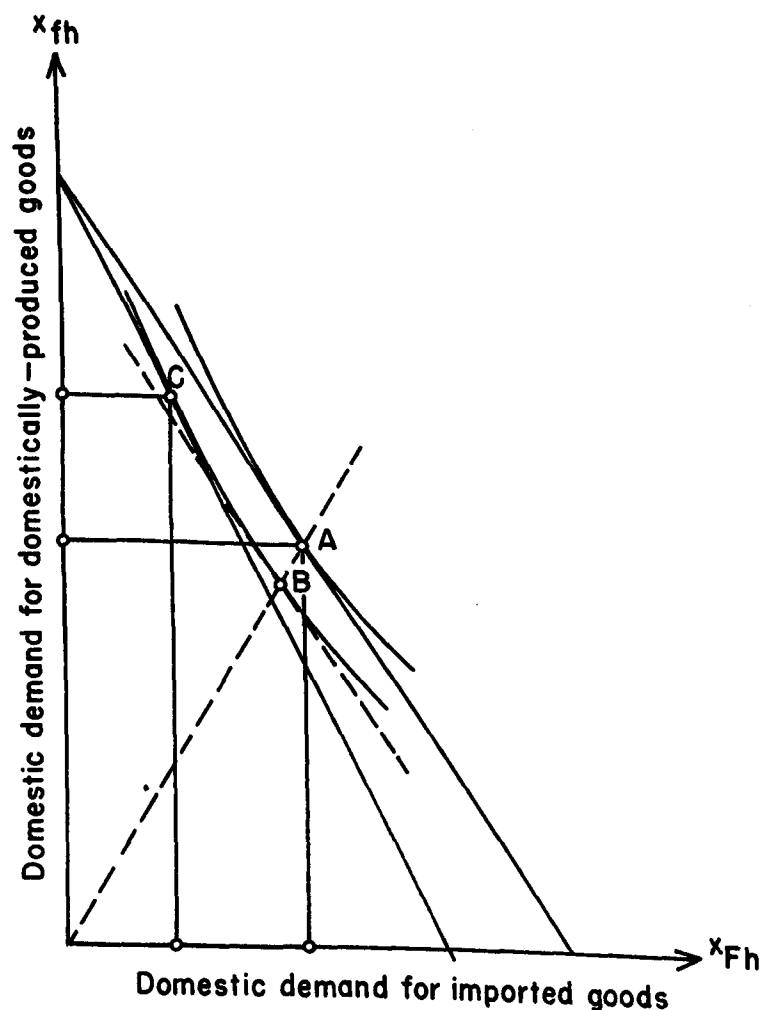


FIG. 2.—The effect of raising the price of imported goods when the goods are excellent substitutes for one another. Optimum point moves from A to C . Now the domestic demand for domestically-produced goods rises, so E_{fh} is negative. Since the goods are such excellent substitutes, the income effect AB is small compared to the substitution effect BC .

familiar technique of logarithmic derivation (R. G. D. Allen, *Mathematical Analysis for Economists*, 10.2, p. 246), this elasticity is

$$\frac{dR}{dt} \frac{t}{R} = t \frac{d(\log R)}{dt} = (I) - (II)$$

The difference $(I) - (II)$ we shall call the "net effect" of the manipulation of the parameter.

16. Tariff Policy

Let us begin with the oldest form of balance-of-trade policy, i.e., tariff policy. The elasticity of the value $\pi_f m_2 X_F / \rho$ of domestic exports in terms of foreign monetary units with respect to the domestic tariff is

$$(I) \quad \frac{d \left[\frac{\pi_f m_2 X_F}{\rho} \right]}{dt} \frac{t}{\frac{\pi_f m_2 X_F}{\rho}} = \frac{X_f}{X_F} m_3 m_5$$

Likewise, the value of domestic imports in terms of foreign monetary units can be written very briefly as $\pi_F m_3 X_f$, and the elasticity of that value with respect to the tariff ratio is

$$(II) \quad \frac{d(\pi_F m_3 X_f)}{dt} \frac{t}{\pi_F m_3 X_f} = m_4 m_5$$

To find the net effect, use the interpretation of the constants m_1 through m_4 given in section 13, deduct (II) from (I) and get

$$(I) - (II) = m_5 \left(\frac{*x_{FF}}{*X_F} + \frac{*x_{FH}}{*X_F} - 1 \right)$$

If foreign autonomous investment, $*x_{FF} + *x_{FG}$, is positive, it follows from equation (38) that the parenthesis above is negative. Now a large income effect relative to the substitution effect in the domestic market, as we have seen, makes m_4 unequivocally negative. Consequently, (I) and (II) are negative but $(I) - (II)$ is positive. Economically, this means that raising the tariff will reduce export as well as import value, but it will reduce the former less than the latter, so the effect upon the balance of trade is positive. If, however, the income effect were small relative to the substitution effect m_5 could, but did not have to, become positive. In that case, raising the tariff would increase export as well as import value, but the latter more so than the former. One contributing factor in either case is the absorption of tariff revenues by the government imposing the tariff.

17. Devaluation

Now let us turn to manipulations of the exchange rate. The elasticity of the value of domestic export in terms of foreign monetary units with respect to the exchange rate is

$$(III) \quad \frac{d \left[\frac{\pi_f m_2 X_F}{\rho} \right]}{d\rho} \frac{\rho}{\pi_f m_2 X_F} = \frac{X_f}{X_F} m_3 m_5 + m_1 m_6 - 1$$

And the elasticity of the value of domestic import in terms of foreign monetary units with respect to the exchange rate is

$$(IV) \quad \frac{d(\pi_F m_3 X_f)}{d\rho} \frac{\rho}{\pi_F m_3 X_f} = \frac{X_F}{X_f} m_2 m_6 + m_4 m_5$$

To find the net effect, deduct the latter from the former

$$(III) - (IV) = m_5 \left(\frac{*x_{Fh}}{*X_F} + \frac{*x_{FH}}{*X_F} - 1 \right) + m_6 \left[1 - \left(\frac{*x_{Fh}}{*X_F} + \frac{*x_{FH}}{*X_F} \right) \right] - 1$$

If autonomous investment at home and abroad are both positive, it follows from equations (37) and (38) that the coefficient to m_5 above is negative, the coefficient to m_6 is positive. Now a large income effect relative to the substitution effect in the domestic market makes m_5 negative, and in the foreign market makes m_6 positive. Were it not for the last term, -1 , we could therefore be sure that (III) $-$ (IV) would be positive. For relatively very large income effects at home and abroad this will happen. Economically this means that devaluation of the domestic monetary unit, *i.e.*, raising ρ , will have a positive effect upon the balance of trade. Vice versa, if in both markets the income effect is small relative to the substitution effect, m_5 could be positive, and m_6 could be negative. Thus all three terms of (III) $-$ (IV) could be negative, and devaluation would have a negative effect upon the balance of trade.

18. Factor Prices and Factor Productivities

Although in a free society factor prices and factor productivities are not directly manipulated by public policy, it might be important to know the effect upon the balance of trade of factor-price changes, of technological advance or featherbedding practices.

The elasticity of the value of domestic export with respect to the price of domestic factors is the same as the elasticity with respect to the per-unit-of-output domestic factor requirement, *i.e.*,

$$(V) \quad \frac{d \left[\frac{\pi_f m_2 X_F}{\rho} \right]}{d\pi_h} \frac{\pi_h}{\pi_f m_2 X_F} = \frac{d \left[\frac{\pi_f m_2 X_F}{\rho} \right]}{da_{hf}} \frac{a_{hf}}{\pi_f m_2 X_F} = \frac{X_f}{X_F} \frac{m_3}{m_1 m_4 - m_2 m_3}$$

The elasticity of the value of domestic import with respect to the price of domestic factors is also the same as the elasticity with respect to the per-unit-of-output domestic factor requirement, *i.e.*,

$$(VI) \quad \frac{d(\pi_F m_3 X_f)}{d\pi_h} \frac{\pi_h}{\pi_F m_3 X_f} = \frac{d(\pi_F m_3 X_f)}{da_{hf}} \frac{a_{hf}}{\pi_F m_3 X_f} = \frac{m_4}{m_1 m_4 - m_2 m_3}$$

The net effect is

$$(V) - (VI) = \frac{1}{m_1 m_4 - m_2 m_3} \left(\frac{*x_{Fh}}{*X_F} + \frac{*x_{FH}}{*X_F} - 1 \right)$$

Here is our only case in which the net effect does not depend upon the relative strength of income and substitution effects in the two countries. (V) $-$ (VI) as determined above is a product consisting of two factors, the first of which is always positive, the last of which is always negative. Thus (V) $-$ (VI) is always negative. This means that if the price of domestic factors is raised, the effect upon the balance of trade is negative. The same is true if the domestic factor productivity is lowered, *i.e.*, if the per-unit-of-

output domestic factor requirement is raised, *e.g.*, by featherbedding practices.

Such unequivocal results should not tempt the reader to jump to the conclusion that we have settled the widely-discussed issue of productivity disparity and the dollar gap.¹ What we have studied is the effect of a *ceteris paribus* change in productivity. Among the *cetera* to remain *paris* are the prices of goods. Thus improved productivity does not, in our model, automatically pass itself on to the consumer, and thus does not affect the competitiveness of national output. To the extent it does so, the combined effects will have to be studied in terms of not only (V) $-$ (VI) but also (VII) $-$ (VIII), to be developed in the following section.

19. Goods Price Policy

Again, in a free society public policy does not directly manipulate the prices of goods, but the effect of reduced domestic prices of goods upon the balance of trade is important and can be shown to bear a very simple relationship to the effects already discussed. The elasticity of the value of domestic export with respect to the price of domestic goods is

$$(VII) \quad \frac{d \left[\frac{\pi_f m_2 X_F}{\rho} \right]}{d\pi_f} \frac{\pi_f}{\pi_f m_2 X_F} = - \frac{X_f}{X_F} m_3 \left(m_5 + \frac{1}{m_1 m_4 - m_2 m_3} \right) - m_1 m_6 + 1$$

The elasticity of the value of domestic import with respect to the price of domestic goods is

$$(VIII) \quad \frac{d(\pi_F m_3 X_f)}{d\pi_f} \frac{\pi_f}{\pi_F m_3 X_f} = - \frac{X_F}{X_f} m_2 m_6 - m_4 \left(m_5 + \frac{1}{m_1 m_4 - m_2 m_3} \right)$$

The net effect is

$$(VII) - (VIII) = - \left(m_5 + \frac{1}{m_1 m_4 - m_2 m_3} \right) \left(\frac{*x_{Fh}}{*X_F} + \frac{*x_{FH}}{*X_F} - 1 \right) - m_6 \left[1 - \left(\frac{*x_{Fh}}{*X_F} + \frac{*x_{FH}}{*X_F} \right) \right] + 1$$

When comparing the net effects of goods prices, factor prices, and devaluation we discover that

$$- [(VII) - (VIII)] = (V) - (VI) + (III) - (IV)$$

In other words, the net effect of a *reduction* of the domestic prices of goods is equal to the net effect of an increase of the domestic prices of factors *plus* the net effect of devaluation of the domestic currency. Since (V) $-$ (VI) is known to be always negative we conclude that a reduction of the domestic

¹ Gottfried Haberler, "Dollar Shortage?" in *Foreign Economic Policy for the United States*, edited by Seymour E. Harris (Cambridge, Mass.: Harvard University, Harvard University Press, 1948), pp. 438-9; J. R. Hicks, "An Inaugural Lecture," *Oxford Economic Papers*, Vol. 5 (June 1953), pp. 117-35; F. Machlup, "Dollar Shortage and Disparities in the Growth of Productivity," *Scottish Journal of Political Economy*, Vol. 1, No. 3 (October 1954), pp. 250-67; and, more recently, E. M. Bernstein, "American Productivity and the Dollar Payments Problem," *The Review of Economics and Statistics*, Vol. XXXVII, No. 2 (May 1955), pp. 101-9; and Svend Laursen, "Productivity, Wages, and the Balance of Payments," *ibid.*, pp. 180-8.

prices of goods is less likely to improve the balance of trade than is a devaluation of the domestic currency.

20. Reality versus Model

When confronting our model with economic reality we shall, first, have to justify our assumption that the money-income elasticities of import as well as consumption of domestically-produced goods are equal to unity. For the leading industrial countries, Neisser-Modigliani¹ have measured the percentage change in the country's import volume associated with a 1% change in that country's money income (both in 1928 prices), assuming incomes of other countries to remain constant. In our notation, what is measured is $e_{Fh} + E_{Fh}$ and $e_{fH} + E_{fH}$. For the United Kingdom and the United States, the money-income elasticity of import was very close to unity indeed, but Germany had a considerably higher money-income elasticity, i.e., 1.48 and 1.73 in 1928 and 1932. For smaller industrial countries, the money income elasticities seem to be of the German order of magnitude. For Swedish inter-war import, Faxén² has found the money-income elasticity to be 1.66, and for Norwegian 1935-39 import, Myrvoll³ found the money-income elasticities to range from 1.48 to 1.66. No mention has been made of the money-income elasticity of consumption of domestically-produced goods, as distinct from the money-income elasticity of imports. No empirical contributions in this field are known by the present writer.

We have found the signs of our constants m_5 and m_6 to be crucial for public policy. The second question of an empirical nature to be dealt with, therefore, is that of the values of the elasticities E_{fh} , E_{Fh} , e_{fH} and e_{FH} . Of these, E_{fh} and e_{FH} have never, to the best knowledge of the present writer, been studied empirically. A small dent in our ignorance can be made as follows. Some empirical evidence would suggest that the money value of *all* domestic consumption, $\pi_f x_{fh} + \pi_{Fh} x_{Fh}$, is a constant proportion, call it K , of money personal domestic income $\pi_h x_{hf}$. If constancy would hold in spite of changes in t , p , π_h or π_f , we could set the derivative of K with respect to any of these parameters equal to zero and thereby prove that e_{Fh} and E_{fh} must have the same sign.⁴ As we saw in Section 4, however, both may be positive or negative, so the dent is, indeed, a small one. The remaining two elasticities, E_{Fh} and e_{fH} , have not been studied directly, but certain observations have been made of related elasticities. As we saw in Section 3 above, if the domestic demand elasticity of import with respect to domestic real income in terms of foreign goods is E_{Fh} , then the simple price elasticity of domestic demand for import is $-E_{Fh}$; likewise, the price elasticity of foreign demand for imports is $-e_{fH}$. These two magnitudes have been

¹ Hans Neisser and Franco Modigliani, *National Incomes and International Trade* (University of Illinois Press, Urbana, 1953).

² Karl-Olof Faxén, "Regressionsanalyser av den svenska importen under mellankrigstiden," *Meddelanden från konjunkturinstitutet*, Series B, 10 (Stockholm, 1949), p. 56.

³ Ole Myrvoll, "Aktivitetsnivå og betalingsbalanse," *Festskrift til I. Wedervang* (Oslo, 1951), p. 34.

⁴ This was suggested to me by Mr. J. Black.

studied quite intensively. For example, Neisser-Modigliani made a large number of price elasticity measurements; in the reliable cases, the price elasticities were found to be between -1.0 and -1.67 .

In the second place, a number of so-called elasticities of substitution have been measured empirically. Using our own notation, we can express the elasticity of substitution concept usually measured as

$$\eta = \frac{d(x_{Fh}/x_{fH})}{d(\pi_F/\pi_f)} \frac{\pi_F/\pi_f}{x_{Fh}/x_{fH}}$$

or relative change in the ratio of foreign to domestic exports over relative change in the ratio of foreign to domestic prices. Using the time-series approach and using "foreign" for the country examined and "domestic" for the rest of the world, Polak¹ found elasticities ranging from -0.16 for Switzerland to -1.56 for Canada. But using the commodity-comparison approach, using "foreign" for the United States and "domestic" for the United Kingdom, and confining himself to American and British exports of manufactures to *all* countries, MacDougall² found the elasticity of substitution to be around -3 . Now if the price of domestic goods, π_f , is constant, the elasticity of substitution concept defined above can easily be shown to be equal to

$$\eta = (-E_{Fh}) - (-E_{fH})$$

or the price elasticity of foreign exports *minus* the cross elasticity of domestic exports with respect to the price of foreign-produced goods. As we know, E_{Fh} is always positive, so the whole first term is negative. Now if E_{fH} were positive, to be consistent with MacDougall's findings it would have to be numerically small compared to E_{Fh} . But if it were negative its numerical value would have much more leeway. On pp. 488-9 of his article, MacDougall makes a good case for his approach as compared with the time-series approach.³ The overall conclusion we can draw from his findings is that E_{fH} is either positive but numerically small or negative, indicating an income effect in the foreign market of *moderate or small size versus* a marked substitution effect. If this can be generalised, e_{FH} and E_{fh} , too, will be either positive but numerically small or negative. Thus nothing in MacDougall's findings precludes the possibility of e_{FH} and E_{fh} becoming negative and numerically large enough to make m_6 negative and m_5 positive, respectively.

21. Conclusion

The present paper has attempted to show that a large substitution effect and a small income effect, manifesting themselves in e_{fH} and E_{fh} being

¹ J. J. Polak, *An International Economic System* (University of Chicago Press, 1953).

² G. D. A. MacDougall, "British and American Exports: A Study Suggested by the Theory of Comparative Costs," Parts I-II, *ECONOMIC JOURNAL*, Vol. LXI, No. 244 (December 1951), pp. 697-724, and Vol. LXII, No. 247 (September 1952), pp. 487-521.

³ As pointed out by Irving Morrisett, "Some Recent Uses of Elasticity of Substitution—A Survey," *Econometrica*, Vol. 21, No. 1 (January 1953), pp. 41-62, the concept has been used by Tinbergen, Polak, Chang, myself and others without adequate recognition of Allen's original assumptions. Morrisett concludes that the concept correctly used is of little value for purposes of empirical study.

numerically large but negative, may defeat the purpose of devaluation, productivity increase, price reduction, etc., because domestic activity is stimulated too much. The possibility of such defeat has been shown to be fully compatible with recent findings of the high-elasticity school represented by MacDougall and Harberger.¹ *Thus elasticity optimism does not imply devaluation optimism!* Before the latter can be justified much more must be known about our crucial "cross" elasticities E_{jh} and e_{FH} .

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APPENDIX

List of Parameters

- a_d^f = physical number of domestic factors purchased by domestic firms per unit of domestic output.
 a_{HF} = physical number of foreign factors purchased by foreign firms per unit of foreign output.
 a_{dh} = the domestic propensity to consume domestically-produced goods out of expected money personal domestic income when $\pi = \pi_{FPT} = 1$.
 a_{FH} = the domestic propensity to import foreign-produced goods out of expected money personal domestic income when $\pi_F = \pi_{FPT} = 1$.
 a_{FH} = the foreign propensity to consume foreign-produced goods out of expected money personal foreign income when $\pi_F = \pi_{FPT} = 1$.
 a_{jH} = the foreign propensity to import domestically-produced goods out of expected money personal foreign income when $\pi_F = \pi_{jT}/\rho = 1$.
 e_{ij} = the elasticity of demand for goods produced by sector i , demanded by sector j with respect to expected, real, personal income of sector j in terms of domestic goods.
 E_{ij} = the elasticity of demand for goods produced by sector i , demanded by sector j with respect to expected, real, personal income of sector j in terms of foreign goods.
 π_f = the price of domestic goods, charged by domestic firms.
 π_h = the price of domestic factors, charged by domestic households.
 π_F = the price of foreign goods, charged by foreign firms.
 π_H = the price of foreign factors, charged by foreign households.
 ρ = the exchange rate, in number of domestic monetary units per foreign monetary unit.
 t = the domestic tariff ratio, i.e., the ratio by which the price of foreign goods is raised when they enter the domestic country.
 T = the foreign tariff ratio, i.e., the ratio by which the price of domestic goods is raised when they enter the foreign country.
 $*x_{ff}$ = domestic expected gross private investment defined as that part of domestic output that domestic firms do not expect to sell to domestic or foreign households or governments.
 $*x_{FF}$ = foreign expected gross private investment defined as that part of foreign output that foreign firms do not expect to sell to foreign or domestic households or governments.
 $*x_{fd}$ = planned purchases of domestic goods by domestic government.
 $*x_{FG}$ = planned purchases of foreign goods by foreign government.

¹ MacDougall, *op. cit.*, and Arnold C. Harberger, "A Structural Approach to the Problem of Import Demand," *The American Economic Review, Papers and Proceedings* Vol. XLIII, No. 2 (May 1953), pp. 148-59.

THE INDUSTRIAL PATTERN AND NEW ZEALAND'S FUTURE

It has been suggested that, while the declared purpose of import restrictions and exchange controls is to safeguard the balance of payments, the use of such measures is now regarded as a normal instrument for the protection of domestic industries against competition from abroad.¹ On the other hand, even while some O.E.E.C. countries are a long way off the agreed target of 90% of imports free from quota restrictions, there is more talk in high quarters of the possible organisation of a single market within the countries of Western Europe. That would be a sensational landmark on the road to world free trade. Those who work for it would probably find "free trade within the Commonwealth" an even more difficult section to construct.

In New Zealand exchange control and quantitative restrictions were adopted at the end of 1938, well before the War forced their general use. This article will discuss some features of New Zealand's industrial pattern that are related to the use of tariff protection and import licensing.

A system of "moderate" protection was adopted for manufactures in 1895. By 1930 not much change had been made except that the ordinary tariff rates had become those of the British Preferential Tariff, with slightly higher duties on some imports from other Dominions, and rates on foreign goods about double those on British. In 1934 after a Tariff Commission had presented its report the government of the day went so far as to reduce the rates of duty on some manufactured products. It seems strange to read in the Report of the Commission that: "An industry requiring continued protection is asking an economic favour from the State."² To-day manufacturers seem to regard it as a natural right. They have been encouraged to think so in New Zealand since 1938. Towards the end of that year deterioration in the balance of payments reached a stage of crisis. A very comprehensive system of exchange and import control fitted in well with the political and general economic policy of the Labour Government which had been three years in office. Since then, relatively mature, nascent and new manufacturing industries have received the stimulus of both tariff and licensing protection against imports. The National Government which assumed office in 1949 proceeded quickly to relax exchange restrictions. They had to be imposed again in 1952 when the balance of payments turned sharply against New Zealand. Again it was announced in 1954 that controls would be relaxed in 1955, and importers and business-men in general were exhorted to do better than before. That year saw further deterioration in overseas reserves, the re-imposition of controls and the

¹ See M. L. Hoffman, "The Present System of World Trade," *Lloyds Bank Review*, January 1956, p. 5.

² Appendix to the *Journals of the House of Representatives*, H.28, 1934-35.

credit squeeze. In at least one case the return to import control had a definitely protective intention, as will be discussed below in the examination of the position of the wool manufacture. Two years before, the Board of Trade, which had been established in 1950, expressed an attitude towards trade policy much more in keeping with the older, traditional view than with that of the years since 1938. It re-affirmed its general policy of "moving eventually from import licensing to import duties when that can be done as a means of protecting sound local industries on a relatively stable basis."¹ By that time the new body had examined the position of a considerable number of industries, and some of its observations are here summarised.

Many New Zealand industries which had carried on for the last two or three years aided only by Customs duties fixed in 1934 or earlier "are carrying on successfully and are expanding their production without the protection of import licensing."

"There appear to be advantages to manufacturers and consumers alike in a reasonable degree of competition from imports." Efficiency might be improved. "In some cases, exemption from import licensing has not resulted in any material quantity of imports." Some fears of manufacturers have not been realised. High rates of duty sought "have not proved to be necessary." Many efficient New Zealand manufacturers are unaware, because they have not had to face competition for many years, how relatively strong they are in the New Zealand market. Some industries did not exist before 1939, they have never known any other form of protection but import licensing, "there is an understandable hesitancy on their part about a change in the form of protection." These observations of the Board of Trade show a calm appraisal of the position and a wish to do justice to the accepted general policy of the country, to the ideal of productive efficiency and to the interests of consumers.

The industrial pattern induced by growth and influenced by protective measures in New Zealand will become especially important in the coming years of this century. A clearer appreciation may be made possible by a brief reference to population trends. Including 129,000 Maoris, there are now just over 2 million people in the country. Twenty-five years ago there were a million and a quarter. Estimates lead to the expectation of 3 million by 1975, and 4½ million ten years later. There should be, by this rate of expectation, well over 5 million by the end of the century.

The population is spread over an area a little greater than that of the United Kingdom. There are four main centres. Dunedin, with 95,000 people, and Christchurch, with 174,000, in the South Island, and Wellington, the Capital, with 133,000 and Auckland, with 329,000, in the North Island. The picture is not complete without reference to the population of about 70,000 in the Lower Hutt, formerly a suburb of Wellington. There are nine other urban areas with more than 20,000 people. These aggregations of population are separated by approximately 400 miles of straight-line distance

¹ Appendix to the *Journals of the House of Representatives*. Report of the Board of Trade, H.46, 1954, p. 15.

in the South Island and 300 miles in the North between Wellington and Auckland. A small population, separated by large distances, makes a number of relatively isolated local markets for some commodities, relieved by road and rail, coastal shipping and air-freight services.

The increasing population will naturally provide larger markets and a continuous increase in the labour force. It seems to be generally assumed that, as the population grows, the best use of economic resources will be to stimulate "secondary" industries in order to provide increased production and, perhaps above all, employment for the increasing labour force. This was the burden of remarks made last year by the Minister of Industries and Commerce when referring to the placement of the 350,000 additional workers who were to be expected by 1975.¹ He estimated that employment would probably have to be found for about 130,000 of them either in primary industry or in secondary industry and that, of these, 100,000 would go to manufacturing. This, according to an *Economic Bulletin* of the Canterbury Chamber of Commerce, in which articles are written by members of the staff of the department of Economics of Canterbury University College (Christchurch), shows far too easy an acceptance of the inevitability of manufacturing rather than farming development in the near future. The *Bulletin* presents calculations of Gross Productivity per "equivalent male" in Tertiary and Service Industries, and in Manufacturing and Farming. For 1953-54 the Net Output for the first group was £569, for Manufacturing £1,076 and for Farming £1,384.² The figure for Farming is all the more significant because values are calculated at world prices, while those for Manufacturing are higher by the extent to which protection raises them. A similar opinion is expressed in a statement issued by the New Zealand Meat and Wool Board's Economic Service entitled, "Local Protection: Is it Necessary and if so in What Form?" Figures for Added Value per person for 1928-29, for 1932-33 and for 1952-53 "show that on the basis of net output per man, expansion of manufacturing in the thirties was justified and that today it appears to be unjustified."³ It is relevant to point out that, while there are no large areas still awaiting, and suitable for, agricultural and pastoral expansion, the development of irrigation and aerial top-dressing, the latter in almost sensational fashion in the last few years, have in many cases trebled the sheep- and cattle-carrying capacity of lands that have been just within the margin. The possibilities of closer settlement are not exhausted.

The remainder of the article offers a brief description of some features of the pattern of manufacturing industry and comments on the development of four industries which are naturally included within the scope of the "infant industry" argument for protection. There is little, if any, real evidence of the localisation of industry in New Zealand, in the sense of concentration of a

¹ Quoted in Bulletin No. 373, *Canterbury Chamber of Commerce Economic Bulletin*, January 1956.

² *Ibid.*

³ *Study Notes for Farm Discussion Groups*, by B. P. Philpott, a brief but comprehensive treatment of theory and facts.

considerable proportion of manufacturing output in one area. The population centres usually have factory workers roughly in proportion to the number of residents. It is true that biscuit production is much more important in the South Island than the North and that if a "location quotient" were worked out for the wool manufacture it would show concentration in Otago. But of the four mills in this statistical region two are ten miles apart and the next one thirty miles away.¹

The average factory in New Zealand is small, and there has been little increase in the number of workers per establishment during the last twenty-five years. Professor Jewkes has recently examined the trend in the size of the factory, in this century, mainly by reference to the United States and Great Britain. Subsequently Professor Sargent Florence emphasised that, besides numbers engaged, it was necessary to examine the trend in the ratio of administrative staff to wage-earners, and in the amount of horse-power used per wage-earner, the latter as an indication of the likely extent of capital equipment. Judged by these criteria, "average size of factory is in fact creeping up almost everywhere."² In the following table these details are set out for New Zealand for the industries included in the Factory Production statistics, and averages have been calculated for three years before the real impact of the depression, for three years ending in March 1940, and, in order to cover a reasonable time after the War, for the four years ending in March 1951.

TABLE I
Size of Factories in New Zealand

Period.	Persons employed per establishment.	Ratio "staff" to wage-earners.	Horse-power per wage-earner.
1928-30	15.6	22.1	2.9
1938-40	17.0	19.8	2.9
1947-51	17.8	18.7	4.3

Note. Figures for horse-power are for 1927-28, 1937-38 and 1951-52, they are not always available as power used for driving factory plant. All figures are taken or calculated from the Reports on Factory Production or the *Official Year Book* unless otherwise stated.

It is clear that there was no great tendency to increasing size, as the number returned as engaged in Factory Production increased from 83,000 in 1929-30, to 108,000 in 1939-40, and to 149,000 in 1950-51. The staff-to-wage-earner ratio declined. The only really significant change is approximately 50% increase in the power used per wage-earner. This has accompanied the greater development of hydro-electric power which makes possible

¹ A Woollen Mill in New Zealand is not one specialised in the woollen as opposed to the worsted branch of wool manufacture. The New Zealand mill, historically, has made a wide range of products, of which the chief have been woollen and worsted cloth, flannel, yarn, rugs and blankets, hosiery, etc.

² See *ECONOMIC JOURNAL*, June 1952, "The Size of the Factory," by J. Jewkes, and comment by Sargent Florence, September 1954.

the extensive use of the small electric motor to drive machines in light industries.

New Zealand manufacturers know about increasing returns and economies of scale. They have for a long time urged that, if they were given adequate protection in the domestic market, they could develop larger and more efficient plants. Things have not worked out quite like that since the added protection of import licensing has been given to them. Competition, in a small country of scattered population like New Zealand, does not readily become effective enough to force the process of growth into surviving firms. More trees spring up in the forest, none grow very large.

In Australia the market is much larger and opportunities are greater. The large enterprise is fairly common. But the story is not very different. The average size of factory was 19.7 persons for 1927-30, 21.3 for 1937-40 and 22.2 for 1948-51.¹

A much more definite picture of the development which has taken place under import licensing and during the recovery period after the depression is possible if attention is focused on the growth of particular industries. In a more detailed study, made some twenty years ago, four industries were selected because they were the most important, in terms of numbers employed, of the manufacturing industries which it had been the intention of the protective policy to foster.² They were, Biscuit and Confectionery, Boot and Shoe, and Clothing Factories and Woollen Mills. Their position was examined by the Tariff Commission in 1934. For the most part the extent of protection which the Commission recommended, and which the Government adopted, was unchanged, but the tariff was actually reduced on some products competing with those of all these industries except the Woollen Mills. Since then the duties have been substantially unchanged. The four industries are of even greater relative importance, when taken together. In 1951 they employed over one-quarter of those engaged in factory production. Their progress, while the unbroken period of import licensing continued, offers some indication of the manufacturing trend. Table II shows the criteria of size for these industries for the same periods as before.

It is not altogether easy to make comparisons. Judging by numbers per establishment, the Boot and Shoe industry showed a tendency to increase, the others a marked decline in size. The Clothing industry would appear to have given more attention to management, and it also showed a greater proportionate increase in horse-power used per wage-earner. No Net Output (Added Value) figures per person are shown. They are perhaps of doubtful significance, especially when comparing industries in which the relative numbers of female workers employed differs considerably. To make comparison more reasonable the statistical device of the "male equivalent" is sometimes used by taking three females as equal to two males. When

¹ As Professor Jewkes states the size, in numbers, increased in Australia during the War and then declined. The same occurred in New Zealand.

² Thesis presented for the degree of Ph.D. (Econ). in the University of London, 1934, entitled, "Some Aspects of Protection and its Relation to Economic Development in New Zealand."

TABLE II

Indications of Changing Size in Four Industries

Item.	Average 1928-30.	Average 1938-40.	Average 1948-51.
A. Number of Establishments.			
Biscuits and Confectionery	63	53	79
Boot and Shoe	76	77	123
Clothing	227	374	741
Woollen	12	12	20
B. Persons Engaged.			
Biscuits and Confectionery	2,579	3,298	2,785
Boot and Shoe	2,313	3,299	5,144
Clothing	7,207	12,462	17,806
Woollen	2,535	2,711	2,708
C. Persons per Establishment.			
Biscuits and Confectionery	41	62	35
Boot and Shoe	30	43	41
Clothing	32	33	24
Woollen	211	226	132
D. Ratio Staff-to-wage-earners.			
Biscuit and Confectionery	14.7	11.5	14.2
Boot and Shoe	14.2	10.0	9.5
Clothing	8.1	7.9	10.8
Woollen	5.9	5.1	5.3
E. Horse-power per Wage-earner.			
Biscuit and Confectionery	1.6	1.9	3.1
Boot and Shoe	0.57	0.51	0.82
Clothing	0.16	0.19	0.38
Woollen	2.3	2.3	3.3

this is done the Biscuit and Confectionery industry shows a Net Output for the two years 1949-51 of £925, Woollen Milling £828, Boot and Shoe Factories £644 and Clothing £623.

But, for the present purpose, the most satisfactory test of progress that can be applied is the ability of these industries to compete with imports, both under the period of the moderate tariff alone before 1940, and under the additional stimulus provided by the licensing system. The great bulk of imports competing with these industries comes from the United Kingdom. As stated earlier, the General Tariff is about double the British Preferential, and the rate on some imports from Australia and Canada is about mid-way between. The British Preferential rates on main competing items—and they have been unchanged, except for minor alterations, since 1934—are:

Confectionery, 25% *ad valorem*;

Boots and Shoes, 25% or 3s. per pair;

Apparel, 20% or 25%;

Woollen Piece Goods, Yarn and Blankets, 20%.

In order to present a brief and for the purpose it seems a satisfactory picture, there have been selected, from the list of Principal Imports into New Zealand, as published in the *Official Year Book*, those items which refer to the four industries being studied.

The relative progress of the four industries in satisfying the domestic market can readily be inferred. Imports of Confectionery declined in value

TABLE III

The Value of Principal Imports into New Zealand: Averages for Three Periods N.Z. £000

Item.	1928-30.	1938-40.	1949-51.
Hats, caps and millinery	232	328	507
Other apparel	2,181	1,367	1,533
Boots and shoes	1,015	560	498
Confectionery	232	119	Not Listed.
Woollen piece goods	717	887	4,541

Note. Slight differences in classification for Hats, Caps, etc., for 1928-30, and the inclusion of Grindery with Footwear in 1949-51 are unimportant.

during the first interval, a clear decline in quantity as judged by price indices, and disappeared altogether from the list of Principal Imports in the second. Of course it must be understood that import licensing could be used to exclude imports altogether, but it is quite safe to say that, relying on New Zealand production, the domestic market was by no means starved. Imports of Boots and Shoes declined progressively. A similar but not so marked a decline occurred in imports competing with the Clothing industry.¹ On the other hand, imports of Woollen Piece Goods showed not much change in the first interval, when prices were relatively stable, but they increased at such a rate in the second as to show (substantiated by the quantity figures) a very considerable increase in volume. Under the system of import control the first three industries had apparently prospered; the Woollen industry had lost ground. This suggests that special attention should be paid to the details of production and competing imports and to the problem of its structure and organisation.

TABLE IV

Woollen Mills: Quantity of Main Products: Value of All Products and of Main Imports Compared

Period.	Quantity cloth and flannel 000s of yards.	Yarn made, 000s lb.	Total value all products N.Z. £000s.	Value imports woollen piece goods and yarn N.Z. £000s.	Ratio value of imports to N.Z. production, %.
1928-30	2,337	459	1,177	839	71.3
1938-40	2,341	817	1,226	1,071	87.2
1948-51	2,702	1,579	3,008	5,827	193.7

The figures in the final column show that, increasingly, the additional New Zealand market provided by the growing population has been supplied by imports rather than by domestic industry. Imports of Woollen Piece Goods almost doubled in quantity between 1939 and 1951, while the mills increased their output by about 16%.

When the New Zealand mills were developing in the closing years of last century they made a reputation for the quality of their rugs and blankets.

¹ Clothing rationing ceased in New Zealand at the end of 1947.

Imports of blankets progressively declined after the turn of the century, until by 1929 they numbered fewer than 500 pairs and were almost negligible as an import cost. A complete reversal has come about since 1930. The New Zealand mills have increased their production from an average of 127,000 to 132,000 pairs; imports have risen from 457 pairs to 296,000 pairs. Almost the whole of the increased demand has been supplied by imports. The explanation suggested here is probably a simple one. New Zealand mills have not maintained and increased their blanket-producing plant because, in the existing situation, it paid better to produce other articles. It seems doubtful whether the best interests of the consumer and the reputation of mills have been well served by this process. There has been little change in the number of Woollen spinning-frames and mules in the last twenty-five years, but Worsted equipment has about doubled. Plain looms are not much more than a third of their former number, but box looms, including automatic, have increased considerably.

It may be contrary to expectation, but the "average" New Zealand Woollen Mill is not smaller than the "average" in the United Kingdom, it is larger. The average for mills employing over ten persons in the United Kingdom, according to the 1950 Census of Production, was 136 persons. The figure for New Zealand in 1953-54 was 176. In spite of this, the size advantage is all with the industry in Great Britain. Almost all the New Zealand mills would be classified in Yorkshire as small or medium. But the fundamental factor is the scale of operations. The specialised mill in the United Kingdom is larger in its scale of operations than anything that is possible in the present structure of the New Zealand industry. There are few internal economies possible for the latter. External economies, it seems safe to say, do not exist. There has been talk from time to time of developing a wool-top making industry. The complete absence of regional concentration in any effective sense makes this and other specialisation difficult.

In Australia there has developed a measure of specialisation and localisation not achieved in New Zealand, but, even with a market over four times as large, the story is very much the same. It is true that an export trade has been developed in piece goods and yarns, but imports of woollen manufactures continue to threaten the Australian producer. The same arguments for maintained and increased protection are presented.¹ United Kingdom mills have greater specialisation, longer runs, a smaller range of lines and patterns, and lower wages. The disadvantage of higher wage costs is put forward as a major argument in favour of protection in both Australia and New Zealand, but here we are concerned with the relative progress of different industries. That the Woollen industry in New Zealand has fared

¹ See "The Case for Tariff Protection of the Woollen and Worsted Industry of Australia," submitted to the Commonwealth Tariff Board, April 1955. Also, the *Australian and New Zealand Weekly* for May 1956 refers to the case to be presented by the United Kingdom exporters to the New Zealand Board of Trade. The case suggests that the quota control of imports "introduced last October . . . was not for balance of payment reasons but as a result of representations made by the New Zealand industry for more protection." It states that quotas are contrary to international agreements such as G.A.T.T.

so badly compared with the other three to which reference has been made is surely due to factors inherent in its character and structure and not to one factor common to them all.

In 1955 exchange control was lifted on many imports. By the end of the year it had been re-imposed on woollen piece goods at the request of the manufacturers. This had, according to one of them, "saved the industry from chaos and unemployment."¹ It appears to be an example of a too sudden removal of a level of protection that had existed for a considerable period, and, as has been shown, the competitive position of the industry was already difficult enough. Exporters in Great Britain, on the other hand, resented the re-imposition of import licensing, and the New Zealand Board of Trade is now considering the rival claims. In the existing condition of New Zealand's overseas exchange reserves the problem of import licensing versus the tariff as the appropriate protective instrument will not be an easy one to solve. Nor will that of the appropriate amount of protection to be granted, for, with any population that may be foreseen, the size of the market and technical factors connected with it make it quite unlikely that New Zealand mills, over a sufficient range of goods, will be able to compete successfully in price and quality with those of Great Britain.

This brief analysis has shown that, in the years before the War, the four industries were making fairly steady and satisfactory progress. Three of them have subsequently gained a much greater share, if not the major part, of the New Zealand market for their products. But in this period, and whenever in the past the tariff has been raised, there has been a marked increase in the number of establishments. A scarcity of labour and capital make it relatively easy for the very small firm to commence and relatively difficult for the large firm to expand. It is instructive that, in what appear to be among the most successful of all manufacturing industries, Biscuit and Confectionery factories, British firms have merged with a New Zealand enterprise, as the names of Cadbury, Fry, Hudson; and Mackintosh, Caley, Phoenix, bear witness.

The decision of the Government on the use of import control or the tariff as the major instrument of protective policy will presumably follow the report of the Board of Trade, which is now making the most thorough investigation since that of the Tariff Commission of 1934. It is proceeding in two stages, the first a discussion of principles, the second a detailed inquiry into appropriate tariff rates. On the wisdom of its findings the pattern of industry and, as the population moves towards its third million, the rate of economic development, will in great measure depend.

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¹ From annual report of Mosgiel Woollen Factory Company Ltd., in *Otago Daily Times*, Dunedin, November 22, 1955.

TRADE BALANCES AND STATUTORY MARKETING IN PRIMARY EXPORT ECONOMIES

SINCE the War, many primary producing countries have introduced governmental monopolistic marketing arrangements for export produce. The marketing organisations set up under these schemes have taken over functions in the export trade which were previously performed largely by expatriate firms. "Price stabilisation" is usually one avowed purpose of these statutory marketing schemes; reducing the share in the proceeds of "the foreigner" and "the middleman" (often the same person) is another.

As a result of the high prices for which produce has been sold abroad, compared with the prices for which it has been purchased internally, at any rate in some years, most of the schemes have realised large "profits" from their operations. In some countries, such as Burma and Thailand, the profits have been disbursed in financing government expenditures. In others, among which the British West African territories are outstanding, the profits have been put mainly to reserve and have accumulated as external assets.

There has been a great deal of discussion recently about the statutory marketing schemes—the Produce Marketing Boards—in West Africa. In the course of the discussion the operations of the Boards and their impact on the West African economies have been extensively examined. The effects with which we are particularly concerned are those on the foreign-trade sector. Mr. Bauer has pointed out that the Marketing Boards' "decisions in fixing the prices paid to producers are a major factor in determining the level of incomes . . . and through their influence on the flow of incomes these decisions largely affect the balance of payments of the colonies."¹ Less attention has been given to the forces operating on the balance of payments when the Boards did not exist. This paper deals with the two most important West African territories, the Gold Coast and Nigeria, and with Uganda, a territory in British East Africa, where the statutory marketing arrangements take the form of a Cotton Lint Marketing Board and a Coffee Control, each operating a Price Assistance Fund. Comparison will be made between the foreign-trade sectors of these three territories in the period before the War, under "free marketing," and in the post-war period of statutory marketing.

It is first necessary to assemble data to show the scale of marketing-board operations in relation to the size of the export sector in the three territories. This is done in Table I. It will be seen (Table I, item *m*) that a substantial part of total export earnings—20% in Nigeria, 29% in the Gold Coast and as much as 38% in Uganda—has been skimmed-off by the marketing

¹ *West African Trade*, p. 263.

organisations.¹ This need not have affected the external accounts of the territories. If the levies had been used to finance public expenditure the

TABLE I
The Economic Impact of Statutory Marketing

	Gold Coast 1948-54.	Nigeria 1949-53.	Uganda 1950-53.
(a) Aggregate Exports (£ million)	556.2	545.7	156.5
(b) Aggregate "Controlled" Exports (£ million)	384.4	400.1	138.0
(c) = (b) as a percentage of (a)	69	73	88
(d) Marketing Organisation Sales Proceeds (£ million)	377.9	371.4	128.1
(e) Marketing Organisation Buying Costs (£ million)	218.6	262.5	68.4
(f) Marketing Organisation "Levies" (£ million): Duty	83.7	39.0	23.7
(g) Ditto: Surplus	75.6	69.9	36.0
(h) Ditto: Total	159.3	108.9	59.7
(i) = (e) as a percentage of (d)	58	71	53
(j) = (f) as a percentage of (d)	22	10	19
(k) = (g) as a percentage of (d)	20	19	28
(l) = (h) as a percentage of (d)	42	29	47
(m) = (h) as a percentage of (a)	29	20	38
(n) Increase in Marketing Organisation Assets (£ million)	58.6	51.1	24.5
(o) = (n) as a percentage of (g)	78	73	68

Notes: Items (a) and (b) are for calendar years; other figures are for various "crop years":

Gold Coast—cocoa, 7 years ending September 30, 1954.

Nigeria—cocoa, 5 years ending September 30, 1953;

oil palm, 4 years 9 months ending December 31, 1953;

groundnuts, 4 years 7 months ending October 31, 1953;

cotton, 4 years 8 months ending November 30, 1953.

Uganda—cotton and coffee, 4 years ending October 31, 1953.

Differences between items (d) and (b) are accounted for by use of calendar year in the latter and crop year in the former, and in the Uganda figures by the fact that not all coffee (one of the "controlled" or marketing organisation exports) contributes to the Coffee Price Fund.

total import bill may have remained unaffected. But enough has been saved² to be able to declare that "the major factor in the large export surpluses of the . . . colonies in recent years" has been the constriction of producers' incomes by marketing organisations, "since the process of restricting incomes below the sales proceeds of exports has served to reduce overall money demand for goods and services generally, including imports."³ Table II illustrates this effect of statutory marketing by listing for each territory "export surplus as a percentage of exports" in each year since the War.

¹ Both the net surpluses of the boards, after export duty has been paid, and the export duty received by the Government are counted as marketing organisation "levies" (to use Mr. Bauer's convenient term), for the export duties fall on the surpluses of the boards.

² Over the period covered by Table I, the Gold Coast Cocoa Marketing Board increased its holdings of external assets by an amount equal to 78% of the surpluses accumulated, and the Nigerian Boards by an amount equal to 73% of their combined surpluses. In Uganda the assets of the cotton and coffee funds rose by 68% of the accumulated surpluses. But substantial amounts have been transferred to an African Development Fund, and if the assets of this Fund are added to those of the Price Funds the ratio of assets-increase to total surpluses rises to 98%.

It is impossible in principle to say how much of the export duties have been saved, but the whole question of the impact of government finance on the trade balance is examined later.

³ P. T. Bauer, *op. cit.*, p. 309. Mr. Bauer is referring to West Africa, but his statement applies as much to Uganda as to any West African territory.

In view of the large-scale operations of the statutory marketing organisations, it is most surprising when one turns to the pre-war years, before the schemes had been introduced, to find that export surpluses then were rela-

TABLE II
Export Surplus as a Percentage of Exports

	Gold Coast.	Nigeria.	Uganda.
1945	36	25	66
1946	37	20	49
1947	20	26	45
1948	44	33	40
1949	9	28	49
1950	38	31	50
1951	31	30	54
1952	23	12	51
1953	19	14	29
1954	38	24	42
1945-54	30	24	46

tively larger than they have been since the War. Table III shows the aggregate export surplus as a percentage of aggregate exports in the pre-war decade, 1930-39, and in the post-war decade, 1945-54. In each of the three territories the pre-war percentage is slightly bigger than that for the

TABLE III
Export Surplus as a Percentage of Exports

	Gold Coast.	Nigeria.	Uganda.
1930	16	16	13
1931	43	27	29
1932	34	25	40
1933	36	28	61
1934	45	40	56
1935	21	33	52
1936	31	29	54
1937	24	25	50
1938	33	11	46
1939	44	36	47
1930-39	32	27	48
1945-54	30	24	46

post-war years. The precise figures are not, of course, of great significance. That the pre-war percentages are actually larger than the post-war ones merely high-lights the situation. What is remarkable is that the export surpluses in the post-war years, when the operation of statutory marketing

has had a powerfully depressing effect on the demand for imports, are not very much larger relatively than any experienced before the War.¹

It would appear that the statutory marketing organisations are not, as seems generally to have been assumed, simply an additional determinant of the external economic balance of these territories, but one new element in a drastically rearranged balance of economic forces, the outcome of which has been export surpluses of no greater (relative) magnitude than those produced before the War. This supposition invites inquiry into the changes undergone by the other forces in the economic balance.

The possibility immediately suggests itself that externally financed investment in the territories has been so much greater than before the War as to counter-balance the operations of the marketing organisations. Whereas statutory marketing has operated to reduce imports, capital inflow tends to increase them. Has externally financed investment been large enough to constitute a significant offsetting element?

No direct comparison of capital inflow into the three territories before and since the War is possible, for the statistics do not exist. But it is possible to go a good part of the way to answering our question. It is possible to extract statistics of capital import² on public account from published sources. This has been done for Uganda for the post-war years, and the results are set out in Table IV. A more comprehensive approach is possible for the Gold Coast and Nigeria, for there are official balance-of-payments estimates for several post-war years for both territories. The figure of capital inflow for each territory is obtained as the difference in any period between the balance of payments on current account and the rise in external assets. To this is added the total of grants or donations which is given in the current-account

¹ A word should be said about import and export valuations. Particularly before the War these were highly unreliable, but the phenomenon with which we are concerned is sufficiently large not to be a mere illusion produced by inadequacies in the data. It has been said that, in Nigeria, trading profits on agricultural exports were to some extent excluded from the valuations in the trade returns (P. Bower, *Balance of Payments of Nigeria in 1936*, pp. 14-15). Mineral exports, on the other hand, were overvalued by the inclusion of ocean freight and other costs (Bower, *op. cit.*, p. 15). On balance, exports were somewhat undervalued, and the magnitude of the exports surplus is therefore understated. In Uganda the method of valuation exaggerated the export surplus by including in the value of exports certain transport costs incurred within East Africa beyond the Uganda border, and by excluding the corresponding costs from the value of imports. An officially prepared paper states that "imports are recorded at a slightly lower and exports at a slightly higher value than if the goods had been valued at the Uganda border" (Allen and Ely, *International Trade Statistics*, Chapter 16; italics added). This refers to the post-war years, and it may be that transport costs bulked relatively larger before the War, but the factor can hardly account for more than a small part of the recorded export surplus. Two further points about valuation should be made. Imports are valued c.i.f., so that the costs of transport services are already accounted for, and they are not an explanation of any part of the recorded export surplus. The post-war export figures are the revised figures, including the value of marketing board surpluses, and not the originally published figures, which in some years excluded the surpluses and valued exports on an "f.o.b. cost" instead of an "f.o.b. selling price" basis (see Allen and Ely, *op. cit.*).

² For the present purpose "grants" to the territories, such as those made under the Colonial Development and Welfare Acts, are treated as capital funds, because from our present point of view their effect is the same, although in balance-of-payments accounting they are considered as current external receipts.

estimates. The resulting figure for "capital" inflow (and the corresponding figure of more limited coverage in the case of Uganda) is added to the recorded export surplus to obtain what may be called the "potential export surplus," in other words, the export surplus which would have occurred (*cet. par.*) if capital inflow had been zero. This adjusted export surplus as a percentage of exports is then compared with the pre-war "export surplus as a percentage of exports." These manipulations are carried out in Table IV.

TABLE IV
Effect of Capital Import on Trade Balances

	Gold Coast 1950-54.	Nigeria 1950-52.	Uganda 1945-54.
Trade Balance	+156.9	£ million +72.7	
Invisible Balance:			
Donations	- 4.0	+ 7.3	+ 4.0
Other	- 73.1	-11.6	
Current Balance	+ 79.8	+68.4	
Change in External Assets	+112.2	+87.2	
Capital Inflow	+ 32.4	+18.8	+ 7.3
Donations	- 4.0	+ 7.3	+ 4.0
Capital + Donations	+ 28.4	+26.1	+11.3
Export Surplus ÷ Exports	% 30.1	% 23.4	% 46.4
Export Surplus + Capital + Donations ÷ Exports	36.3	31.1	50.1
Export Surplus ÷ Exports 1930-39	31.7	26.5	47.5

Notes and Sources :

Gold Coast—Gold Coast *Economic Surveys*, 1952, 1953, 1954.

1954 partly estimated from half-year figures.

Donations partly estimated.

Nigeria—*The Economic Development of Nigeria*, I.B.R.D., p. 87 (Nigerian edition).

Uganda—*East African Economic Review*, July 1955, pp. 46-9.

Colonial Development and Welfare Acts. Report . . . Cmd. 9375, January 1955.

Commonwealth Survey.

U.K. Appropriation Accounts.

Partly estimated.

The effect of the adjustments is to increase the size of export surpluses as a percentage of exports by between 4 and 8% in the relevant years. As a result the adjusted post-war figures exceed the pre-war percentages. But the excess is small: only 2% for Uganda, 4% for the Gold Coast and 4% for Nigeria. If these figures are compared with those of levies as a percentage of exports—38% in Uganda, 29% in the Gold Coast and 20% in Nigeria—it is clear that the effect on the balance of trade of capital imports is small compared with that of the statutory marketing organisations. The failure of the marketing organisations to produce much larger export surpluses than before the War cannot be explained, therefore, by an offsetting rise in capital imports.¹

¹ It should be noted that we have implicitly assumed that there was no capital import or grants before the War. Our conclusion would be true *a fortiori* if account had been taken of pre-war inflows.

The inquiry may be carried a little further with the help of some unofficial estimates of the balances of payments of Nigeria and the Gold Coast in certain pre-war years. The nature of the statistical raw material for this period makes it inevitable that the estimates can be correct only in broad outline, but the change between the pre- and post-war periods is so striking

TABLE V
Balance of External Payments: Expenditure as Percent of Export Receipts

	Gold Coast.		Nigeria.	
	1936-39.	1952-54.	1936.	1950-52.
Imports plus Net Services ¹	74	77	79	80
Payment of Net Investment Income	23	6	20	3
Net Capital Export ²	3	17	1	17

¹ Net Services = Invisibles, excluding Investment Income and Donations.

² Including currency changes, donations and errors.

Sources :

Gold Coast 1936-39—J. Mars, *The Balance of External Payments of the Gold Coast for the Fiscal Years 1936/37 to 1938/39* (unpublished). I am greatly indebted to Dr. Mars for permission to make use of his study.

Gold Coast 1952-54—*Gold Coast Economic Surveys* 1953 and 1954. (Figures include only first half of 1954.)

Nigeria 1936—P. A. Bower, *The Balance of Payments of Nigeria in 1936* (Oxford, 1949).

Nigeria 1950-52—International Bank for Reconstruction and Development, *The Economic Development of Nigeria*.

that it could not be affected by any conceivable inaccuracy in the data. Table V shows the use to which export earnings were put in certain pre-war and post-war years in the Gold Coast and Nigeria. The data are presented in broad categories, expressed as percentages, both to show the facts clearly and to emphasise that no particular weight is being placed on details of the estimates.

The reversal in importance of payments of investment income and of capital export is unmistakable. It is tempting, in the light of these figures to argue that the introduction of statutory marketing, by displacing expatriate firms from certain sectors of the economy, has led to a marked fall in the proportion of external earnings required to pay for the economic functions performed by the firms; that heavy export surpluses have been maintained, as a consequence of the price policies pursued by the marketing boards, which have been the vehicle for capital export and the accumulation of large external assets instead of for the service of expatriate capital and enterprise; and to conclude that the impact of statutory marketing, as compared with a system of "free marketing," has therefore been on expatriate firms more than on native producers.¹ But such a conclusion involves a *non sequitur*, for it is incorrect to associate the pre-war export surpluses solely with the payment for the services rendered by expatriate firms in the export trade

¹ The author is indebted to Mr. E. Hallett for rescuing him from this error. Mr. Hallett is not, of course, to be held in any way responsible for the paper as it now stands, nor for any errors which remain.

in agricultural produce. The balance of trade is also affected by the remittances of expatriate firms concerned with the merchandise import trade and the mining industry, and the introduction of statutory marketing can have had no effect on these. In addition, there is the force exerted on the trade balance by government finance, of which the service of the external public debt is only one element. To go any further, therefore, it is necessary to discover what changes have taken place in the relative importance of these other elements in the situation. Something, at any rate, can be said about two of them: mining exports and government finance. The relevant figures are assembled in Tables VI and VII.

In both the Gold Coast and Nigeria mineral exports before the War were large enough for the remittance of mining profits to be an important component of the trade balance. Mining exports are now of less importance, and a fall in the relative magnitude of expatriated mining profits has an effect on the trade balance opposite to that of the marketing boards. The figures in Table VI indicate the extent to which this decline in the importance

TABLE VI

	Gold Coast.		Nigeria.		Uganda.	
	1930-39.	1945-54.	1930-39.	1945-54.	1930-39.	1945-54.
Expressed as a percentage of total exports:						
Export Surplus	32	30	27	24	48	46
Mineral Exports	39	24	14	8	3	1
Balance of Trade-impact of Government Finance . .	+ 7	- 8	+ 9	- 4	-1	-12
Marketing Organisation Levies ¹		+27		+21		+38
Impact on Trade Balance of change between the two periods in:						
(a) Mining remittances ² . .	- 8		- 3		- 1	
(b) Impact of government finance	-15		-13		-11	
	-23		-16		-12	
(c) Marketing organisation levies	+27		+21		+38	

Items marked + tend to increase the export surplus, and those marked - to reduce it.

¹ For Nigeria and the Gold Coast these figures are rather less accurate than the corresponding ones in Table I, which are for the shorter period for which detailed information in Marketing Board reports is available. The Uganda figure is taken from Table I, and probably exaggerates the impact of the marketing organisations on the balance of trade for the whole ten-year period.

² These figures are based on the arbitrary, but perhaps not wildly unrealistic, assumption that mining-company remittances amount to 50% of the value of mineral exports. Appropriate adjustments to the table may easily be made if some other assumption about mining remittances is thought to be more realistic.

of mining has counteracted the new force exerted on the trade balance by the marketing boards.

Table VII summarises the results of an attempt to assess the impact of

government finance on the balance of trade during the pre- and post-war decades. Before the War net external public debt charges were (except in Uganda) a significant contributor to the export surplus. As might be expected, these are relatively far less important in the post-war years. This

TABLE VII

The Impact of Government Finance

£ million

	Gold Coast.		Nigeria.		Uganda.	
	1930-39.	1945-54.	1930-39.	1945-54.	1930-39.	1945-54.
Balance of Revenue and Expenditure ¹	+2.6	+51.6	- 1.8	+48.6	-0.1	+ 6.1
Deduct Export Duty paid by Boards		84.0		64.4		35.0
Net Revenue Balance . . .	+2.6	-32.4	- 1.8	-15.8	-0.1	-28.9
Net current external payments ² .	+6.1	+ 6.0	+16.7	+15.1	+1.1	+ 4.4
Expenditure from grants ³ . . .	-0.2	-11.4	- 0.2	-19.5		- 3.0
Expenditure from loans ³ . . .	-1.0	- 9.9	- 3.9	-10.3	-1.4	- 9.0
Impact of Public Finance . . .	+7.5	-47.7	+10.8	-30.5	-0.4	-36.5
Impact of Government Finance as a percentage of exports .	+7%	- 8%	+ 9%	- 4%	-1%	-12%

Items marked + tend to increase the export surplus, and those marked - to reduce it.

¹ Including expenditure from Development Funds financed by appropriations from revenue, expenditure in Uganda by Electricity Board financed by advances from Uganda Government and the balance of the Regional Governments in Nigeria.

² External public-debt charges net of income received from assets held abroad and profits of Currency Board, and part of expenditure on pensions of government servants.

³ External and local, including contribution from marketing boards, which are important in both grants and loans for the Gold Coast.

change, in itself, is some offset to the operation of statutory marketing. But public finance cannot be left at that. Account must also be taken of other transactions, some of which (revenue surpluses, including payments into reserve funds and "development funds," net of expenditure financed from such funds) tend to increase the export surplus, and others (expenditures financed by grants and loans, both external and local) to reduce it. And, because export duties paid by the marketing organisations have been treated as part of their "levies," contributing to their impact on the balance of trade, it would involve double counting to include the duties in government revenue when assessing the impact of government finance. Export duty paid by the marketing boards is therefore deducted from the balance of government revenue in Table VII. The result is to transform the revenue surpluses into deficits and to show government finance since the War as a negative influence on the balance of trade.

The changes, which it has been possible to isolate (as set out in Table VI), in the forces operating on the trade balance are therefore the following. First, a decline in the positive influence of mining-company remittances to

not much more than half that of before the War.¹ Secondly, a change in the overall impact of government finance from a positive to a negative influence in the Gold Coast and Nigeria, and from a small to a substantial negative influence in Uganda. Finally, the introduction of a new positive influence from the price policies pursued by the marketing organisations. In the Gold Coast and Nigeria this new force is offset to the extent of more than three-quarters by the changes in mining-company remittances and government finance; in Uganda only about one-third of it is offset in this way.² In the first two territories, therefore, the unexplained residual is comparatively small,³ and the fact that the export surpluses experienced since the War have been (relatively) no larger than those before the War is largely explained by the counteracting changes in the other two forces. In Uganda, however, where neither mining-company remittances nor public finance seem to account for any important part of the pre-war export surpluses, a large question mark remains.

It is nothing new in the territories with which we have been concerned for a substantial proportion of total export earnings to be sent abroad, but the mechanism generating the surpluses has changed. Before the War they were to a large extent accounted for (except in Uganda) by the remittances of mining companies and the service of the public debt. Since the War they have been the result of marketing-board price policy. At the same time government expenditures have become relatively much larger, and government finance now exerts a negative influence on the balance of trade. A further novel feature of the post-war period is that the export surpluses have been matched by the accumulation of external assets, on both marketing-board and other public account, which are available to finance the balance-of-payments deficits which seem likely to occur in the future.

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¹ See footnote to Table VI.

² But it should be remembered that the figure we have taken for the impact of the marketing organisations in Uganda is probably an exaggerated one when applied to the whole post-war decade. See footnote to Table VI.

³ To the extent that the assumption that mining-company remittances amount to 50% of mining exports exaggerates their importance, the unexplained residual is the larger.

ESTIMATING THE SOVIET NATIONAL INCOME¹

It is almost a century since the first estimate of the Russian national income was published in the *Journal of the Royal Statistical Society* of 1860, and fifty years since the appearance of the first estimates by a Russian economist. The Central Statistical Administration of the Soviet Union has prepared national accounts each year since the First World War; in addition, there are now nearly a score of estimates presented by scholars working in Britain or America, culminating in the recent appearance of Professor Bergson's comparative accounts for five selected years between 1928 and 1948.² It is thus an appropriate time to try to review the progress made in estimating the national income of the world's second industrial power and to compare the magnitudes, composition and methodologies of the computations.

The emergence of a considerable body of foreign academic work paralleling the data prepared by the national statistical office is unprecedented with respect to any other country and, although testimony to the natural interest the rest of the world shows in the Soviet economy, requires further explanation. Reference is made in the first section of the present study to certain statistical procedures of the official series which seriously affect intertemporal and interspatial comparisons, while the second and third sections consider the extent to which the foreign calculations seek to adjust Soviet data to different methodological and conceptual bases. As a measure of long-term change, the official Soviet figures suffer from the employment for nearly a quarter of a century of a constant-price structure at variance with actual factor rewards (and in the even longer term from improvements in accuracy); as a measure of short-term change and of sector contributions, they continue to be influenced by a price valuation reflecting a highly discriminatory tax scale. The shorter answer, however, is that the Soviet official data are almost wholly unpublished. The last full account was published in 1929, and the last summary breakdown (by six main sectors) available is for 1937. In the twenty years since, the only data published have been totals³—

¹ The author is a member of the Secretariat of the United Nations Economic Commission for Europe at Geneva. The views expressed herein, however, are his personal views and should not be interpreted as those of the Organisation.

² Abram Bergson, *Soviet National Income and Product in 1937* (New York: Columbia University, 1953); Abram Bergson and Hans Heymann, Jr., *Soviet National Income and Product 1940-48*, and Oleg Hoeffding, *Soviet National Income and Product in 1928* (Both New York: Columbia University, 1954).

³ Until 1950 the money aggregates (in 1926/27 prices) were published. Subsequently, only index numbers (measured in 1951 prices) have been released. The position has not been altered by the publication during 1956 of three Soviet statistical handbooks. The index numbers of national income are reproduced but no breakdowns are quoted. The handbooks nevertheless are of some use as sources for composing national accounts: they provided data directly for four (and indirectly, in conjunction with other information, for sixteen) entries in a set of accounts for the year 1955 prepared by the present writer (not yet published) and containing some seventy independent entries.

at constant prices plus two isolated references (for 1940 and 1950) to the percentage breakdown (in current prices) between accumulation and consumption. The efforts of western scholars must primarily be viewed, therefore, as the provision of the statistical facts needed in a study of the Soviet economy rather than as an attempt to improve upon the work of Soviet statisticians, for it is clear that the official accounts must contain more accurate data than any outside estimate.

I

Sergei Prokopovicz published the first Russian estimate of the national income of his country exactly fifty years ago.¹ Inspired by Marxism,² he adopted that definition of the national income which excludes services not intimately associated with material production, a concept to which all estimates subsequently made in the Soviet Union adhered. Both statistical and territorial limitations inhibited Prokopovicz's computations, since the basic data, especially the agricultural, were collected by officials of a low level of literacy and covered only European Russia. He allowed for some shortcomings—e.g., for deliberate crop under-estimation by peasants by adding a sampled margin of 10%—but, faced with other inadequacies, he adopted very rough guesses with spurious accuracy. For example, he used the product of employment and *per capita* output in factory industry to the last kopek for urban handicrafts³ and passenger carriage, non-housing construction and the retailing of excise goods: in aggregate the sectors thus estimated contributed one-tenth of the total and one-fifth of the non-agricultural income. For his study of gross national product in 1913,⁴ Prokopovicz was able to use somewhat better basic statistics, in particular the 1916 census of livestock and Kevdin's survey of Russian fisheries (1915), but handicrafts, urban passenger carriage and trade in excise goods were no better treated than for 1900. His total of 11.8 billion (*i.e.*, thousand million) roubles for European Russia (inflated, without detailed explanation, to 16.4 billions for the whole Empire) revalued in 1900 prices showed a 39% volume increase, within which industry had risen by 62%.⁵

¹ S. N. Prokopovicz, "Opyt ischislenia narodnago dokhoda v 1900 g." in *Trudy Imp. Volnago Ekonomicheskago Obshchestva*, 1906. Prokopovicz mentioned an earlier estimate of agricultural and industrial income by the Minister of Finance S. Yu. Vitte in 1897 (but this was so rough and inaccurate that it may be ignored) and another, published in St. Petersburg in 1896 and relating to 1894, by V. Pokrovsky incidental to a study on the Russian balance of trade (and whose income-per-head estimate was of the same order of magnitude as Prokopovicz's).

² He was deported from the Soviet Union in 1922, having formally broken with the orthodox Marxists in 1899, and is described by Soviet Marxists as a "bourgeois economist" (cf. A. Paltsev, *Natsionalny dokhod pri kapitalizme* (Moscow, 1954), p. 33). His estimates were accepted by Gosplan for 1900 and 1913 after deductions for depreciation and the reduced area of the country (cf. Gosplan, *Kontrolnye tsifry narodnogo khozyaistva S.S.S.R. na 1928-1929 god* (Moscow, 1929), p. 68).

³ Nevertheless, he accepted for rural handicrafts an outside estimate of one-tenth this value.

⁴ S. N. Prokopovicz, *Opyt ischislenia narodnago dokhoda 50 gub. evropeiskoi Rossii v 1900-1915 gg.* (Moscow, 1918).

⁵ Prokopovicz also produced in the same study an approximate breakdown between incomes of the "working" and the "owning" classes.

The accuracy of Prokopovicz's estimate for 1913¹ is of continuing significance to the extent that, only slightly adjusted by Gosplan, it is still frequently used by Soviet writers as the base year for national income index numbers. The official Soviet calculations have continued to use broadly the same coverage concept as Prokopovicz,² but this definition has not been without its critics in the Soviet Union. Thus N. Ya. Suzdaltsev³ proposed to the Central Statistical Administration the inclusion of passenger transport; N. M. Krasnolobov⁴ would also add private use of posts and telegraphs, and commercially-sold services; M. Bor⁵ urged the inclusion of transport and communications used by individuals, and the exclusion of trading income not associated with a real appreciation of the worth of the traded goods (*e.g.*, retail profits and taxes, margin between cost of imports and receipts from exports); S. Turetsky⁶ opposed the exclusion of education, public health and entertainment; while Kursky⁷ strongly criticised on this score a text-book prepared by the Institute of Economics and argued for the inclusion of passenger transport, communal services, education, medicine and even Government administration.

Initially, official Soviet computations approached the national income from both the production and the expenditure aspects.⁸ Computations on both methods were in fact made by Gosplan for only six years (1925-30), but they are of interest to the extent that their mutual relationship is precisely the opposite of that shown for the United Kingdom in not wholly dissimilar economic conditions:⁹ the expenditure method showed a larger

¹ Two other estimates of the 1913 income (area and prices of that year) were 15 billion roubles (net of depreciation) by M. N. Sobolev, *Ekonomicheskoe Obrezenie*, No. 1, 1925, p. 48, who did not state his methods, and 17.6 billion roubles by A. Veinstein, *Sotsialisticheskoe Khozyaistvo*, No. 4, 1926, p. 8, who describes his figure as a revision of Prokopovicz's.

² "The national income of the U.S.S.R. is composed of the following branches of material production: industry, building, agriculture, transport (of freight), communications (serving the productive sector) and that part of trade which fulfils a productive function in circulation (packing, sorting, storage, movement)" (D. A. Allakhverdyan, *Natsionalny dokhod S.S.S.R.* (Moscow, 1952), p. 37). Other Soviet economists who defend this definition are V. Sobol, A. Petrov and A. Paltsev.

³ *Vestnik Statistiki*, No. 1, 1954, p. 86.

⁴ *Planirovanie i uchët narodnago dokhoda* (Moscow and Leningrad, 1940), pp. 14-19.

⁵ *Voprosy Ekonomiki*, No. 10, 1954, pp. 82-3.

⁶ *Planovoe Khozyaistvo*, No. 1, 1940, p. 105.

⁷ In a review of D. I. Chernomordik, *Narodny dokhod S.S.S.R.* (Moscow, 1939), in *Planovoe Khozyaistvo*, No. 10, 1939, pp. 92-3.

⁸ "The study and computation of the national income make it impossible to give exclusive preference to one or other of these methods—we can approach the study of the size, structure and change of the U.S.S.R. national income only if we adopt and adapt both" (Gosplan, *Kontrolnye tsifry*, *loc. cit.*).

⁹ The comparison may be made with the United Kingdom from 1947 onwards, also both a post-war period and beginning with the re-attainment of the pre-war volume of national income. Although sector and factor proportions were widely different, the institutional structures ("productive relations" in Marxist usage) of the two countries were, at the time, both marked by predominant private enterprise co-existent with some recently-nationalised basic sectors. Roughly speaking, the price mechanism had a similar degree of operative significance at the beginning of each period, subsequently decreasing in the Soviet Union and increasing in the United Kingdom.

annual rate of increase in the Soviet Union when the growth of income was relatively large, whereas the converse was true of the United Kingdom.

During the twenties some national-income estimates using both approaches were published by private individuals,¹ but when subsequently the comprehensiveness of the State statistical services superseded the need for the collection of data by such independent workers,² the official estimates were confined to the production side. Krasnolobov mentions, only to reject, a further variant, summation by end-user: end-use aggregation, he explains,³ would have no place for harvest losses or abandoned construction sites, and its price structure is very different from that used in national-product summation.⁴

Since the credit and tax reforms of 1930, the Soviet fiscal system has been such as to obscure its comparability with Western national-income estimates either at factor cost or at market prices. The official Soviet view is that in a socialist society factor cost and market-price valuations are identical, for the division of the margin between selling price and input costs in a State-owned establishment⁵ ("turnover tax," "profit contribution to the budget," "retained profits," "Directors Fund," etc.) is guided by administrative convenience, not by explicit charges for capital or land. Some western commentators accept this contention,⁶ others concede it in part,⁷ while others regard it as outright catachresis.⁸ An inversion of Hicks' postulate that a welfare appraisal requires market prices and a productivity appraisal factor cost⁹ could, perhaps, be based on the predominance of the productivity motive. Although the Soviet Central Statistical Administration reports the national-income index under the head "Growth of the National Income and Improvement in the Material and Cultural Living Standards of the Nation," the definition used excludes a wide range of services obviously adding to welfare, and Soviet text-books always tend to stress the productivity implications.¹⁰

¹ L. N. Litoshenko, *Narodny dokhod* (Moscow, 1925), from the expenditure side; P. I. Popov (ed.) *Balans narodnogo khozyaistva S.S.S.R. 1923/24 g.* (Moscow, 1926), from the production side. M. N. Sobolev, *op. cit.*, p. 53, and A. Veinstein, *op. cit.*, p. 9, produced production method index numbers, for 1923 and 1925/26 respectively, in constant prices on a 1913 base.

² Controversy on coverage or valuation procedure has nevertheless not resulted in the publication of estimates alternative to the official series.

³ Krasnolobov, *op. cit.*, pp. 79-80.

⁴ M. Bor, *op. cit.*, pp. 81-2, states that the production method is still the only method used, but argues for the computation of "utilised national income" (*i.e.*, excluding losses).

⁵ If the majority of industrial co-operatives are eventually taken over by the State, as was suggested by the Chairman of the Council of Ministers (*Pravda*, July 17, 1955), State enterprises will control virtually the whole economy outside collective and private farming.

⁶ Maurice Dobb, *Soviet Economic Development Since 1917* (London, 1948), p. 266.

⁷ A. Bergson, *op. cit.*, p. 58.

⁸ Alec Nove, *Soviet Studies*, January 1955, pp. 250-6.

⁹ J. R. Hicks, "The Valuation of Social Income," *Economica*, May 1950, p. 124. For a proper measure of welfare Hicks was in fact prepared virtually to adopt the Soviet income definition and exclude public services (*ibid.*, p. 115).

¹⁰ E.g., T. Ryabushkin, *Ocherki po ekonomicheskoy statistike* (Moscow, 1950), Ch. 3.

Soviet practice is made the more acceptable to western statisticians by definitions offered by Nicholson and Kuznets. In a recent article the former reached the conclusion "that, except for any indirect taxes that may be imposed after the final stage of production, national expenditure at market prices is in fact equal to national expenditure at factor cost, if the latter is correctly defined."¹ Since Soviet indirect taxes are imposed during production, this identity may be established for the Soviet Union and the use of market prices vindicated for both welfare and productivity objectives of gross product estimation. Nicholson proceeds to the paradox that although total product should be valued at market prices, the relative contribution of each sector is correctly to be measured in factor rewards, *i.e.*, gross output exclusive of taxes *less* cost of inputs inclusive of taxes. The components of such a computation are, in fact, prepared by the Soviet Statistical Administration but are not so used. Each Soviet industrial enterprise (the procedure for other sectors differs radically only for agriculture) reports its output² in tax-free wholesale prices (monthly in constant prices and annually in current prices), as well as its expenditure subdivided by materials, fuel, energy, wages and amortisation. Summation of these enterprise outputs (including thereby outputs which are inputs of other enterprises) gives a tax-free gross output of industry used to measure the rate of growth of industrial output.³ For the global value of industrial output, the Statistical Administration adds turnover taxes,⁴ deducting duplicated inputs for the net contribution to national income. Although the concept used in the national accounts is thus value-added plus indirect tax, the Nicholson-type measure could be simply computed if the tax-free outputs were used instead of tax-inclusive outputs. The Statistical Administration has recognised that the levying of turnover tax almost exclusively upon consumer goods distorts the relative contribution of this sector⁵ to global industrial output (without, however, admitting the same effect in the re-

¹ J. L. Nicholson, *Economic Journal*, June 1955, p. 219. He points out that the "factor cost" of previous usage is better called "factor reward," since it will differ from the correctly defined "factor cost" if the price paid by the user incorporates a tax or subsidy.

² Net of intra-enterprise duplication. The turnover gross of intra-enterprise duplication was computed for industry as a whole until 1935, but the figure had, of course, no economic significance. Certain exceptions are made for vertically integrated enterprises, a list of which is given by A. I. Ezhov, *Promyshlennaya statistika* (Moscow, 1954), p. 80. Ezhov envisages a computation net of intra-industry duplication ("sometimes called the 'real' method"), but does not imply that it is used in current Soviet practice.

³ In constant prices: until 1927 prices of 1911 or 1912, from 1927 to 1950 in 1926/27 prices, from 1950 to 1955 in prices of January 1, 1952, and for 1955 to 1960 in prices of July 1, 1955.

⁴ The use of different aggregates for the rate of growth and for global value appears to date from the reform of industrial index methodology whereby 1952 prices replaced the obsolete 1926/27 prices. The first mention of the new usage seems to be by M. S. Urinson in A. I. Petrov (ed.), *Kurs ekonomicheskoi statistiki* (Moscow, 1954), p. 178; and was clearly spelt out by S. Genin, *Voprosy Ekonomiki*, No. 8, 1955, p. 71. This change helps to explain why, since the index reform, only rates of change and not global output values have been published.

⁵ And between consumer-good industries by imposition at one stage only (*e.g.*, baking and confectionery enterprises pay no tax because the levy is made on flour-milling and sugar-refining).

lative contributions of industry and agriculture to national product), and each industry's outputs and inputs¹ are computed free of turnover tax. At least one Soviet writer, Bor (*op. cit.*), has gone farther and has called for national accounts in which the relative sector contributions are free not only of turnover taxes but also of profits taxes (which are assessed on a scale similarly discriminating against consumer goods). In order not to alter the aggregate from its presently-defined magnitude, Bor would then treat taxes as payments for government services. This is tantamount to adopting a much decried definition proposed some years ago by Kuznets.² Sector contributions are further altered by the Soviet calculation of farm consumption at the "average realised price" of cash sales, since these are depressed by procurement prices. This practice, moreover, overstates the rate of income growth, for, as labour moves from agriculture to industry, some farm produce is transferred from valuation at levels heavily weighted by low procurement prices to valuation in prices incorporating (or, on farm markets influenced by) high rates of turnover tax. As a solution another Soviet author, Braginsky,³ has suggested the computation of farm consumption at retail prices.

Valuation procedure has been a further cause of divergence between accounted and real contributions to national income to the extent that constant price bases have been unsatisfactory. Current-priced sector contributions are deflated to base year prices⁴ (a combination of 1912 and 1913 prices until 1929, 1926/27 prices from 1926 to 1951, 1951 prices from 1951 to 1955 and 1955 prices for 1956 to 1960). The inflation of the rate of growth induced by the use of the 1926/27 price lists⁵ still vitiates comparison

¹ This is made clear by Genin, *op. cit.*, p. 73. A less-explicit reference to the practice by A. I. Gzulev, *Ekonomicheskaya statistika* (Moscow, 1953), p. 183, led Nove (*op. cit.*, p. 256) to believe taxes on incorporated materials were not deducted. Nove saw the absence of corrections for taxes on materials and for subsidies as the sole obstacles to considering these tax-free totals as factor-cost elements for the national income. This is not the case, as the totals are not "value-added" but gross of duplication.

² "Total factor costs would equal total payments to all factors net of all taxes, plus direct services rendered by government to individuals and additions to capital under government auspices. This sum of returns to all factors in the economy would at the same time equal the value of net output at market prices" (S. Kuznets, *Review of Economics and Statistics*, August 1948, p. 159). He regarded this, however, as only a rough, first approximation.

³ B. Braginsky, *Vestnik Statistiki*, No. 2, 1955, p. 20.

⁴ The procedure, which varies from sector to sector, is critically described by Paul Studenski (*Studies in Income and Wealth*, VIII, 1946, and, with Julius Wyler, *American Economic Review*, May 1947) and by Nove (*op. cit.*, pp. 267-73); until 1951 construction seems to have been included at current prices without adjustment.

⁵ Soviet and other criticisms of the 1926/27 prices are too well known for repetition here (see, in particular, Donald Hodgman, *Soviet Industrial Production, 1928-51* (Cambridge, Mass., 1954), pp. 8-17). Alexander Gerschenkron has shown (*Review of Economics and Statistics*, May 1955, pp. 127-8) from both American and Soviet data that very much higher rates of growth are shown by index numbers of engineering output when based on price structures pertaining to earlier periods of industrialisation. Ira Scott (*ibid.*, November 1952, pp. 386-7) had pointed out that this form of index-number bias was not uniform to all industry, and Gerschenkron shows the bias to be phenomenal only for machinery. The bias—as will be indicated below—seems generally to affect national product estimates.

between the official series before and after 1950, for the only retrospective repricing undertaken was for the link year needed to splice the two indexes. The 1951 base prices are in themselves more reflective of real factor rewards than their predecessors but still germinate, so far as industry and transport are concerned, two seeds of distortion. The less important is the evolution of production since 1951 (introduction of new goods not produced, and consequently not priced, in 1951 and changes in the pattern of cost relationships).¹ The more important is the temporary abandonment of the full-cost principle in 1950. Industrial wholesale prices and freight rates were raised in 1949 to allow for the elimination of subsidies by 1950 and were deliberately sighted slightly below current average full costs (*i.e.*, they were based on the planned costs for 1950). In 1950, however, although costs had not fallen to the extent required, two sets of price cuts were made—in January and July—embracing even goods whose average cost already exceeded price (*e.g.*, timber).² The price lists introduced on July 1, 1955, are officially reported not only correct for the first group of divergencies but will apparently make a return to the full cost principle.³

II

The estimates of Soviet income prepared abroad fall into two groups: those which use a rouble valuation (predominantly studies of static structure) and those which are valued in foreign currencies (and attempt primarily interspatial comparisons).

The rouble valuations are dominated by the work of Bergson and his two collaborators.⁴ Bergson's aim was to extricate as many components of the national accounts as possible from Soviet sources, to estimate the others and to adapt these values at current transaction prices⁵ to a theoretically conceived "adjusted factor cost standard." Bergson envisaged this standard as, under certain assumptions, satisfying both a welfare criterion (for which commodity values are proportionate to marginal utilities,⁶ discounted

¹ As Genin, *op. cit.*, p. 74, makes specific references to these points, their effect cannot be wholly insignificant.

² The pricing policy changes of 1949 and 1950 were observed respectively by the present writer (*Economic Journal*, March 1950, pp. 89-90) and by Nove (*op. cit.*, pp. 260-1).

³ The scattered evidence for this view cannot be detailed in the present paper, but includes the price indexes (1955 over 1952) for certain products given in *Zasedanie Verkhovnogo Soveta S.S.S.R.* (Moscow, 1955), p. 242, and the evolution of costs as quoted in the annual plan reports and elsewhere.

⁴ Of the three studies noted at the beginning of the present article, that for 1937 was originally published in the *Quarterly Journal of Economics*, May and August 1950. The revisions in the final monograph were mainly confined to a different treatment of subsidies.

⁵ In 1928 most transactions responded to a freely functioning price mechanism, but for the later years studied this was probably true only of direct sales from farmer to consumer (now comprising about one-fifth of urban food supplies). Bergson has subsequently been elaborating price indexes to link these current-valued magnitudes: the first instalment of his study, written in collaboration with Roman Bernaut and Lynn Turgeon, on the prices of basic industrial products during 1928-50, was published in the *Journal of Political Economy*, August 1956.

⁶ Interpreting this, if necessary, as the preference schedules of the planning authorities.

very usefully codified the territorial coverage of the data (both contemporary and post-war published) concerning 1940¹—the areas incorporated between September 1939 and August 1940 having added one-eighth to the Soviet population. The 1944 study is of small interest and was included “as a war year of high military output” (p. 17) presumably because the United States Air Force was among the sponsors of the research. Not only are data scanty for the year (though there are more for 1944 than for other war years), but the computations lead in some instances to unreal results. Thus the earnings of collective farmers, assessed as better on average than those of (mainly urban) wage-earners in 1940, are put at 6% below wage earnings in 1944: under conditions of stringent rationing of urban consumers (at one period the ration card for the lowest category of consumer was valid only for grits and matches) it would seem to be obvious that, at least in terms of the maintenance of a normal consumption pattern, the peasant is at an advantage. Similarly, 1944 military earnings (inclusive of subsistence) are held to have been below average civilian wages by very much more than the pre-war differential at a time when rations for the Armed Forces were the highest in the scale. Nor is the final year selected, 1948, an ideal post-war year for the purposes of the study, principally because it was the year of maximum divergence from the criteria required by Bergson’s own “adjusted factor cost standard.” The reforms which came into effect on January 1, 1949 proscribed the subsidy system (a few remaining exceptions), fixed wholesale prices to cover costs and what could be termed capital charges (prices included an average profit of 2–5%, the more efficient firms to earn more than the mean) and initiated a downward trend in costs which has continued to the present. This downward trend, together with an overhaul of amortisation norms in 1950, brought depreciation charges nearer to the theoretical ideal (*i.e.*, that, summed over the asset life, they should equal original cost).² Later reforms, from 1953 onwards, have done much to eliminate other factor-price disparities. Compulsory delivery quotas, supplementary State purchases and machine-tractor station fees have been transformed squarely into Ricardian rent, free of the previous tax on efficiency. Factor services in agriculture—undervalued in comparison with other sectors since the late twenties—were better remunerated by virtue of a series of laws and decrees, of which the first was promulgated in August 1953, and which have continued to the time of writing. Finally, work began in 1955 to bring labour remuneration more into line with efficiency and disutility criteria in industry,³ construction and agriculture

In as comprehensive a piece of research as these three studies, requiring the discovery¹ and interpretation of statistics covering the whole of the Soviet economy, it is inevitable that some small errors can be discovered, but they are very few indeed. Bergson seems misinformed in stating (p. 113) that as premia from the Directors Fund are already included in wage bills, there is some double-counting in the computed gross national product, for Gozulov² makes it clear that these premia are excluded. Bergson refers (p. 117) to an inconsistency in Soviet sources between figures of working capital and attributes it “very likely” to a difference in coverage. It is more probable that one set of figures excludes and the other set includes the so-called “excess working capital,” which has to be transferred to the budget at the end of the year. Finally, he finds (p. 122) the scope of State expenditure on “forestry” unclear, since “lumbering generally is included under industry”: the outlays are on forest services (fire prevention, re-forestation, seedling nurseries, etc.). Bergson and Heymann wrongly assume (p. 74) that Soviet statistics of fixed capital stock are net of depreciation, whereas the Statistical Administration, primarily concerned with assessing useful capacity, allows only for retirements. They could have gone further in suggesting (p. 132) that rents may not much exceed operating expenses and depreciation, as Soviet text-books on housing administration show that rents do not always cover depreciation. Moreover, they use the official scale relating rent to the tenant’s wage to compute (p. 135) for 1944 and 1948 respectively rentals of 1.50 and 1.90 roubles per square metre, although the regulations set a maximum of 1.45 roubles. It may also be recorded, though the information making the computation possible was not published until after the studies had appeared, that the 1948 urban housing stock was some 310 million square metres of living area,³ compared with their figure (p. 132) of 261 million. On the other hand, later information has shown the accuracy of their estimates of wages and retail turnover.⁴ Subsequent official statements have also vindicated their assessment of the place of the budget surplus “as the counterpart of bank financed working capital and dishoarding by economic organizations and households” (p. 215), although they were misled (p. 214), presumably by the pre-war decline of long-term bank credit (41% of bank loans in 1933, 13% in 1940, 15% in 1950), into concentrating attention on short-term credits.

A methodology similar to Bergson’s had earlier been developed by Jasny.

direction had become a dead letter, and that the correlation of wages and productivity had been impaired in order to maintain wage/disutility relationships.

¹ Something like an official statistical abstract was available only for 1928 and 1937, and in the case of the latter year was restricted in scope.

² *Op. cit.*, pp. 282–3.

³ Nor were they to know that, beginning with 1948, global housing data began to be quoted in terms of useful area: they assumed that the previous practice of measurement in living area (*i.e.*, excluding kitchens, bathrooms, etc.) was still in force.

⁴ Cf. the present writer in *Soviet Studies*, July 1955, pp. 43 and 45.

¹ Their evidence on the coverage of the agricultural data is slight, but better proof is to be found in the sown-area statistics for 1940 published in 1941, which may be shown to comprise the whole of the end-1940 territory, whereas those for the same year published after the war exclude the Bialystok region (incorporated in 1939 but retroceded to Poland in 1945).

² Bergson, p. 59, stresses the divergence from this ideal caused by inflation and overestimation of service life in the years studied.

³ Official statements foreshadowing these reforms have shown that, contrary to the view expressed by Bergson and Heymann (p. 58) on post-war developments, the 1940 decree on labour

He has computed ¹ national product totals in terms of his "real 1926/27 prices," ² goods not in production in that year being aligned with comparable goods for which a 1926/27 quotation is available. As Hoeffding has shown that the established price structure of 1928 diverged relatively little from the "adjusted factor cost standard," ³ the Jasny and Bergson criteria are reasonably close to each other. The resulting estimates of national product, both by origin and by use, are, however, at wide variance—compare, for example, their 1937 estimates of the share of agriculture (Table II) and consumption (Table III)—the principal reason being Jasny's wholesale rejection of many Soviet statistics which Bergson accepts. Thus Jasny claims that retail turnover declined in each successive year studied (admitting it a "startling result" when urban population increased 2.8 times during the period) and that the rates of growth of industrial production and construction were half those shown by the official statistics between 1928 and 1948. Much—though not all—of his deflation of the Soviet data in "1926/27 prices" originates in the price indexes he computed. He was the pioneer in the field—official Soviet price series not having been published for a quarter of a century—and it must be recognised that three studies which have followed his agree remarkably with his findings. His retail-price index, although based on a mere sixteen goods and four services, shows precisely the same rise between 1928 and 1948 as one (based on 94 and 149 items in each decade respectively) compiled by Mrs. Chapman,⁴ and his investment-goods price index is little different from those recently published by Wiles⁵ and Bergson.⁶ On the other hand, the industrial production index at which he arrived—showing a 220% increase between 1928 and 1948—is considerably below any alternative estimate. Thus Hodgman,⁷ weighting 137 products with 1934 industrial wage-bills, showed a 364% rise (and there seems good evidence for considering this an understatement)⁸; Seton⁹ computed an

¹ Naum Jasny, *The Soviet Economy during the Plan Era* (Stanford, Calif., 1951), for estimates to 1948 and in *Social Research*, Spring 1954, for 1948 to 1950.

² In *Journal of Political Economy*, August 1947, Jasny considers the main defects of the official series other than those of the 1926/27 prices to be the inclusion of unusable goods (e.g., harvest losses or spoilt output); inadequate amortisation; the unrecorded decline in home processing; poor coverage of small-scale industry in the earlier years; and such miscellaneous faults as the inadequate allowance for seed.

³ Apart from the exclusion of indirect taxes and subsidies normal to factor cost, Hoeffding's only quantitative adjustment is for differential profit incidence, involving no more than a 1% reduction in household consumption.

⁴ Janet Chapman, *Review of Economics and Statistics*, May 1954.

⁵ Peter Wiles, *Encounter*, November 1955, p. 66.

⁶ A. Bergson, R. Bernaut, L. Turgeon, *op. cit.*, use considerably more refined methods and a much wider range of quotations: they show a 1949 index for basic industrial products (excluding tax) of 534 (1928 = 100) compared with Jasny's 500–600 (1926/27 = 100).

⁷ D. Hodgman, *op. cit.*, p. 89.

⁸ Cf. reviews of Hodgman's methods by Francis Seton, *Soviet Studies*, October 1955, and Richard Moorsteen, *American Slavic and East European Review*, February and April 1956.

⁹ F. Seton, *The Tempo of Soviet Industrial Expansion* (a paper read to the Manchester Statistical Society on January 9, 1957).

increase of 414–421% between those dates by applying regression equations relating the manufacturing indexes and energy and steel inputs of fourteen capitalist countries to Soviet energy and steel inputs; Clark¹ with, however, a mere twelve items to weight in his "international units," obtained a 1940 value of 3.4 times 1928 (1948 output is generally agreed to have regained the 1940 level); and Gerschenkron's dollar-priced index for heavy industry² summed with the Soviet series for light industry³ showed a 3.5-fold increase on 1928 in as early as 1937. No such comparison can be made with his agricultural output estimates, in which his work stands alone, but the relationship he shows between farm and non-farm earnings seems better founded than those of Bergson and Hoeffding. In reproducing his figures (in Table III) no account is taken of his apparent error in deducting, as an alleged duplication, the labour remuneration component of public-service outlays.

Seton's study,⁴ like Bergson's, is confined to structural analysis, in this instance for 1934: it is modelled on the form of national accounts developed by Stone and seeks maximum comparability with Bergson's accounts for 1937 in established prices. Although Seton is more detailed than Bergson, there seems only one difference in methodology, and that is minor; whereas the latter uses rentals for State-owned housing for the imputed rent of owner-occupied dwellings, Seton takes a Soviet estimate of depreciation on non-socialist property (i.e., including private farm capital) and provides no depreciation in the operational account of individual producers. This means that some outlay and income properly in the business ledger is entered in the household ledger. A similar, but even less significant, partial mis-entry is the attribution of Savings Banks deposits wholly to households, whereas some are made by institutions otherwise entered under business. Moreover, in confronting their estimates with the Soviet statistics of product distribution by use, Seton differs from Bergson in interpreting the division between "consumption" and "accumulation": Seton includes defence in "consumption," while Bergson puts the munitions component in "accumulation" and pay and subsistence in "consumption." Both in fact seem wrong:⁵ some share of munitions is included with pay and subsistence under "consumption," the remainder appears as "accumulation." Seton, while briefly discussing the effects of the established price structure, presents his accounts in current market prices, adopting the Soviet convention of valuing farm income in kind at the average price realised for cash sales, but rejecting their convention of applying procurement taxes to in-

¹ Colin Clark, *The Conditions of Economic Progress*, 1951 edition, p. 186.

² Alexander Gerschenkron, *Review of Economics and Statistics*, May 1955.

³ Very much less influenced than heavy industry by the inflation of "1926/27 prices" as a result of the incorporation of new products.

⁴ F. Seton, *Review of Economics and Statistics*, August 1954.

⁵ Cf. D. A. Allakhverdyan, *Nekotorye voprosy teorii sovetskikh finansov* (Moscow, 1951), pp. 30 and 31, and M. Bor, *op. cit.*, p. 89.

dustrial value-added. The value of his accounts lies in the ingenious excavation of the figures which Soviet statisticians would have produced had they been asked to draw up a Stone-type matrix. Accounts for 1948 and 1953 drawn up by Nove¹ resemble those of Bergson rather than Seton but without any Bergson-type adjustment from current market prices. In quoting Nove's estimates, Wiles has applied sector-price indexes, calculated (except for consumption) by himself, to obtain growth rates in comparable prices. As would be expected for a period so short as 1948-53, the difference between base-year and end-year weighting is small—though even so, not insignificant, but the spread that he shows in applying his price indexes to compare Hoeffding's 1928 figure for gross national product with Bergson's datum for 1937 is a further vindication of Gerschenkron's hypothesis of inherent index number bias: on base-year weights the rise is 115% but on end-year weights only 58%. For his rate of growth Wiles uses the geometric mean of the two.

An impressive series of summary breakdowns of Soviet national product by use and by origin has been prepared by Block.² He has extended, with small modifications, Bergson's adjusted factor cost measures to 1953 but as yet only the results of his computations have been published.

Much less detailed accounts, also at current market prices, had earlier been prepared for 1940 by Baran,³ Rosen⁴ and Wyler.⁵ Baran's object was not so much to prepare an account as to piece together items of national outlay for the sake of the total (used for comparison with United States magnitudes). Rosen's objective was more limited—to relate a breakdown by use, given by the then Chairman of the Soviet State Planning Commission,⁶ to current price outlays, but he based his computation on an error (confusing State investment with total "accumulation") and "proved it" by circular argument. A similar error was made in a computation by Laurat,⁷ who made the further error of confounding national-income figures in 1926/27 prices with budget data in current prices. Wyler, whose dollar revaluation of the Soviet national product for four inter-war years is considered in the next section, confined himself to synthesising data computed by Jasny and Baran with Soviet budget statistics: the main subject-matter of his paper was a summary review of official and non-Soviet estimates published up to 1951. Prokopovicz, in his works written outside Russia, commented on the shortcomings of the official series, and made some corrections both to his

¹ Nove's accounts have been only privately circulated, but his use-breakdown has been reproduced by Peter Wiles, *loc. cit.*

² Herbert Block in *Trends in Economic Growth* (Washington, 1955, pp. 16, 57, 71 and 284), prepared for the Joint Committee of the United States Congress on the Economic Report.

³ Paul Baran, *Review of Economic Statistics*, November 1947.

⁴ Julius Rosen, *Schweizerische Zeitschrift für Volkswirtschaft und Statistik*, No. 1, 1950.

⁵ Julius Wyler, *ibid.*, Nos. 5 and 6, 1951.

⁶ Nikolai Voznesensky, *Voyennaya ekonomika S.S.S.R.* (Moscow, 1947).

⁷ Lucien Laurat, *Bilan de vingt-cinq ans de plans quinquennaux* (Paris, 1955).

own 1913 and to the later Soviet data.¹ A rough calculation in the *Economist* of December 18, 1948, converted 1926/27 priced Soviet estimates into current roubles by applying an unexplained price index.

To the present writer's knowledge,² the only other rouble-priced estimates are those incidental to the rate-of-growth studies of Goldsmith and Grossman. Goldsmith³ constructed some income figures for pre-revolutionary years in an as yet unpublished study. Grossman⁴ suggested an approximation to an "ideal" measure of the rate of growth (the geometric mean of a chain index, each annual value of which is weighted according to the cost structure of that year) by taking the geometric mean of two indexes, the one using initial-year and the other final-year cost-weights, adapting Jasny's estimates for this purpose.

III

Of the estimates of Russian and Soviet national income translated into foreign values for international comparison,⁵ the earliest are those of Levi,⁶ now nearly a century old, and Mulhall,⁷ both in terms of sterling. Goldsmith (*op. cit.*) deprecates both as rough guesses because, despite a comparison of Levi's figure with Prokopovicz's, which shows a rate of growth similar to his own computation, he finds no supporting sources and methods. It is clear, however, that Levi used estimates of household incomes stratified

¹ In *Memorandum of the Birmingham Bureau of Research on Russian Economic Conditions*, No. 3, 1931, he deflated the Soviet figures to something like factor cost by excluding excise duties (but did not add in subsidies), revised agricultural income slightly upwards and added estimates for depreciation, and certain forms of transport, postal and restaurant services where these had been covered insufficiently (or not at all) by the Soviet data. In his *Quarterly Bulletin of Soviet Russian Economics*, March 1941, and *Histoire économique de l'U.R.S.S.* (Paris, 1952), he indicated the direction (and sometimes the rough magnitude) of the corrections to the Soviet statistics which he found necessary in each producing sector; Chapter VI of his *Russlands Volkswirtschaft unter den Sowjets* (Zurich, 1944) develops a sector breakdown of national product for five years between 1913 and 1937 based on the official figures in 1926/27 prices. Only his 1931 study presented a complete revision of the official accounts.

² He acknowledges with thanks the help of Professor Giorgio Fua and Drs. Lief Bjork, Eugène Zaleski and Theodor Zotschew for confirming the absence of other estimates in, respectively, the Italian, Scandinavian, French and German languages. There is, however, a growing Continental literature on Soviet national-accounting methodology, cf. Jan Marczewski, *Income and Wealth*, IV (London, 1955); Stefano Somogyi, *Critica Economica*, No. 3, 1951, and there are, naturally enough, many studies in eastern European journals.

³ Raymond Goldsmith, *The Economic Growth of Russia 1860-1913*, paper presented to the Fourth Conference of the International Association for Research in Income and Wealth, Hindsøgl, Denmark, 1955. (Preliminary draft, privately circulated.)

⁴ Gregory Grossman, "National Income" in A. Bergson (ed.), *Soviet Economic Growth* (Evanston, Ill., 1953); a Soviet notice of the book (*Planovoe Khozyaistvo*, No. 4, 1954, p. 79) observed with pleasure that "even using every device and slander to discredit Soviet statistics," the Soviet rate of growth was shown to exceed that of any capitalist country.

⁵ Interspatial comparisons of the consumption sector of national income by household budget and price comparisons are excluded from the present study.

⁶ Leone Levi, *Quarterly Journal of the Statistical Society*, March 1860, p. 42.

⁷ Michael Mulhall, *The Dictionary of Statistics* (London, first edition 1884—fourth edition, 1909); reference here is to the fourth edition.

by class-group (his method for computing United Kingdom income in the same and later papers), and it was not much later that family budget studies were published in Russia.¹ Mulhall is clear enough on his methods, though less so on his sources, but the mystery in his figures is the inexplicable divergence between his breakdown by nine originating sectors for around 1890 (p. 320) and by eight mostly identical sectors for 1895 (p. 747): the rate of growth shown by the two estimates is, moreover, unrealistically small by reference to crop and industrial outputs of the time. No other valuation in sterling, or any other foreign money, appears to have been made until Polanyi's calculation² in the mid-thirties. On the consumption sector his method was reasonably sound (agricultural output valued at British wholesale prices and the annual wage-bill converted to sterling on a retail purchasing-power parity), but he confused investment with the gross value of producer goods. Clark improved upon this procedure, first in 1939 and in four subsequent revisions.³ He avoided Polanyi's main error by valuing a sample of capital goods in sterling (in later revisions in dollars) and inflating to gross investment in the proportion shown by those goods within the United States gross investment; consumption of food and house-space was directly revalued, but for other services (including Government) he used rouble valuations converted at an estimated equivalent purchasing power. Brown⁴ used Clark's 1934 and 1937 estimates, together with State budget data for rough estimates of war-time national income.

Soon after the war two dollar-valued estimates appeared. Wyler⁵ adopted the technique of thorough-going revaluation: although he did not furnish details of his valuations (in 1940 dollars), he stated that:

"the technique of conversion was adapted to the nature of the data available for each output or expenditure group. Where no measure of the quantity or quality of the output was possible, as in the case of civil servants and soldiers, an appropriate average value of the individual services was imputed. Farm operatives' income in kind was imputed at American retail prices" (p. 508).

The effect of this procedure was, in particular, to inflate, relative to Soviet values, services and farm consumption in kind. Baran (*op. cit.*), on the other hand, tried a short cut by employing a dollar-rouble conversion factor derived from a Soviet revaluation of the United States national income into

¹ Cf. A. A. Kaufman, *Statisticheskaya nauka v Rossii: teoria i metodika 1806-1917* (Moscow, 1922), pp. 70-9.

² Michael Polanyi, *The Manchester School*, No. 2, 1935.

³ C. Clark, *A Critique of Russian Statistics* (London, 1939); in *Review of Economic Statistics*, November 1947, and in *The Conditions of Economic Progress* (London, 1940 and 1951); a third edition is in the press.

⁴ A. J. Brown, *Bulletin of International News*, March 4, 1944, for 1941 and 1943 estimates and A. J. Brown, *Applied Economics* (London, 1947), pp. 69 and 70, for 1941 (revised) and 1944 estimates.

⁵ Julius Wyler, *Social Research*, December 1946.

roubles.¹ Jasny² has demonstrated the errors Baran's route involved, but believes that so far as the 1940 factor-cost estimate is concerned the errors offset each other. Baran's 1937 dollar valuation was less than it should have been because the "1926/27 prices" used in the conversion factor with 1929 dollars was presumably the 1937 lists, and consequently included goods newly produced between 1929 and 1937 at inflated prices. On the other hand, his 1937-40 link overstated the actual increase because Baran unreservedly used the official Soviet data in "1926/27 prices." Jasny also rightly points out that Baran's conversion of his dollar-priced national income at factor-cost into gross national product at market prices on the basis of established Soviet prices implies the same weight of indirect taxes in United States as in Soviet prices. This procedure, however, commends itself to Dobb,³ who calls Baran's factor-cost figure very nearly a measure at prime cost, since indirect taxes might be regarded as "that part of profit (and other property income) in a capitalist economy which is devoted to capital investment." Baran's method was used in an estimate prepared by the United Nations Statistical Office for 1949,⁴ primarily to assist the determination of contributions to the Organisation. The main change from the methodology used by Baran was to apply "a statistical correction for the upward trend of the index of national income in constant prices": the magnitude of the correction was not stated. There are, finally, two dollar-priced valuations for 1953 made by Harvey and Block in the United States Department of State,⁵ which differ from each other by a margin of 28%. No computation details have been published for either figure, but one may hazard a guess (see Table IV) that Harvey's is in fact based upon the United Nations estimate for 1949.

IV

As the estimates described in the preceding sections are tabulated in comparable form in an Appendix, the only commentary needed is to draw attention to methodological or conceptual features which cause significant divergence between them. In Table I the rate of growth shown by the Soviet estimates while the "1926/27 prices" were in use (1928-50) is considerably higher than alternative estimates for the same period and for the period since the abandonment of that price valuation. In fact, the 11% annual increase shown for 1950-55 is between the 12 and 13% hazarded by Jasny for 1948-50 and the 9% shown for 1948-55 by Wiles' adaptation of

¹ By M. Kolganov, *Problemy Ekonomiki*, No. 4, 1940, p. 111. Kolganov has recently published (*Voprosy Ekonomiki*, No. 11, 1955) a reclassification of 1950 United States national income into Soviet concepts and presents it as a reply to the Bergson studies.

² *The Soviet Economy during the Plan Era*, pp. 38-9.

³ *Review of Economics and Statistics*, February 1948, p. 37.

⁴ United Nations, *National and Per Capita Incomes of Seventy Countries in 1949* (New York, 1950).

⁵ Mose Harvey in *Industrial Russia* (*Studies in Business Economics*, No. 44, 1954), p. 7; H. Block, *op. cit.*, p. 16.

Nove's estimates. The rates of growth shown between the start of the First Five-year Plan and the war are greater in the rouble valuations (Grossman, Jasny and Wiles) than those in dollar prices (Clark and Wyler), since the latter are those of a more developed industrial structure.

An interesting feature of Table II is the quantitative difference between the Soviet and "bourgeois" concepts of the national product, *i.e.*, the value of "non-material services" excluded from the Soviet accounts. Seton and Bergson showed the addition to net material product to be almost one-fifth in 1934 and 1937 if measured in Soviet established prices, compared with 23.5% in Hoeffding's study of 1928. The differential is larger at factor cost because the incidence of indirect tax is heavier upon material production.¹ Jasny's computation of this margin is methodologically unsatisfactory. A recent recalculation of the 1950 United States national income to the Soviet concept by a well-known Soviet statistician² shows a difference of 27.5%, but it must be borne in mind that services occupy a larger place in the United States than in the Soviet economy. The variations between the origin breakdowns shown by the available estimates up to 1928 may be ascribed to relatively minor differences in accuracy and definition (*e.g.*, of transport), but the decline in the relative share of agriculture as collectivisation temporarily reduced output and as industry expanded after 1928 is very differently assessed. Jasny, using his "real 1926/27 prices," shows an even more rapid fall than the Gosplan estimates in the official "1926/27 prices" and Bergson in established prices. Bergson's revaluation of farm consumption and elimination of turnover taxes from manufacturing considerably raises the agricultural at the expense of the industrial share.

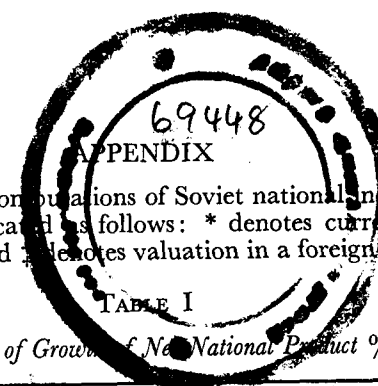
Similarly the exclusion of turnover taxes sharply reduces the indicated share of consumption (Table III). The lowest share is shown by Jasny for 1948, computed in prices of a year when indirect taxes were very light, but Bergson and Heymann also indicate a low proportion, the main element in their adjusted factor cost being the deduction of turnover taxes: inclusion of these taxes (by them and by Nove) raises its share by 13 points. Clark's repricing in dollar values also diminishes consumption, since the tax element in those prices is relatively lower than in the Soviet Union, but not so much as by Wyler, despite his revaluation of food consumption on farms at retail prices.

The most uncertain set of estimates are those which try to situate the Soviet income magnitudes into international comparison. It has been shown that the size of a national product in relation to that of a more-industrialised economy is higher when valued in the prices of a more-industrialised economy (or in domestic prices of a later stage in industrialisation) than when valued in prices of a less-industrialised economy (or

earlier stage).¹ Both using United States prices Clark and Wyler nevertheless obtain for the inter-war period quite different magnitudes—the latter exceeding the former in 1940 by more than one-third. Wyler attributes the discrepancy to different index-number usage and inaccuracies in the basic statistics used by Clark. Block² used Jasny's Soviet-priced and Clark's American-priced estimates for a comparison of Soviet net national product with that of the United States: for 1928 and 1937 respectively the Soviet-priced set showed 15% and 25% while the American-priced set showed 30% and 37%. For the post-war years rough estimates are available in both Soviet and foreign prices and, if only an order of magnitude is required, the Soviet national product at United States prices seems to be one-third the size of the United States product, and at Soviet prices one-quarter the size.

Geneva.

M. C. KASER



The price bases of the computations of Soviet national income reproduced in Tables II and III are indicated as follows: * denotes current prices, † denotes prices of a different year and ‡ denotes valuation in a foreign currency.

TABLE I
Annual Average Rate of Growth of Net National Product % per annum

From: To:	1870 1885	1885 1900	1900 1913	1928 1937	1937 1940	1948 1950	1950 1955
Soviet official	—	—	2½	16	9	19	11
Clark, 1951 ^a	—	—	—	4½	8	—	—
Clark, 1951 ^b	—	—	—	2½	7	—	—
Grossman, 1954	—	—	—	7	—	7	—
Jasny, 1951 ^c	—	—	—	8	6½	—	—
Jasny, 1951, 1954 ^d	—	—	—	9	7	12½ ^e	—
Wyler, 1946 ^f	—	—	—	7	6	—	—
Wyler, 1951 ^g	—	—	—	5½	8	—	—
Block, 1955	—	—	—	—	—	10	6 ^h
Composite	3½ ⁱ		4½ ⁱ	7 ^j	—	9 ^j	

^a Valuation in United States dollar prices.

^b With Fisher-type allowance for valuation in rouble prices.

^c Distribution method. ^d Production method. ^e 12–13%.

^f National income. ^g Social product. ^h 1950–53.

ⁱ Relationship of 1860 (Levi), 1895 (Mulhall) and 1913 (Clark) converted into dollars at contemporary exchange-rates and inflated by United States price-index to a common year.

^j Relationship of 1928 (Hoeffding), 1937 (Bergson), 1948 and 1953 (both Nove) converted into comparable prices by Wiles, 1955.

¹ But the rate of growth is lower. For a discussion of this problem with particular reference to comparisons between the Soviet Union and the United States see *Trends in Economic Growth*, *op. cit.*, pp. 54–9.

² *Op. cit.*, p. 57.

¹ Bergson ignores the tax on "non-merchandise operations," which is the form of turnover tax levied on services, but the effect is insignificant.

² M. Kolganov, *Voprosy Ekonomiki*, *loc. cit.*

TABLE II

Net National Product by Origin

Percentages of net material product *

Year and source.	Agriculture.	Industry. ^b	Construction.	Transport and communications. ^c	Trade.	Services.
<i>At market prices :</i>						
1895 (Mulhall, 1909) †	43.6	32.8		9.7	13.9	35.1
1900 (Prokopovitch, 1906) *	45.4	30.8	7.2	8.1	8.5	—
1913 (Prokopovitch, 1918) *	47.7	27.9	7.2	8.9	8.3	—
1925/26 (Gosplan, 1929) *	45.9	33.5	5.0	2.4	13.2	—
1928/29 (Gosplan, 1929) *	39.5	39.0	6.5	3.2	11.8	—
1928 ^d (Hoeffding, 1954) *	40.7 ^e	45.1		5.7 ^f	8.5	23.5
1934 (Gosplan, 1936) †	16.8	51.9	12.0	5.4	13.9	—
(Seton, 1954) *	27.9	49.3	7.6	4.6	10.6	19.5
1937 ^d (Gosplan, 1939) †	25.7	56.0	5.8	3.0	9.5	—
(Bergson, 1953) *	26.2	58.1		4.7 ^f	11.0	19.6
(Jasny, 1951) †	19.4	52.4	10.9	9.8	7.5	10.0
1940 (Jasny, 1951) †	18.6	55.2	9.4	10.1	6.7	11.0
<i>At adjusted factor cost^g :</i>						
1928 (Hoeffding, 1954) *	45.3	41.5		6.0 ^f	7.2	25.2
1937 (Bergson, 1953) *	39.8	47.1		6.8 ^f	6.3	27.7

* I.e., Soviet definition of national product.

^b Including forestry, fisheries and public utilities.^c Freight carriage; the distribution of communications between this head and "services" varies, but no adjustment has been attempted because exact data are lacking and the quantities involved are small.^d Clark, 1951, gives the following distribution of net national product:

	1928.	1938.
Agriculture, forestry and fisheries	36.7	25.9
Large-scale manufacture	9.4	20.0
Other manufacturing and services	53.9	54.1

^e Forestry and fisheries (included with agriculture by Hoeffding) transferred to industry on the basis of Gosplan data for the same year.^f Use by individuals of transport and communications transferred to services, at an estimated one-third of total (as shown by Seton, *op. cit.*, for 1934).^g Block, 1955, uses this adjusted factor cost (with higher imputed land rent than Bergson) for the following distribution of net national product:

	1937.	1948.	1953.
Agriculture	36	28	23
Industry	34	36	46
Transport and communications	7	8	10
Trade and services	22	28	21

TABLE III

Gross National Product by Use

Percentages of net national product

Year and source.	Consumption.	Social services.	Administration. ^a	Defence. ^b	Net investment.	Depreciation.
<i>At market prices :</i>						
1928 (Hoeffding, 1954) *	75.6	5.4	2.7	2.5	13.8	8.9
(Jasny, 1951) †	73.4	4.9	2.5 ^c	2.4	16.8	—
(Wyler, 1946) †	72.9	10.4		4.0	6.4	—
1934 (Wyler, 1946) †	62.2	18.3		6.1	13.4	—
(Clark, 1947) †	69.4	16.8			13.8	—
(Seton, 1954) *	65.9	6.4	1.5	3.7	22.5	5.5
1937 (Bergson, 1953) *	64.1	9.6	2.6	6.1	17.6	2.0
(Jasny, 1951) †	41.2	7.4	2.5 ^c	10.0	38.9	—
(Wyler, 1946) †	58.2	18.2		11.4	12.2	—
1938 (Clark, 1947) †	66.7	21.0			12.3	—
1940 (Bergson, Heymann, 1954) *	64.8	8.2	3.1	12.7	11.2	2.9
(Wyler, 1946) †	44.1	18.2		25.0	12.7	—
1941 (Brown, 1947) †	58.5		7.5	18.0 ^d	16.0	—
1943 (Brown, 1944) †	55.0		7.0	30.0 ^d	8.0	—
1944 (Brown, 1947) †	51.0		7.0	32.5 ^d	9.5	—
(Bergson, Heymann, 1954) *	52.2	6.5	2.9	28.9	9.4	2.3
1948 (Bergson, Heymann, 1954) *	59.0	10.7	4.9	8.3	17.1	1.8
(Jasny, 1951) †	30.7	7.4	3.3 ^c	19.2	39.4	—
(Nove, 1955) †	60.6	15.4		7.5	16.5	0.6 ^e
1953 (Nove, 1955) †	54.7	15.3		10.3	19.7	1.5 ^e
<i>At adjusted factor cost :</i>						
1928 (Hoeffding, 1954) *	73.0	5.7	2.9	2.7	15.7	9.8
1937 (Bergson, 1953) *	57.2	10.9	3.2	7.9	20.8	2.7
1940 (Bergson, Heymann, 1954) *	57.3	9.3	3.7	16.2	13.5	3.7
1944 (Bergson, Heymann, 1954) *	42.4	7.8	3.5	35.2	11.1	2.8
1948 (Bergson, Heymann, 1954) *	46.3	11.9	6.0	11.9	23.9	2.3
(Block, 1955) † *	49	10	5	15	21	(2.3)
1953 (Block, 1955) † *	48	8	4	16	24	(2.3)

^a Including internal security services.^b Outlays classified as defence in the State Budget, but excluding pay and subsistence.^c In the absence of a computation by Jasny, outlays on administration have been estimated as bearing the same relation to social services as they showed in current prices.^d Military pay and subsistence have been computed as the share of total defence outlay (in which they were included by Brown) shown by Bergson and Heymann and transferred to consumption.^e As recorded in the books of Soviet enterprises.^f Percentages of gross national product deflated to net by the Bergson, Heymann depreciation estimate for 1948.

TABLE IV

Valuation of National Income in United States Dollars of 1953 Purchasing Power

Billions of dollars

	Net national income.		Gross national product.	
	Soviet factor cost.	Foreign market prices.	Soviet market prices.	Foreign market prices.
1860	—	6 ^a	—	—
1895	—	18 ^b	—	—
1913	—	40 ^c	—	—
1928	—	41, ^c 46 ^d	—	—
1937	—	56, ^c 85 ^d	—	—
1940	70 ^e	75, ^e 102 ^d	100 ^e	—
1944	—	76 ^f	—	—
1949	66 ^g	—	—	—
1953	86 ^h	—	—	110 ⁱ

Note. The price index used to inflate to 1953 prices is that of the United States Bureau of Labor Statistics; sterling valuations have been converted to dollars at the contemporary exchange-rate.

^a Levi, 1860.

^b Mulhall, 1909.

^c Clark, 1951 (using only his values directly using United States dollar prices: his adjustment for rouble-price valuation was not suitable for inflation to 1953 United States prices).

^d Wyler, 1946.

^e Baran, 1947.

^f Brown, 1947.

^g United Nations, 1950.

^h Harvey, 1954. This coincides exactly with an inflation of the United Nations, 1950, estimate for 1949, by an index in Soviet factor costs computed by Block, 1955.

ⁱ Block, 1955.

REVIEWS

Policies to Combat Depression. A Conference of the Universities—National Bureau Committee for Economic Research. (Princeton, New Jersey: Princeton University Press for the National Bureau of Economic Research (London: Oxford University Press), 1956. Pp. 417. 68s.)

THE fourteen papers brought together in this volume were presented at two conferences at Princeton in the autumn of 1953 and the spring of 1954. As the title indicates, the purpose of the conference was "to survey the existing state of readiness to deal with the problem of depression, in terms both of understanding the problem and the availability of instruments to deal with it." It should perhaps be added that the material relates entirely to the United States.

The papers fall into two groups. The first three, by Gordon, Caplan and Boulding, examine the various types of depressions in the past, ask which are likely to be repeated in the future and discuss in general terms the most suitable types of remedies. The remaining eleven deal with more specific measures and examine their likely degree of effectiveness with great thoroughness. One of the most interesting is "The Stabilising Effectiveness of Budget Flexibility," by Lusher. He attempts a statistical estimate of the stabilising properties of United States Government revenues and expenditure and comes out with the result that in a recession the decline in GNP will be mitigated by 30–40%: the actual decline in GNP, that is to say, will be 30–40% less than it would be without the stabilising effect of Government revenues and expenditures. This is a remarkable and far too little understood change compared to the position at the beginning of the 1930s, when United States Government budgets *aggravated* the downturn by some 10–20%. The paper by Goode—"The Corporate Income Tax in a Depression"—offers some interesting, though non-statistical, analyses of the ways in which the corporation tax assists, or could be made to assist, in the process of built-in flexibility. Other papers deal with the role of income tax in a depression, the place of social-security programmes, farm-price-support programmes and so on. Whilst these all maintain a high standard of discussion, it is somewhat aggravating to find that the paper by Roosa on "The Role of Monetary Policy," which one suspects may have been one of the most interesting, is reproduced only in abstract form.

Enough has been said to indicate that this is an unusually good symposium. Indeed, it is a good deal better than the results of a conference have a right to be! Two final reflections remain. The first is that surely one of the best guarantees the world has against an acute American recession is that Americans are prepared to give so much thought to the subject.

Second, is there any prospect of a corresponding amount of knowledge and thought on these lines being built up in this country, or for that matter, any country in Western Europe?

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The Economics of Repressed Inflation. By H. K. CHARLESWORTH. (London: Allen & Unwin, 1956. Pp. 126. 13s. 6d.)

Inflation and Capital. By F. V. MEYER. (Cambridge: Bowes & Bowes, 1954. Pp. 75. 12s. 6d.)

FOR the importance of the subject—and for its practical significance to economists, a predominantly fixed-income profession—the quantity of the economic literature on inflation is remarkably small. Our knowledge of it needs building up in both of two ways: through theoretical analysis of its processes, in which attention to the timing of its phases will be more revealing than methods of general equilibrium analysis, and through case-studies. In recent years Bent Hansen's *Study in the Theory of Inflation* has provided an example of the first, and A. J. Brown's *The Great Inflation* of the second. Mr. Charlesworth chooses his ground well in confining his study to what is likely in practice to be the relevant case: the case where inflationary pressures, for social reasons, will neither be allowed to work themselves out fully in the open nor can be entirely bottled up by a total (or totalitarian) system of controls, but where in some part of the economy natural forces are thwarted by rationing, allocations and price control. But he makes the mistake of falling heavily between the two methods of approach suggested above. His mind is obviously dominated by the experience of the United Kingdom in the period from 1939 to 1950, but he does not offer us a case-study of what actually happened in that period. He uses it instead as a springboard for a theoretical discussion of the effects of a partial repression of inflation on savings and the supply and productivity of factors. His theoretical discussion, however, is apt to be confused by particular features of the period he has in mind which have no close relevance to the problems he is trying to elucidate. Thus he is apt to bring in observations about the supposed effects of a highly progressive system of taxation of income or of heavy "social" investment, which, while they may be highly relevant to an understanding of the economic history which is in the forefront of his mind, and may be important causes of the inflationary situation which gives him his starting-point, are not particularly relevant to the results of dealing with that situation by the method of partial repression. He is inspired by a particular case and attempts a general discussion; but he fails to keep the two distinct. He indulges in considerable diagrammatics to establish points about the distorting effects of controls which are by now familiar; there is little effort

to tackle the much more important, and little studied, questions concerning what makes these distortions mild in some cases and deadly in others. Mr. Charlesworth is one of those economists who are apt to be more excited by the existence of distortions than by their size. Nor is his analysis impeccable. He comes close to confusing the marginal utility of income with the marginal utility of money (pp. 31–2); and he is capable of such appallingly loose sentences as: "the quantity which will be consumed is that at which the price is equal to the relative marginal utility" (p. 70). When discussing a totally repressed inflation, where there is a fixed ration of every good, he states that the supply curve of labour will be infinitely inelastic (p. 35). In fact, he means it will have an elasticity of minus one. This mistake is repeated in the diagram on p. 41.

The main object of Mr. Meyer's monograph is to present estimates of the national capital in 1938 and the post-war years up to 1952. His method is to use *The Economist's* computations of industrial profits and the profits figures in the National Income Blue Book. The latter divided by the former is used as a factor to gross up the capital of the companies in *The Economist's* sample. The capital which is thus grossed up, however, is their issued capital. So what we have are estimates of issued industrial capital. The national capital is a concept which usually has about it the aura of something more "real" (in some sense) than the capital that a firm has issued; it is about machines, not about paper. Measuring the paper may be a good way of learning something about the machines. But one would expect someone who thought so to spend some time discussing this view and justifying it to his readers. Mr. Meyer gives it a footnote. He is almost equally terse with other statistical questions, including the vital one of the price indices to be used in obtaining estimates of the real national capital; these are given three lines of a footnote in a table. His first estimates he later refines by making a distinction between the National Capital Stock and the Real National Capital. This appears to be based in the idea that profits are a function both of the quantity of capital and of its profitability, so that if you want to use profits as an index of the quantity of capital you must discount them for changes in its profitability. But this has to be puzzled out by the reader himself almost entirely unaided by the text. One can forgive statisticians for making mistakes, but not for failing to reveal their hands. Certainly Mr. Meyer's results look peculiar. They show the national capital in 1952 as being substantially less in real terms than in 1938, and less indeed than in 1946, both of which results are contradicted by Mr. Redfern's calculations (*J.R.S.S.*, 1956). By implication, Mr. Meyer's title lays this at the door of inflation; but the discussion in the first chapters of his book does not illuminate the connection.

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Post Keynesian Economics. Edited by K. K. KURIHARA. (New Brunswick, New Jersey: Rutgers University Press, 1954 (London: Allen & Unwin, 1955). Pp. vii + 442. 30s.)

IN his preface the editor states that "this volume represents the extension of Keynes' *General Theory* by a group of well-known economists." There are fifteen essays in all, subdivided into three sections of five. From the list of contributors one gains the impression that most, if not all, have yet to reach the half-way stage in their active careers—literally post-Keynesian economists!

In place of an essay-by-essay commentary, reference will be made to only seven selected in such a way as to indicate the range of the volume, the strength of its contribution to thought, divergent methods of analysis and last, but one hopes least, the predilections of the reviewer.

Part I concentrates upon monetary theory and policy. An essay by Professor Don Patinkin on "Keynesian Economics and the Quantity Theory" queries the range of assumptions necessary for the validity of the Quantity Theory under full employment. He maintains that two only are required, full employment and absence of money illusion, whereas Keynes stressed the need to assume that the propensity to hoard is always zero in equilibrium and that effective demand increases in the same proportion as the quantity of money, the latter depending upon the shapes of the consumption, investment and liquidity-preference functions. Professor Patinkin's analysis contains certain non-Keynesian elements, notably the dependence of expenditure functions upon real money balances. There are two essays on inflation, in one of which Professor Martin Bronfenbrenner discusses problems posed in contemporary capitalist society by a persistent tendency towards secular inflation. He proceeds to forecast that secular inflation will come to an end when the limited gains to labour from a wage-price spiral become sufficiently evident. Workers will then endeavour to increase their share of the national income at the direct expense of property interests, and either Labourism or Fascism will triumph according to the relative strength of labour and property interests. One might argue that to some extent some decline in the share accruing to property might be tolerated by that group in view of the reduction of uncertainty through full employment. The style of this essay bears close affinity to that of Keynes when he is speculating upon the future of capitalism.

Part II is concerned with economic fluctuations and growth. Mr. R. C. O. Matthews discusses the policy implications of recent trade-cycle models of the Hicks-Goodwin-Kaldor type when the aim is to set and maintain activity (growth considerations apart) at full-employment levels. The nature of stability at full employment is examined under two hypotheses, damped cycles with erratic shocks and explosive cycles with ceiling constraints. Quite apart from considerations of inflationary instability, it is

shown that the policy position cannot be considered necessarily stable. The author suggests measures of restraint over private investment as the most appropriate policy procedure in these circumstances, since in present conditions there is more likelihood of upwards instability through the threat of inflation than of downwards instability. Moreover, the authorities are then more strongly placed to counter any downwards instability by fresh investment. This lucidly written paper provides in addition a good critical assessment of current trade-cycle theory. This may also be said of the succeeding paper by Professor S. Ichimura, which traces the central elements of this same group of theories in mathematical terms. The writer's purpose is to examine the cyclical properties of these essentially non-linear models and to ascertain whether they give rise to unique limit cycles: to cycles, that is, of constant amplitude and fixed period independent of initial conditions. He concludes that for the Hicks-Goodwin theories there is a possibility of two or more limit cycles, which, however, appear to be encircled by a stable limit-cycle zone. For a more general cycle theory Professor Ichimura has been able to show that limit cycles exist but has not been able to demonstrate uniqueness. This reviewer is not clear as to the objection to multiple-limit cycles *per se* if it could be shown that the degree of variation is sufficiently small. One objection to his essay may be raised. In his analysis of the Hicks model he retains the autonomous investment function but fails to take account of subsequent criticism that in that model autonomous investment is income but not capital creating. It would be interesting to know the nature of the limit cycles when the model is suitably amended.

Part III, entitled "Aggregative Economics and Testing," is the most rewarding. It contains in an essay by Dr. L. R. Klein an authoritative summary of the essential elements in the *General Theory*, combined with a discriminatory assessment of improvements to that theory in so far as theoretical suggestion has been backed by empirical support. The writer emphasises that the main tenets of the theory remain unimpaired. The essay is concluded with the empirical estimates of a new econometric model for the United States covering the years 1929-41 and 1946-50. In completely different vein Mr. Paul Streeten contributes a philosophical essay upon the contrast between the value premises implicit in Keynes' writing and those of classical British economic thought. He classes Keynes as a liberal-utilitarian accepting the doctrine of harmony of interests. He considers that the doctrine of harmony was more acceptable in the period of unemployment when the *General Theory* was written than in subsequent periods when Keynesian remedies for economic malaise have been in operation.

The last essay in this volume, "Utility Analysis and the Consumption Function," by Professor F. Modigliani and the late Dr. R. E. Brumberg, is also the most important. It presents a new hypothesis to help resolve the consumption-function controversy which has arisen through difficulties in

interpreting post-war data and apparent inconsistencies between time series and family-budget material. Using a restricted utility function containing consumption in each year of an individual's life from the planning date, there is shown to be a simple relation between current real consumption and expected real resources (incomes, expected incomes and current assets) the coefficient of which depends solely upon the remaining expected life. It is shown how under stationary income conditions the proportion of income saved is independent of income. Moreover, "Systematic deviations of the saving ratio from the normal level are largely accounted for by the fact that short-term fluctuations of income around the basic earning capacity of the household, as well as gradual changes in this earning capacity, may cause accumulated savings to get out of line with current income and age" (p. 430). This essay, one of a pair, is concerned solely with the interpretation of family-budget studies. Built upon traditional utility theory, in which one consumer's preferences are assumed independent of others, it brings into relief the respective influences of the components of expected resources and age and emphasises resources not current income as the principal influence upon savings patterns. This thesis, if empirically supported, has important implications for the redistribution policy that is currently based on the Keynesian suggestion that the marginal propensity to save increases with income. It is unfortunate that this essay, through its form of presentation, makes unduly heavy demands upon the reader.

There are sufficient good contributions, together with one or two outstanding ones, to establish this volume's right to a place on any economist's bookshelf.

Cambridge.

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Economic Co-operation in Europe. A study of the United Nations Economic Commission for Europe. By DAVID WIGHTMAN. (London: Stevens and Sons and William Heinemann, 1956. Pp. xi + 288. 21s.)

THIS book, as its blurb explains, "tries to find reasons for the astonishing vitality of E.C.E. in the face of very unfavourable political circumstances" and indeed tries so hard that it almost damns with excessive praise. For the E.C.E.'s greatest claim to fame, its Research Division, receives scant attention (and not a word about Mr. Kaldor), while its various Technical Committees were mostly *not* able to maintain their vitality in the unfavourable political circumstances of the Cold War, as the well-documented Part Three, on "Co-operation in Practice," all too clearly shows.

One suspects that Mr. Wightman has not been able to dissociate himself from the viewpoint of his hosts at the *Palais des Nations*, which is, first, that the E.C.E. must not be judged as a research organisation, but as an organisation which gets things done; second, that it is the Technical Committees which provide the machinery for getting things done; and third, that these

Committees do in fact get important things done, despite (or rather because of) the fact that they operate out of the limelight in closed sessions, and deal with matters too technical to get into newspaper headlines.

But though apparently subscribing to these propositions, Mr. Wightman steadily erodes our confidence in the last (and crucial) one, for he has constantly to make reservations, and anyway, the facts (presented with clarity and impartiality) speak for themselves. For the truth is that the E.C.E., after making a highly creditable start (by assisting member governments to deal with "bottleneck problems"), fell victim to the Cold War, and has not yet recovered. In circumstances described in Chapter 2, and which give ample opportunity for speculating about historical might-have-beens, the agency selected for distributing Marshall Aid was not the E.C.E. but a new body, the O.E.E.C., set up in Paris for the purpose. Thereafter, European co-operation became West European co-operation, centred on Paris (and later also on Luxemburg) instead of Geneva. West European organisations proliferated (with N.A.T.O., E.P.U., E.P.A. and E.C.S.C.) and E.C.E. languished. More and more E.C.E. became a stand-by organisation, to be kept in being as a possible bridge over the Iron Curtain: hence the great emphasis laid by the Secretariat on East-West trade. Then, with the movement towards "peaceful co-existence," E.C.E.'s prospects seemed to brighten, especially since (beginning with the eighth session of the Commission in March 1953) Russia and her allies began to take a less acrimonious line in public sessions and to send their experts once again to sit on the Technical Committees. Nevertheless, though this increased the political importance of the E.C.E., there is little evidence that the E.C.E. has yet provided the machinery for much economic co-operation between East and West, whether in trade, payments or anything else.

This book is a most valuable case study in European economic co-operation, and whets one's appetite for a companion study on the O.E.E.C.

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The Value Judgement. By W. D. LAMONT. (Edinburgh: The University Press, 1955. Pp. xv + 335.)

It is very much to be hoped that those economists who are interested in the logical and semantic foundations of economic theory will read this book with open and receptive minds, and not allow feelings of exasperation and bewilderment to stop them at about p. 74. For Dr. Lamont has an important chain of questions to ask, and the fact that he has mixed it up with all sorts of unreal difficulties and groundless complaints against economists does not lessen its interest. The first question is: By what right do we assume that it makes sense in logic for the individual to take *any pair whatsoever* of the objects of consumption (the quantitative items) which might appear in his budget, and set a higher or lower subjective, private, personal valuation on

one of them than on the other? In other words, what right have we to assume that all the possible items of consumption are well ordered, as the mathematicians say, in his estimation? This possibility, of comparative valuation of two items, exists *prima facie*, Dr. Lamont says, only if the two items belong to one and the same "valuational order," that is, if they meet the same basic need, as for instance, the need for sustenance, or the need for mental occupation, or the need for personal transportation. Now in so far as this is true, namely that all objects which can be comparatively valued against each other by the individual (in his private capacity: valuation in the market is not here in question) must be ones which serve the same ultimate, fundamental need of his, it follows that we can mark off a particular chunk of this need (say the need for a pint of water to drink) and compare the various ways of meeting this need, that is, the various goods or objects, according to their *opportunity-cost*, the sacrifice, that each one entails, of other possibilities of meeting this same ultimate need. Thus we can conclude (*Proposition V*, p. 73) that "The order of value is the inverse of the order of opportunity-costs," or "... if we know that the cost of x is estimated higher than the cost of y , we know at the same time that the person making the estimate will place y higher than x on his valuation scale. . . . If the descending order of estimated opportunity-costs is A, B, C, D, then the descending order of values will be D, C, B, A."

I can only hope that this drastic compression of Dr. Lamont's thesis, ending with a bald quotation unsupported by his careful structure of argument, will not give an entirely false impression of his line of thought. There is only space now to refer to some of the more serious doubts and objections that arise even in the mind of a reader who is willing to surrender himself to the current of the author's thought; and after that to sketch the lines of defence of orthodox economics against some of the author's more baseless charges and indicate what seem to me to be his misconceptions.

Perhaps the most important question that will trouble an economist is how a person can ever arrive at a determinate, uniquely "best" consumption-budget or "shopping list," that is, a plan for spending a given income, if there exist side-by-side in his mind several quite independent valuation-orders *between* which there is no means of making comparisons. Dr. Lamont has gone far to meet this difficulty by suggesting that, in the last analysis, the various separate valuational orders (each resting upon the degree to which various goods, in the ordinary sense, can satisfy a given "chunk" of some "common demand" or single end which all these goods are really intended to serve) are united by some superior, all-embracing end, the "*summum bonum*," the individual's "total conception of the good," his "search for total happiness." In this suggestion there lies, I think, the strongest recommendation of his scheme of thought and, from the point of view of orthodox economic ideas, its greatest novelty. Moral philosophers may (one can scarcely doubt it) often and long since have had this idea in mind; but the modern economic theoretician, manipulating his technical apparatus of indifference-curves, may well lose sight of the need to answer

the question: Why, ultimately, is it possible for me to compare the significance to me of a tub of butter and a symphony concert?

But when we reach this vantage-point another difficulty comes into view: so long as the "common demand" is something as simple as the need for, say, the quenching of thirst (which can according to the physiologists be satisfied by water and by nothing else), it may be easy enough to argue that if well A is more accessible than well B, a pint of water from the former is to be preferred to a pint got from the latter, because its opportunity-cost is less, and, if you like, we can fetch two pints from the nearer well with the same effort and time that would get one pint from the distant well. But how does this notion look when the "common demand" is something as complex as the individual's "total happiness" or "total idea of the good"? How, *then*, can he measure opportunity-cost, without invoking some mental process or form of judgment which will amount to that very kind of *positive*, self-subsistent valuation which Dr. Lamont is mainly concerned, it seems, to discard. Indeed, he seems to have an inkling of this difficulty, for he says (pp. 171-2) in one of his illustrations:

"If our high-souled artist is wealthy, he can probably devote himself to the pursuit of pure art and posthumous fame. But if he is poor, he cannot ignore the fact that one of the subsidiary demands expressive of his principal demand for a dedicated life is the demand for life itself. He will have to clarify this principal demand sufficiently to get its various aspects or items into perspective. . . . When the main pattern of the principal demand has been roughed out, the technical calculations as to resources will have to be faced; and then will come the valuation of this as against that, a little more of one thing as against another, in order to reach the best adjustment for the life envisaged as a whole."

Now what are the methods and nature of this valuation, if they are different from those which the economist has always assumed to belong to the inherent and essential powers of the human mind and personality? And if they are *not* different, then why need we follow an arduous route to the conclusion that, in flat contradiction of the great insights which Gossen, Jevons, Menger, Walras and Marshall gave us eighty years or more ago, valuation is simply a matter of cost?

Whatever answer we may finally give to this question, no one will wish to deny to Dr. Lamont the credit of having started in the minds of economists an insistent train of questioning thought about the foundations of their subject. But I think that any economist, set to review this book, would be failing in his duty if he did not point out that in very many directions Dr. Lamont has completely misconceived what economists do and say, and has introduced into his dissertation "proofs" or illustrations which collapse at a touch. I do not wish to make heavy weather of this, and three or four examples selected from some thirty individual places where I have noted them will serve.

On pp. 91-3 he argues that because a person pays the same price for the
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marginal as for the intra-marginal units of a commodity, the marginal unit must have for him no less "desiredness" than the intra-marginal units. On p. 106 some light is thrown on this contention by a reference to "the curious concept of 'surplus value.'" I think consumer's surplus is meant. The same argument recurs on p. 109.

On pp. 111 and 112 a strange oversight has led him to argue thus:

"When resources are superabundant . . . the problem of distribution of these resources over the demands will be purely 'technical' or 'administrative' and not 'economic.' Calculation and judgement will indeed be required. Thus, if I have free access to unlimited supplies and am proposing a week's trek in the wilds, I shall need to sit down and calculate how much of various things I require to take with me in order to meet in full all the demands likely to arise in the course of the week. These problems are technical or administrative rather than economic for there is no question of scarcity, no question of opportunity cost for one demand in devoting resources to the satisfaction of another, no question therefore of evaluating the contents of the different demands against each other. Here there is no place for the marginal unit however much I may be pre-occupied in calculating what would be the 'last unit' sufficient to meet all demand up to satiation-point."

"No question of scarcity"? Then why not simply take far more than enough of everything, why bother to calculate at all? Of course, the author is unconsciously assuming that there is a scarcity: of transport.

Through long stretches of the argument an astonishing proposition taken for granted without discussion, and regarded apparently as self-evident, namely that if the individual's desire for commodity A would be completely satiated by, say, 20 units of A, and likewise his desire for B would be satiated by 10 units of B, then if his means are scarce so that he cannot in fact satiate all his desires, he will in equilibrium be found to buy twice as many units of A as of B, no matter whether the actual quantities are 10A and 5B, or 2A and 1B, or anything else. On p. 118 we read: "This *a priori* postulate is one which is integral to economic theory."

But enough. This book may well make an economist dizzy, but at the end, if he sticks it out, he will surely feel that he has been taken for a ride fit of interest and stimulation, and given the starting-points for lines of thought that he will not be able to resist pursuing.

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The Economics of European Air Transport. By STEPHEN WHEATCROFT (Manchester: Manchester University Press, 1956. Pp. xxii + 35 35s.)

THIS book fills a surprisingly large gap, for on this side of the Atlantic the air transport industry has been very inadequately studied. Mr. Wheatcroft has deliberately not written a general text-book; as a consequence, what one learns of air economics is refreshingly founded upon

concrete cases. Moreover, for the student of applied economics there could be few better reminders of the continuous interaction of politics and of technology with his subject.

The book is addressed, with something of a missionary ardour, to those concerned at all levels with the organisation of air transport services. Its main thesis is that over-extension of the route network is responsible for the airlines' failure to achieve economies of scale which could rescue them from their financial difficulties; and that this aspect, unlike the often-blamed short-haul nature of their operations, can and should be regulated. In scope therefore the work is rather narrower than its title suggests. Attention is explicitly confined to the passenger-carrying activities of scheduled airlines within Europe, and excludes much discussion of topics relevant to the economic picture as a whole, such as the integration of long- and short-haul services, the economics of aerodrome provision, the financial results and resources of the companies, and the relationship of the industry to its manufacturers of aircraft. The author's close ties with the industry may explain some of this reticence.

Within these limits Mr. Wheatcroft writes as an economist. He shows where economic arguments are over-ridden by other considerations; he points out that the concept of the public interest should take into account consumers' sovereignty in the choice of what they pay for; and he stresses frequently the role which price variations can play in bringing this about. For the most part he expounds these ideas in their practical context in a way which is certain to further the economic education of his public, though here and there he falls from grace with expressions such as "should," "ought" or "minimum essential," where economic analysis would not require it.

Part I is a description of the industry and an analysis of the economic factors influencing its operation. Here the author recognises that the factual basis is sadly limited by the unwillingness of airlines other than B.E.A. to disclose facts. Nevertheless, he has presented much information which is hard to get—his research into fare structure with the high utilisation—and he has provided some impressive contrasts with the high utilisation by United States airlines both of aircraft and stations. These he treats in some detail as indicative of the kind of economies which he believes the larger European airlines are already of a size to achieve. The chapter on size and efficiency one feels might have been improved if the author had plunged straight into his own ideas about the economies of scale in his industry. Here and elsewhere there is also a suspicion that Mr. Wheatcroft has overlooked his own warnings about the significance of market conditions, and writes as if a high cost of output reckoned simply in ton-miles necessarily implies, for example, that infrequent services or small airlines are economically inefficient. The chapters on the European fare structure and seasonal variations are fascinating, and are warmly recommended to students of like problems in other industries.

Having suggested that lower costs could be achieved through an intensification of operations, the author proceeds in Part II to discuss present restrictions upon competition. Throughout his treatment of rate-fixing by the International Air Transport Association he is insistent that scope must be found for price competition to limit the competition in quality of service now so prevalent. However, he finds that "the relatively low temperature of the competitive climate in Europe" is mainly due to the manner in which traffic rights are bargained for bilaterally. His analysis of air agreements and their provisions relating to capacity carries a convincing argument that here is a major factor responsible for too many low-frequency routes.

In Part III, "Requirements for Progress," the author outlines a system, based where possible on existing institutions, involving a multilateral air agreement and a European Commission to supervise the rationalisation of the route network, much as the Civil Aeronautics Board does internally for the United States. Mr. Wheatcroft is hopeful that co-ordination of investment plans plus an investment bank will ensure "fair and equal opportunity" for all airlines to compete, and yet retain the Bermuda philosophy of "allowing public choice of airline to be the ultimate arbiter of the division of traffic." But is it not just this choice which most protected industries fear?

All these prescriptions may sound very conservative unless the restrictionism of the present state of affairs is recalled. No one in the field of transport to-day would advocate the abandonment of all public controls. Mr. Wheatcroft has aimed at increasing the competitiveness of the industry, and has set his sights at a level which is likely to prove more of a help than a hindrance.

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Studies in the Economics of Transportation. By MARTIN BECKMANN, C. B. McGUIRE and CHRISTOPHER B. WINSTEN. Introduction by TJALLING C. KOOPMANS. Published for Cowles Foundation for Research in Economics. (New Haven: Yale University Press (London: Oxford University Press), 1956. Pp. xix + 232. 32s.)

SINCE expenditure on transport absorbs about a fifth of the national income of most civilised countries, it is surprising how little is known about the economics of transportation. This book, the result of a research project carried out by the Cowles Foundation for Research in Economics under contract to the Rand Corporation, gives the result of an attempt to meet a part of the gap in our knowledge. According to the introduction to the book, one of the three authors is a mathematical economist especially interested in linear programming and economic-activity analysis, the second a mathematician and economist with a special interest in the applications of probability calculus to industrial phenomena, whilst the third is an economist

to whom was assigned special responsibility for the degree of "realism" of the models developed by the group. As might perhaps be expected with this background, the topics discussed have a strong tendency to be those that can be attacked by the methods that the authors were particularly interested in applying. Few actual data are given, whilst the theoretical approach of the authors is well illustrated by the following extract from p. 73: "two hypothetical examples are presented solely for the purposes of illustration. . . . The parameters were chosen arbitrarily and any resemblance to an actual road network is accidental."

The first part of the book starts with a discussion on the capacity of roads and intersections, then considers the demand for and the supply of road transport and so progresses to an examination of the equilibrium that is set up. The second part of the book discusses various problems relating to the economics of railway transport.

The chapter on road capacity discusses possible definitions of the term and how delay on roads varies with the amount of traffic. However, although references are made to a great deal of work published in the United States and elsewhere, the authors are clearly unaware of much important recent work on the subject outside the United States. There is no reference to the concept of "economic capacity" put forward by Schuhl (*La Route*, 1948, No. 166 bis, pp. 33-7) and defined as the amount of traffic on a road at which widening becomes economically justified taking into account the cost of widening and the benefits which would accrue, nor to the recent paper by Lighthill and Witham (*Proc. Roy. Soc. Arts*, 1955, Vol. 229, pp. 317-45), in which capacity is defined as the maximum volume of traffic that a road can carry, and it is shown that this volume is, in fact, the flow which occurs at the stop line when a queue of formerly stationary vehicles moves off.

The authors review the related literature before analysing the delay at fixed-time traffic signals and propose an ingenious method for calculating the delay, but they do not carry out the calculations. Although their review includes references to some mathematical papers by the Road Research Laboratory, no reference is made to the more recent work done on the subject by the Laboratory (*Road Research*, 1953, pp. 33-5, and *Road Research*, 1954, pp. 26-7; London, H.M.S.O.). By using a Monte Carlo method similar to that described on p. 44 of the book, where the authors describe an attempt to study the frustrations experienced by fast vehicles on a straight road, the Laboratory has produced a formula for delay under a comprehensive range of conditions which agrees well with observations. If the authors had been aware of the French and British work, they would almost certainly have written a different book.

The discussion on the demand for road transport adopts the view that vehicles are operated by people who have a range of choices available to them and are motivated by economic considerations in their decisions. Demand is regarded as a function of cost defined as the sum of operating

cost, time cost and risk cost. Since the presence of other traffic causes extra operating costs, delays and risks, the road user experiences a higher transportation cost the greater the flow. The authors find that the selection by drivers of the routes that minimise their own individual costs does not result in the division of traffic between alternative routes, which minimises the total costs incurred by road users. This is because the individual road user ignores the costs that he imposes on the others, and these costs will differ between alternative routes, being greater on a short, congested route, for example, than on a longer, less-congested route. Compared with the minimum-cost situation, therefore, there will be too much traffic on the more congested route, and to correct this the authors consider the idea of efficiency tolls, expressing the difference between marginal social and private costs. They fail, however, to find a method of solving the practical problems involved in calculating and collecting such tolls, and suggest that the problem of how to make the road user sensitive to the social cost he causes be discussed at the technological level.

The authors discuss the ways in which the demand for and the cost of road transport vary with the amount of traffic and then consider the interaction between these factors. They assume—without giving any evidence—that the demand for road transport is relatively inelastic and conclude that the equilibrium set up is stable. The discussion is not, however, very satisfying, since it is known that the supply (cost) curve is almost vertical when the traffic on a road network approaches the maximum amount that the network will carry. It is difficult, nevertheless, to understand the authors' concern for stability, since traffic appears to adjust fairly well to changes in road conditions and costs, and instability does not appear to be a pressing problem.

In spite of some unevenness in the work, for example, the tendency to give similar attention to important and unimportant questions, the authors have performed a valuable task in putting forward techniques which may be used in assessing the efficiency of road- and rail-transport systems. A more empirical approach, rather than the use of simple and rather unrealistic models, might have been more useful, but it is, nevertheless, refreshing to read a book that attempts to tackle the subject of road transport in a comprehensive and fundamental way.

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Agriculture and Industry: Relative Income. By J. R. BELLERBY and others. (London: Macmillan, 1956. Pp. 369. 30s.)

THIS book is a collection of reports on the statistics illustrating the size of the disparity between industrial and agricultural incomes in different countries at different periods, and on the relative importance of the causes

of that disparity. Reading straight through the book inevitably gives the impression that the job of the toiling statistician is to prove what we all know to be true, that agricultural incomes are low principally because most farmers will continue to farm in spite of low incomes; the supply price of farmers and of farm workers is low. The income disparity is smallest in countries where men are easily mobile and land is relatively plentiful, such as Australia and New Zealand; it is greatest in countries of dense population where industry is a comparatively late intruder, bringing with it a different social climate.

The main statistical argument proceeds by a comparison of the average "farm incentive income" with the average industrial income for a number of countries, and for the individual provinces of Canada. Diversions include studies of retail prices in town and country and of agricultural and urban wages. The farm incentive income is defined to exclude the return to farmers as landowners, and therefore involves the deduction from farm income of imputed rent for all owner-occupiers. This seems a reasonable process for the United Kingdom, but leads to some nice statistical problems in other countries; the social prestige of landowning in countries such as France and the expectation of capital appreciation in the mid-west of America are surely important elements in agricultural "incentive."

And even for the United Kingdom, the non-statistician, confronted with a table showing for seventy years the ratio between average farm incentive income and average industrial income, may wonder what reality is hidden behind these averages of almost infinite complexities on either side of the ratio. Yet the statistics so patiently assembled and cogently marshalled do provide a rough measure of this ratio in various countries; because they support what we all know, they do carry conviction within their own range.

The last part of the book contains a useful, though necessarily brief, discussion of what might be done, and what must not be done, if these disparities in income are to be reduced. Mr. Bellerby and his colleagues at the Agricultural Economics Research Institute are to be congratulated on the outcome of the years of statistical hard labour.

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Nigerian Cocoa Farmers. An economic survey of Yoruba cocoa farming families. By R. GALLETTI, K. D. S. BALDWIN and I. O. DINA. (London: Oxford University Press for the Nigeria Cocoa Marketing Board, 1956. Pp. v + 744. 105s.)

THE Nigeria Cocoa Marketing Board is charged by its Ordinance "to assist in the development by all possible means of the cocoa industry in Nigeria for the benefit and prosperity of the producers," and as long ago as 1948 an approach was made to A. W. Ashby, Director of the Agricultural

Economics Research Institute at Oxford, to ask him to bring together a committee to initiate and supervise a comprehensive survey of the economy of the cocoa areas. Plans for the survey were approved by the committee in August 1950; a full field survey was conducted during the two years ending March 1953; a period of about fifteen months intensive office work in London on the field material was necessary before this book could be written.

The result is a formidable and remarkable work which, as it cost £70,000 and runs to some 350,000 words, 369 Tables and 33 Charts, must be judged by the most formidable standards. It is not primarily a work which sets out to answer any of the pseudo-political questions which, when world cocoa prices were high, so exercised international cocoa circles. It is true that the authors sought with diligence and punctiliousness to adhere to their absurdly comprehensive terms of reference (for which, presumably, the managing committee for the survey, which met in England, must take the main responsibility) and that one of these was the effect on the farmer's well-being "of the present system of marketing, which protects him absolutely from price fluctuations within a season and the more severe fluctuations from season to season." But although the main concern was the production of a "factual report" which would record in detail how the cocoa farmer and his family lived, worked and secured their livelihood, I think that throughout the work more attention should have been paid to readers' requirements. We all have our unanswered questions. The more I read the book, the less convinced do I become that certain of my more obvious questions have been adequately answered.

Let me give an example. The matter of new planting of cocoa is an important one. Now it so happens that the only mention of new cocoa farms in the terms of reference is in (a)—"Cost of the establishment and maintenance of his [the cocoa farmer's] farm." This may be why the book contains practically nothing on new farms—had the senior staff been more in the field, they would have been compelled to seek an amendment of their terms of reference. We learn (p. 360) that few farmers in the selected families had planted in recent years or were planting during the survey, and thus (p. 334) "the allocation of labour to immature cocoa plots is a complication we can ignore in discussing the farmers." In the Gold Coast most cocoa farmers in most areas appear to have non-bearing (young) cocoa farms. Can the two countries really be so different? Did any of the forms or questionnaires used by the field staff include questions on young farms? (Incidentally, the failure to publish any of these forms as Appendices to a book of this length seems a grave omission.)

The survey methods were both orthodox and unorthodox. They were orthodox in that it was the role of the junior unskilled staff to be in touch with the cocoa farmers and their families—the senior skilled staff being mainly concerned with "organisation" and with criticism and analysis of the results. The authors are very frank about their difficulties in securing

competent field staff. The failure of the five or six Research Superintendents "to meet the standards required had many unfortunate consequences. Not only was the standard of recording affected but a great strain was put on the Senior Officers and later on the office staff in dealing with imperfect records which could have been improved out of all knowledge if the Assistants had been properly instructed by their supervisors and their notebooks and records promptly and intelligently checked in the field." But despite this frankness, I think that the authors are still unaware of the extent to which the field staff stood as a barrier between their own critical intelligences and the comprehension of the activities of the farmer. Uneducated field-workers all over the world are liable to build up obstinacies, resistances, orthodoxies of their own, *which they tend to impart to one another*, and only the constant presence of the senior staff in the interviewing field can counteract these. Much is seen through a glass darkly. I do not agree with the assertion on p. xxix that "information obtained at single interviews or by inquiries for limited periods (even if these are repeated at intervals) will be fragmentary and probably most inaccurate." All depends on who collects the information. I think it is always necessary in Africa to complement the orthodox survey through field-workers with information obtained from the same informants in all kinds of informal ways. The authors were too busy with organisation to have time for this.

An unorthodoxy of approach, which I find commendable, was the bold decision to choose the families for study, not to draw them by random sample. While I do not agree that a justification for this was that there was a serious risk that most of the persons drawn from a list by random sampling would refuse to co-operate, I think that the need for an extensive geographical coverage, and the fact that there were no satisfactory lists from which a random sample could have been drawn, more than justified the approach adopted. But although a method involving a rough stratification by size of family and size of cocoa holding was adopted, I think the authors sometimes tend to forget that their material is not fully representative—partly for reasons beyond the authors' control the records of only 187 families were accepted and tabulated for the inquiries into production, consumption, income and expenditure.

The book is so capacious that it is hard to give a bird's-eye view of its scope. In Part I the chapter on Resources, for instance, is 101 pages long. That on the General Pattern of Consumption and Living is based on the detailed census of around 750 families carried out in 1950–51. Part II presents the results of the more intensive survey of specially selected families (187 of them) over a longer period. I cannot here comment adequately on it: it is impossible to know where to start. So much material—relating to factors of production, labour, production, income, indebtedness, consumption and expenditure—is presented. To criticise is, I know, to look a gift-horse in the mouth; for there has never been anything like it before. And then

the authors are themselves so critical of their figures and yet so persistent. I cannot make up my mind whether I am willing to accept the accuracy of figures which show the savings from cash (savings being the residual of receipts less expenditure) of all the families surveyed to be no less than two-fifths of their whole disposable income and not a great deal less than the household expenditure. It is true, as the authors emphasise, that cocoa farmers enjoyed an unusual increase of cash income in the 1951-52 season (as a result of the raising of the cocoa price from £120 to £170 a ton) and that the prices of commodities were stable or falling and were expected by some to fall farther so that there may have been a tendency to postpone expenditure; but can one really believe that any low standard of living community would be capable of such a degree of abstention?

Nevertheless, the impressive quality of much of the statistical material in this book ought greatly to encourage the academic study of the economics of tropical Africa. One cannot expect young students to be attracted to this fascinating field until there is raw material for them to get their teeth into. Although Mr. R. Galletti, the principal author, has analysed his figures with passionate devotion, the Appendices contain many tables demanding further analysis. One must agree that the work of the recorders in getting the facts of food consumption, yielded "remarkably consistent, coherent and probable" results. The sixty-five-page section called Labour and Land in Farming stands in its own right as a kind of Ph.D. Thesis. All in all, the authors are worthy of the magnificent format they have been given by the Oxford University Press. And I do not think the volume will date.

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Accra.

Adam Smith and the Scotland of his Day. By C. R. FAY. Department of Social and Economic Research, Glasgow University, Social and Economic Studies III. (London: Cambridge University Press, 1956. Pp. 174. 25s.)

WHEN Mr. Fay knows a thing, no man knows more of it than he. In this comparatively short book we are given, not all there is to know about Adam Smith, not a criticism of his ideas nor an appraisal of his work as philosopher or economist, but a re-creation of his world and of himself. Not, oddly enough, very much of his material world; but abundantly of his intellectual and personal world, the world of his ideas and his friends. And it is not merely what passed in the Scotland of that day, as the title would suggest, which is brought before us; here is life in Oxford as well as Kirkcaldy, London as well as Edinburgh. Mr. Fay is a master of detail, and his book is a mosaic of personalities, incidents, anecdotes, extracts from letters, snatches of conversation.

It seems a safe guess that everyone, however familiar with Smith and his age, will find here something that is new. In particular, Mr. Fay has

interesting things to say about the relations between Smith and some of his contemporaries. Besides the well-worn theme of the possible influence upon Smith of Turgot and Quesnay, there is a good deal that is new concerning Smith and his intellectual contacts with the lawyers Blackstone and Mansfield and the political theorist John Millar. It is, indeed, in establishing such points of contact and thus in "placing" Smith within his age that Mr. Fay is at his best. There are a few trifles to argue about. Some may disagree with what is said about Mandeville, and perhaps Cantillon and Turgot are done rather less than justice when it comes to listing Smith's "fundamental contributions" to economic thought. But these are matters more of opinion than of scholarship and fact.

The book contains no summing up, no considered view. The reader is left to form his own impression of the man and his works as a whole. There are a few fine, provocative asides—"In lauding nature and sterilizing trade the physiocrats ran amok with a bright idea" (p. 160)—but for the most part the actors and disputants are left to speak for themselves. Mr. Fay knows them all.

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War Economy, 1939-1942. By S. J. BUTLIN. Australia in the War of 1939-1945, Civil Series, Volume IV. (Canberra: Australian War Memorial (London: Angus & Robertson), 1955. Pp. xvii + 516. 25s.)

THIS is the first of two volumes in which Professor Butlin is presenting the history of the economic war effort of Australia. The present book takes the story to the eve of Pearl Harbour, that is to say, it stops at the point when, on his own assessment, the transition to a total war economy came to be made. Inevitably, therefore, this is the history, at best, of preparations only and of "mistakes and bickerings" at worst.

It is a most detailed account: so much so, that to the reader who is not himself quite closely acquainted with the events and personalities described and analysed, the book makes pretty hard reading in places. It is difficult to judge whether this could have been remedied without loss of valuable material by a more cursory treatment of certain features of these early gropings towards a true war economy. But one reader at least cannot help gaining the impression that Professor Butlin finds it difficult to resist the temptation to put in everything he knows. No doubt, the second volume will enable one to test this impression, since the picture of the subsequent three years will necessarily have to be painted on a broader canvas.

There can be no doubt, however, that Professor Butlin knows pretty well all there is to know of the period with which he deals; and while there can be few if any who could test his accuracy, both of facts and interpretation,

on every point, the overwhelming impression left is one of complete reliability in regard to the facts and sound judgment on the issues. Like the writers of the British civil histories, Professor Butlin has had full access to official papers, including Cabinet documents. But he has clearly relied on much more than official records and, in particular, must have derived much help from personal contact and interviews. Unlike the British authors, he deliberately sets out to be much more free in his assessment of the part played by individuals, particularly civil servants; and the book is greatly enlivened by the naming of names and the apportionment of credit and blame. On the whole, this novel treatment seems to be successful and makes one wonder whether it might not with advantage be tried some time (cautiously, no doubt, and perhaps with a suitable "quarantine" period!) in our official histories. Another experiment is the inclusion of a number of contemporary cartoons. These are less obviously a useful contribution, but some of them certainly illuminate a situation or problem more vividly than pages of writing or statistical tables.

As is inevitable in any work of this kind, chronology and clarity of exposition are in an uneasy compromise. Generally, however, Professor Butlin has been more successful than most in combining the straight historical narrative with treatment by topics. His plan is clear. After a brief introductory survey of pre-war planning leading up to the *Commonwealth War Book* (which one senior official said he had locked up when war came because "it was just b—— irrelevant"), he deals in eight chapters that occupy about two-thirds of the book with preparations up to the end of 1940 under these topics: price control, export industries, external finance and trade, shipping, public finance, labour, supply and production. This whole period of nearly eighteen months is then reviewed in an excellent brief chapter which makes most rewarding reading. Four more chapters take the story twelve months forward in respect of finance, transport and coal, overall economic balance and man-power. A final chapter analyses, in less than twenty pages, the economy on the eve of the Japanese attack and America's entry into the War and shows Professor Butlin to be capable not only of meticulous detail but also of broad and enlightening generalisation.

It is difficult to pick out examples from the very large number of interesting details in this narrative. Special mention may, however, be made of the committee of economists set up in December 1938 in the Defence Department, which as a corporate body does not seem to have been able to infuse greater relevance into the *War Book* (see, for example, the complete absence of any appreciation that civilian consumption would need to be deliberately curtailed), but whose members in various capacities contributed most notably to the management of Australia's war and post-war economy. Of great interest also, on a different level, is Professor Butlin's description of the progressive development of bulk-buying arrangements for Australia's main export commodities, his analysis of the slow development of sensible

war finance, and of the (not unusual) trials and errors by which an efficient organisation for war production was built up.

Special praise is due to Professor Butlin's frank yet quite unpartisan treatment of the change of government in October 1941, and the coincident major change in the central conception of the economy in war-time. This is well brought out in his chapter on "Labour's First Budget" and in his final survey of the economy at the end of 1941. His summing-up, which neither belittles the achievement by that time of an industrial base and an administrative machine nor understates the violence of the subsequent change to a total war economy, is balanced and convincing.

ERIC ROLL

London.

The Early History of the Russia Company, 1553-1603. By T. S. WILLAN. (Manchester: Manchester University Press, 1956. Pp. 295. 30s.)

To reconstruct the early history of the Russia Company is an immensely difficult task. Almost inevitably, any manuscript material which may exist in Russia cannot be investigated. More serious is the defective nature of the English sources. The early records kept by the Company itself were all unhappily destroyed in the Fire of London in 1666; and it is a nice comment on the inadequacy of the English material available to Dr. Willan when he observes that "the historian of Tudor trade cannot live by statistics alone unless he wishes to suffer from malnutrition." In the face of such difficulties Dr. Willan has done a first-rate piece of detective work. Making judicious use of the scattered evidence he has painstakingly unearthed, Dr. Willan has pieced together an excellently clear and detailed account of the early years of the Company.

Inevitably, much of the story of the Russia Company is closely linked with the diplomatic relations of England and Russia. The merchants, it is true, always hoped that "merchants' affairs" could be kept separate from "princes' affairs." But this was never feasible when the Company enjoyed a highly privileged position in Russia (for the most part it was, for example, exempted from customs duties) and when the Tsar expected these privileges to be paid for in "political coin." Thus Dr. Willan gives us an admirable account of Ivan IV's attempts to translate a commercial relationship into an offensive and defensive alliance. Elizabeth had skilfully to resist these without jeopardising the commercial concessions her merchants enjoyed—just as Walpole had to deal with a precisely similar situation in the 1730s.

The mixing of "merchants' affairs" with "princes' affairs" was not the only problem which the Russia Company had to face. Dishonest servants, interlopers, the natural hazards of the treacherous sea journey to St. Nicholas (the outward voyage took from one to two months, the return rather longer, and, since the port was ice-bound from autumn to spring, the ships could

make only one round trip a year, which had to be carefully timed), attacks by buccaneers, and the unpredictable behaviour of the Russians, were constant anxieties for those who ventured in the Muscovy trade. Indeed, so great and constant were the difficulties, that one cannot help wondering why the Russia trade was maintained at this time. Certainly it was hardly because the trade was vital to either country, though by the end of the century most useful amounts of cordage from Russia were being supplied to Elizabeth's Navy. Nor can the continuation of the trade be attributed to the size of the profits. As Dr. Willan shows, there were none at first, and after a number of years the Company had in effect to write off at least a proportion of its original capital. Even by the end of the sixteenth century what rewards there were seem far from excessive when the degree of risk is borne in mind.

That the trade was nevertheless persevered with was undoubtedly due in part at any rate, to the natural momentum to continue in operation which a joint-stock monopoly like the Russia Company generated. The monopoly was important because it held out hope for the future and therefore helped to make present losses the more bearable. The joint-stock principle was no less vital. As Dr. Willan shows, the main features of the Russia trade at this time were such that it is difficult to see how it could have been carried on on other than a joint-stock basis. And since at first the Company did not opt for a system of terminable stocks, this gave members a vested interest in the continuation of the trade, and thus contributed to the momentum which kept the Company going.

Dr. Willan's account leaves one in no doubt of the value of the service which an organisation like the Russia Company rendered in the development of English trade. We are fortunate, therefore, that Dr. Willan has been able to give us such a clear picture of the Company's trading organisation, both in England and in Russia, and that he has managed, in spite of all the obstacles, to give some idea of the extent of that trade.

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Peasants, Politics and Economic Change in Yugoslavia. By J. TOMASEVICH (Stanford, California: Stanford University Press (London: Oxford University Press), 1955. Pp. 743. \$7.50.)

THERE are very few reliable books in English to which the student of economic history can turn for information concerning agrarian, commercial and social developments in the Balkans. Dr. Jozo Tomasevich's massive study of *Peasants, Politics and Economic Change in Yugoslavia* should therefore be warmly welcomed by scholars in this country. Here, for the first time, is a detailed and objective survey of Yugoslavia's economic progress between the two World Wars, preceded by an outline account of the history of the Serbs

Croats, Slovenes and Montenegrins who were united into a single political unit in 1918.

When Serbia expanded into Yugoslavia on the collapse of the Habsburg and Ottoman empires the country was in a deplorable condition. Casualties had been very heavy during the Balkan Wars and the First World War; the country had recently been occupied by enemy troops; farms had been neglected; transport was disorganised, local administration had collapsed, and there were dangers of racial and religious conflicts. Apart from these factors in the situation, the basic problem of "rural over-population" had to be faced. It appears that in Yugoslavia more people were trying to make a living on a given area of farm land than anywhere else in Europe. Dr. Tomasevich discusses the policy pursued by the Yugoslav Government in the period after 1918, and he examines the means by which the State tried to solve the fundamental problems raised by the continued growth of population in a predominantly rural country. This part of Dr. Tomasevich's book is an invaluable contribution to the literature of the subject.

The early chapters, on the period before 1918, are in some respects less satisfactory. Until the last quarter of the nineteenth century most of the regions which now form part of Yugoslavia had for centuries been under foreign rule. It is clearly difficult to survey the economic development of the lands of the southern Slavs when they formed part of the Ottoman, Habsburg and other dominions. The author might have achieved his purpose better if he had written an introduction on the economic conditions in the territories inhabited by the Southern Slavs in the period 1900-18 and left to historians of the Ottoman and Habsburg empires the task of describing the economic development of these regions in the nineteenth and earlier centuries.

W. O. HENDERSON

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Pioneering in Big Business. History of the Standard Oil Company (New Jersey), 1882-1911. By R. W. and M. E. Hidy. (New York: Harper & Brothers, 1955. Pp. xix + 839. \$7.50.)

ONE of the strongest arguments which has been used to persuade business firms to open their records to scholars is that only by so doing can they get "fair" treatment historically. Industrial history written from court records, government investigations and periodicals is almost bound to emphasise alleged violations of the law, economic and social ills and the sensational rather than the humdrum aspects of business history. By placing its existing records temporarily at the disposal of the Business History Foundation, Inc., Standard Oil of New Jersey has gained able, judicious and sympathetic writers to present its views of the controversial years 1882-1911 in the first of several promised volumes on the history of the company. Though they generally prefer the testimony of a Standard Oil leader,

Professor and Mrs. Hidy and their assistants have avoided the other pitfall of relying exclusively upon the company records for their history. While reviewing much familiar material, they amply justify this extensive addition to the voluminous literature on Standard Oil by illuminating many aspects of the aims and policies of Standard Oil as its leaders saw them at the time.

The book covers the history of the Standard Oil interests under three successive legal types of combination: the trust (1882-89); the "community of interest" (1889-99); and the holding company (1899-1911). These three periods form a somewhat artificial framework for topical treatment of each of the functions this group of firms performed. Production of crude oil, its transportation and storage, refining and manufacturing, domestic marketing and the varied foreign activities of the group are described in each period. Only labour policy and finance receive general treatment for the whole thirty years. The book is so written that any chapter can stand by itself as an account of the group's reactions to a given set of problems. This is a by-product of their approach to business history which is strongly influenced by the case-study method of N. S. B. Gras and Henrietta Larsen. The book is not primarily concerned with problems of economic growth. It aims to show how the leaders in this industry responded to particular "prods and pressures" in making business decisions. The authors applaud the company when it made the "right" decisions and point out where and when it went wrong. Some fascinating and gripping accounts of the "game" of business result, notably the story of "conquering Lima crude," the building of an integrated affiliate after oil was found in California and the unsuccessful attempt to become producers in Asia.

Competition in various forms, from other refiners and marketers hatched either by Standard Oil's efficient organisation of the oil industry or by new sources of supply, from alternative sources of light and fuel and even among components of the combination itself, is interpreted as an effective pressure upon Standard Oil to which its leaders responded by lowering costs in every phase of their operations. How much lower costs were reflected in prices is not clear. The writers are able to give only one example of the proportion of average savings in cost in processing a gallon of crude passed on to buyers between 1884 and 1885. With the exception of crude-oil purchases up to 1895, prices were always a matter of policy, though that intricate policy which varied from market to market receives no systematic treatment.

Perhaps the most important contribution of the volume is its analysis of the development of management techniques. In part because the authors had access to company records and did not depend on the private papers of individual leaders, a startlingly different picture of management methods emerges from that presented in Nevins' study of Rockefeller or, for that matter, in Wilson's of Unilever. The Hidys show how the individualistic leaders of an era of cut-throat competition came to work together in a large

combination, not through the domination of a single personality, but by the use of committees and consultation. Whereas in Professor Nevins' view Standard Oil did things because Rockefeller (or later Archbold) "ordered" or "had" them done, actually the leaders operated increasingly on the basis of information supplied from below, recommendations from committees with specialised functions, and face-to-face consultation and investigation. Decisions were the "synthesis of opinion of the group after discussion." The process was slow and bureaucratic, but it was an important part of holding the organisation together. Individualistic leaders in affiliates were given lots of head, and occasionally even the strict rules that appropriations over \$5,000 and salaries over \$600 be approved at 26 Broadway were allowed to lapse in the interests of harmony. This concern with harmony often delayed the rapid adoption by all affiliates of innovations made inside and outside the group. But though consultation was the key to management relations, the group patriarchally resisted its extension to the labour force.

CHARLOTTE ERICKSON

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Measurement of Responsibility. By ELLIOTT JAQUES. (London: Tavistock Publications, 1956. Pp. xiii + 143. 15s.)

THE setting of salaries and wages is amongst the most crucial, and also the most embarrassing, problems in industry. Dr. Jaques looks at these social-economic problems from a fresh viewpoint. He was retained by the Glacier Metal Company as consulting social-analyst, responsible to the Works Council. Hard-hit by apparent inconsistencies in salaries, the Lowest-Grade Staff Committee sought his help to discover objective criteria for defining and measuring the responsibilities attaching to jobs; this led on to a study of the whole wage- and salary-structure of the firm. The author notes that the instruments used for *measuring* work derive directly from the particular method used for *describing* work.

At the outset, criteria such as number of subordinates, equipment controlled, amount of training or qualifications required, failed to give useful assessments of responsibility and authority; so did rating scales and similar quasi-objective methods traditionally used for job-evaluation. From the suggestion of a relation between the "size" of responsibility and the time over which it is carried before being checked, the author came to the concept of the maximum time-span of discretion attached to a job. The method of assessing this, by reaching agreement in discussion with the person doing the job, entailed, first, teasing out the discretionary content of the job; second, discovering the ways (often indirect and not obvious) whereby the use of discretion was reviewed by superiors; third, discovering the maximum period of time that would elapse before such review, during which the person was authorised and expected to exercise discretion on his own

account. Important ideas contrast the *prescribed* content of a job (laid down by rules, policies, physical limitations and the like) about which the person has no choice, and the *discretionary* content (such as choice of methods to achieve a prescribed result and—usually—rate of work); and point out the various methods of review—direct and indirect—used by superiors. People could also agree upon the salary which was fair for their job. Fair payment appeared to be specified completely by the level of work, defined by the maximum time-span of discretion; it was not necessary to refer to quantity of work, nor to the *prescribed* content of the job. With hourly-paid operators, this method was found to apply for those jobs carrying responsibility of more than a few days' span. In shorter-term jobs the measure of discretion was found in the maximum potential loss, e.g., as scrap or damage, which bad judgement could cause; this, too, was found to be closely related to earnings.

These ideas are so interesting and stimulating that it is the more pity that the findings are out of the reach of scientific discussion. This is because the author nowhere describes the methods used to arrive at his quantitatively-expressed data (maximum time-span of discretion; maximum potential loss; salary considered fair) in such a way that another observer could repeat them to arrive at comparable figures. For instance, the "times to pay-off" of a series of decisions must form a statistical distribution; what point of this distribution (for instance, upper quartile or centile) did the author take as "the maximum time-span of discretion"? Statistical distribution is never mentioned, nor possible difficulties of definition, for example, of what is "prescribed" (perhaps by custom or habitual skill) and what is "discretionary." However, "all members were able [in discussion with the author] to describe their responsibility in terms of maximum time-span, and in a manner absolutely consistent with the independent assessment of their managers [in discussion with the author]. . . . There was no dubiety." The measurement of level of work in terms of time-span is repeatedly described as "objective"; the numerical assessments were apparently reached in discussion and (even though the assessor was medically qualified) this seems an unusual connotation of the term "objective". The developments here reported, based on unrecognised subjective judgements, indeed offer an interesting parallel with the little-known history of *n*-rays in physics (described by G. F. Stradling in the *Journal of the Franklin Institute*, 1907). Again, some years ago the reviewer was encouraged by an exponent of another "scientific" method of measuring work to learn to do it himself: "You try doing it for a week, and then you'll suddenly realise that you can do it." Another criticism is that, before reaching wide conclusions, one would like to see the method repeated by more people and in more firms than Glacier.

The interest of the book, then, lies in the ideas it puts forward, rather than the findings. In industry, it seems, any attempt to measure work compels

close scrutiny of what really goes on; a main benefit is the resulting spring-clean. Likewise, this book is full of shrewd incidental observations. Clearly written and well printed, it should be read as a valuable stimulus to new thought in many directions.

R. G. STANSFIELD

London.

Elections and Electors. Studies in democratic representation. By J. F. S. Ross. (London: Eyre & Spottiswoode, 1955. Pp. 480. 42s.)

HERE is an author with an unrivalled knowledge of his subject, sensible and interesting views on it and a message. The message is that the present method of consulting the electors in Great Britain is inadequate, out of date and incapable of rational justification. It is 1832 all over again. We need another Great Reform Bill.

There are two habits of the national mind which we need to be reformed out of. One is that the straight fight in a local township is the ideal expression of political rivalry. Mr. Ross finds this scarcely civilised. Indeed, in his view to think of politics in terms of fighting makes Red Indians of us—what will do to sell breakfast cereal will not do to interest us as voters. The other is that the single-member constituency, the smallest possible voting area that is to say, possesses natural political virtue. The traditional misconception that to turn the country into a map of constituencies like these gives the best chance to all parties, to local interests and to the voter himself, informed the *Representation of the People Act, 1949*, and still completely dominates our practice. It could not be more wrong. What we really need is much larger constituencies, and more members sitting for each of them: five is best, three or seven will do; one member per constituency is intolerable.

This book is readable and may well be influential—especially taken along with his two earlier works—because of the way Mr. Ross chooses to convince us of these palpable errors. He appeals to our principles and he floors us with figures. The two-party attitude and the accent on a straight fight between them with simple majority counting makes our system unrepresentative, and it insults the intelligence of the electorate. Mr. Ross believes that voters can make up their minds between candidates in other ways than by party labels alone, that they are capable of ranging three, five or seven in order of preference and that they are prepared to permit more complicated counting than the simple totting up of *xs* against one name or another.

It is possible that he is right in these claims. But the two-party system would need to justify itself on general grounds if these accidental aids to its persistence were removed, and it is to be hoped that the British electorate would accept it by intelligent choice. For persuasive and moderate as he is for a man with such an excellent case on such a subject, Mr. Ross's political assumptions are unsophisticated. No political theorist, however willing to accept the correction he is given here for misunderstanding methods

of representation, could ever think of representation as he does. The process of exploiting, manipulating, even falsifying the representative system is part of politics itself, one of the complicated consent mechanisms which make government possible. The straight fight mentality is a great psychological strength to British democracy, and not because it is just another Test Match or Cup Tie for the supposedly ignorant and stupid. It is the guarantee of an open game.

When he brings forward his figures, however, Mr. Ross says some very interesting and important things. He demonstrates quite convincingly that the single-seat system can never provide equality of electorates. He is devastating on our persistent attempt to make constituencies "natural," representative of historical and geographical divisions. The great strength of his multi-member constituencies, it seems to me, is that it would turn the conurbation, the nearest thing to a natural community we seem to have left to us, into the geographical basis of politics. If we could adopt this, we might really be carrying out the ideals of 1832. But meantime it is fascinating to wonder how much of the marginal constituency and other talk of our "psephologists" merely arises because of the incredible inconsistencies which this book shows up.

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NOTES AND MEMORANDA

A FORMAL PROOF OF THE CONCAVITY OF THE PRODUCTION POSSIBILITY FUNCTION¹

1. It is a generally accepted feature of economic models of an economy which can produce only two commodities that the production possibility function will be concave, *i.e.*, that the two commodities will be capable of being produced only at increasing opportunity costs in terms of each other, if constant returns to scale prevail in the production of both, but the most economic way of producing them involves the use of differing factor proportions. It is true that this appears to be obvious; but it is of some interest to know that it can be proved geometrically in a simple manner, shown below.

2. In the figure² the axes represent the total supplies of factors (*a*) and (*b*), and *HABCJ* represents the locus of all equilibrium combinations of factors in the production of goods (1) and (2); *e.g.*, at *B*, the parts of factor (*a*) to the left of *B* are used in the production of good (1), and the parts to the right of *B* are used in the production of good (2); and the parts of factor (*b*) below *B* are used in the production of good (1) and the parts above *B* in the production of good (2). An equilibrium point is, of course, one at which the relative marginal products of the two factors are the same in each occupation; this means that at any point on *HABCJ* the iso-product curves of the two commodities, *i.e.*, the curves showing the various combinations of factors which could produce equal amounts of each product, are tangential. In the figure, *aAa*, *bBb* and *cCc* are iso-product curves of good (1), and *a'Aa'*, *b'Bb'* and *c'Cc'* are the iso-product curves of good (2).

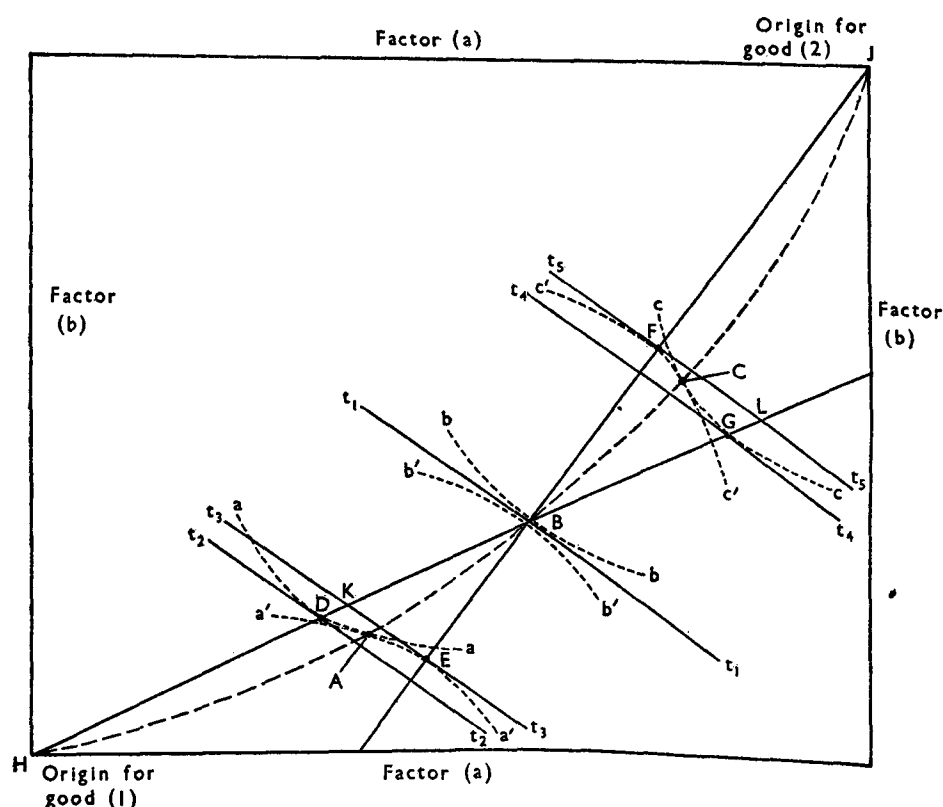
3. Now the only assumptions needed to prove that the production possibility function must be concave are (1) that the iso-product curves of each commodity are convex to the "origin" (*i.e.*, *H* for good (1) and *J* for good (2)); this means that each good has a production function such that to produce the same output with varying factor proportions, either factor needs to be increased more for each successive decrease of the other: and (2) that the production functions of each good are "linear homogeneous," *i.e.*, that constant returns to scale prevail with any given factor-combination.

4. If these assumptions are made, then let *A*, *B* and *C* be points which

¹ This note was written while the author was a Student of Nuffield College, Oxford, and Senior Webb-Medley Scholar.

² The diagram is that originated by W. P. Stolper and P. A. Samuelson in "Protection and Real Wages," *The Review of Economic Studies*, Vol. IX, November 1941, reprinted in *Readings in the Theory of International Trade* (Allen and Unwin, 1950), pp. 333-57.

involve equal increments of good (1) in the movement from A to B and from B to C . D and G are points which represent outputs of good (1) equal to those at A and C , but factor proportions equal to those at B ; while E and F are points which represent outputs of good (2) equal to those at A and C , but factor combinations in the production of good (2) equal to those at B . t_1Bt_1 is the common tangent to bBb and $b'Bb'$ at B . t_2Dt_2 , t_3Et_3 , t_4Gt_4 and t_5Ft_5 are the tangents to aAa , $a'Aa'$, cCc and $c'Cc'$, at D , E , G and F



respectively. These must all be parallel to t_1Bt_1 , because of the "linear homogeneous" properties of the iso-product curves. As $aDAa$ is convex to H , A lies between t_2Dt_2 and B .

As $a'AEa'$ is convex to J , t_3Et_3 lies between A and B .

Thus K , where t_3Et_3 cuts $HDBG$, lies between D and B , and $BK < BD$.

As $cGCc$ is convex to H , t_4Gt_4 lies between C and B .

As $c'FCc'$ is convex to J , C lies between t_5Ft_5 and B .

Thus L , where t_5Ft_5 cuts $HKBG$ produced, lies beyond G , and $BL > BG$.

Thus as $BK < BD$ and $BD = BG$ and $BG < BL$, $BK < BL$; but BKE and BLF are similar triangles, so that $BE < BF$.

But production of good (2) is the same at E as at A , and the same at F as at C . Therefore the decrease in the output of good (2) incurred in a movement from A to B is less than the decrease incurred in a movement from B to C ; i.e., equal increments of good (1) can be obtained only at the cost of increasing decrements of good (2), provided that both goods are produced under conditions of constant returns to scale with any given factor-proportions, that the iso-product curves of each are convex to their respective origins and that the equilibrium methods of production of some of both goods involve the use of factors in different proportions in the two industries.

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THE DEFINITION OF SOCIALISM: A COMMENT

THE really essential element in most of the traditional definitions of socialism put forward during the last hundred years has been the public ownership of the material instruments of production. Certainly, at any rate, most of the economists who have discussed socialism in recent years—Mises, Pigou and Lange, for example—have assumed that this was the position. Mr. H. Smith, however, in his article in the September 1955 issue of the *ECONOMIC JOURNAL*, suggests that socialism should be re-defined to mean a society in which all forms of economic conflict, and therefore all forms of undue group advantage, have disappeared. Socialism in this sense, Mr. Smith argues, is compatible (at least in theory) with either the public or the private ownership of the instruments of production, and there is no real reason to suppose that public ownership will be any more likely than private ownership actually to bring it about.

What Mr. Smith appears to be saying, at least by implication, is that the public ownership of the instruments of production was advocated by socialists merely as a means to the end of a society without classes. Now if we define "classes," as Mr. Smith proceeds to do, as "groups within which movement is difficult, possessing different incomes and preserving the differential by the combined exercise of economic and political power," it can plausibly be argued that the mere public ownership of the instruments of production will not necessarily bring about a society without "classes" in this sense of the word. For "classes," Mr. Smith says, are the product of "economic conflict"; and other types of "economic conflict" exist besides that which socialists have traditionally associated with an economy where the instruments of production are privately owned and "a high proportion of income consists of rents or quasi-rents." "Economic conflict" exists and breeds "classes" not only under these conditions, but also, according to Mr. Smith, "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 . . . 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 latter conditions for the existence of economic conflict, and therefore for the emergence of "classes" in Mr. Smith's sense, are necessarily present in *any* form of society in which "the marginal productivity of capital and, probably, of land, is much greater than zero." Thus to develop a truly "socialist" society, in which economic conflict would be avoided or minimised and "classes" abolished, those in control of economic affairs must "above all things, aim at reducing the marginal product of capital as near to zero as may be." This would involve not simply the accumulation of capital, but also (since "the inventors will always outstrip the savers") the deliberate suppression of all those new inventions which "at once created new tastes and the means of satisfying them." The basic conditions for the establishment of a stable "socialist" society, then, turn out to be that "tastes should be simple and conservative," and that "the level of industrial skill and the degree of capitalisation of industry should both be high."

The rationale of Mr. Smith's re-definition of socialism may still not be clear from this summary of his argument—and, indeed, it is by no means clearly stated in the article itself. The basic point seems to me to be the following: When socialists have suggested that the abolition of the private ownership of the instruments of production would lead to a society without "economic conflict" and without "classes," they have usually had in mind a particular type of economic conflict and a particular type of class relationship. The economic conflict they wished to abolish, broadly speaking, was that which arose in a capitalist society over the distribution of the national income between property-owners and wage-earners; and the class relationship they wished to abolish was that existing under capitalism between these two social groups. The question of whether any other types of economic conflict and undue group advantage would remain or emerge under socialism was frequently (but by no means always) neglected or soft-pedalled. What Mr. Smith is really trying to say, I think, is that this question should now be brought forward for serious discussion, since in his opinion experience has shown that the existence of a positive marginal productivity of capital, in *any* form of society, leads to certain types of "economic conflict" which are at least comparable in their power to generate cases of undue group advantage with that other type of "economic conflict" which socialists have traditionally emphasised. Mr. Smith's extension of the traditional definition of "class," then, and his amendment of the traditional definition of "socialism," are really only devices for drawing attention to the importance of these additional types of "economic conflict," and for emphasising his view that there is no reason to suppose that the abolition of the private ownership of the instruments of production would significantly reduce their intensity. If Mr. Smith's argument is interpreted

in this way, the rather misty air of paradox which pervades the greater part of it begins to disappear.

But even if we agree with Mr. Smith that the economic conflicts associated with a positive marginal productivity of capital are important, and that the abolition of the private ownership of the instruments of production would not significantly reduce their intensity, it by no means follows that it is either necessary or useful to re-define socialism in the way he suggests. Like Keynes' re-definition of "classical economics," which was put forward for a rather similar sort of pedagogic purpose, Mr. Smith's re-definition of socialism seems much more likely to sow confusion than to shed light on the problems involved. Suppose we have two societies—the U.S.S.R. and Britain, say—in both of which the marginal productivity of capital is greater than zero, but in the first of which public ownership of the instruments of production predominates, and in the second of which private ownership predominates. Even if both these societies be equally subject to certain types of economic conflict arising out of the positive marginal productivity of capital, it surely remains true that only the second is subject to that other very important type of economic conflict which is associated with the private ownership of the instruments of production and the consequent presence of a high proportion of "rents or quasi-rents" in the national income. It is this distinction between the two societies that the word "socialism" has traditionally been used to emphasise, and even if we accept Mr. Smith's main argument there seems to be no good reason why the word should not continue to be used for the same purpose. Even if it were true that new "classes" in Mr. Smith's somewhat puristic sense of the word were emerging in the first society, and that social legislation was mitigating the effects of conflicts between property-owners and wage-earners in the second, this would at most diminish the importance of this distinction between the two societies, and would by no means do away with it. Why should Mr. Smith not attach to his ideal society some harmless and handy label such as "Bliss" or "Modified Rapture"?

But can we in fact accept Mr. Smith's main argument? In particular, can we really accept his view that in *any* society in which the marginal productivity of capital is greater than zero and tastes are not conservative, wealth and power are bound to become concentrated in the hands of social groups which will use their position to obtain undue advantages? This is a difficult question, which cannot be answered quite as readily as Mr. Smith seems to assume, and to which economists and sociologists ought to pay much more attention than they are doing at the moment.

The vital problem here seems to be that of the extent to which *social* control of economic and administrative decisions can become effective in breaking down "classes" in Mr. Smith's sense. *A priori*, one would surely expect that it would be more likely to be effective in an economy where the instruments of production were publicly owned than in one where they were privately owned. For in the latter type of economy, private ownership means that individuals take economic decisions and exercise economic

power because of the concentration of wealth in their hands. The structure of economic decisions in general is such that social control, while it may exercise *some* influence over the property-owning groups, is likely to be very limited in its power to break down "classes." In the former type of economy, on the other hand, one would expect that with the abolition of the power of the property-owning groups the possibilities of exercising social control over decisions would become much greater.

However, it is, of course, possible that in an economy where the instruments of production are publicly owned decision-making groups with power and virtual control of wealth (even though they do not legally own it) may emerge, just as they do in large monopolies under private capitalism. How far could social control become effective in breaking down the power of these new "classes"? This is a question upon which the experience of the U.S.S.R., if properly studied, could in all probability throw considerable light. Some of the points which require empirical investigation are the following: What is the precise part played by "the public" in government and planning in the U.S.S.R.? How far is the extent of "public" participation in these activities likely to be increased by the recent measures of decentralisation? How far will the introduction of universal compulsory secondary education, now rapidly proceeding, operate to prevent the emergence of a new technocratic "class"? Is mobility between social groups increasing or decreasing, and how are the long-term policy proposals now being put forward likely to affect it in the future? What is the significance of the recent public complaints about the excessively high incomes of certain groups? What is the role played by the intense public criticism of bureaucracy? An investigation of such points as these would probably show that Mr. Smith's argument, in so far as it purports to be derived from Soviet experience, is grossly over-simplified.

Finally, it is worth noting that in a society like the U.S.S.R., where the instruments of production are publicly owned, economic development is likely to be *more rapid* than in a society where these instruments are privately owned, owing to the fact that economic decisions are co-ordinated to a very much higher degree. An investigation of the effects of this rapid expansion might well confirm the Soviet claim that in the U.S.S.R., under conditions where the technical level of the population as a whole is being appreciably raised, the basis is now being laid for a wide diffusion of wealth and power among the people,¹ leading ultimately to a communist society in which (following classical Marxian theory) the present system of distribution according to work will be replaced by a system of distribution according to need. This is a point which cannot be ignored when dealing with the

¹ A new stage in the laying of this basis, as it seems to me, was reached at the 20th Congress of the Soviet Communist Party, which took place after the present comment was written. The investigation for which I am calling would require to consider carefully a number of the new policies announced at the Congress, notably (a) the abolition of school and university fees, (b) further measures of industrial and agricultural decentralisation, (c) a more equalitarian pension system, and (d) the reduction of the excessive gap between the wages of lower-paid and higher-paid workers.

problem. And Mr. Smith himself does give passing attention to it, in a footnote dealing with the capacity for rapid improvement in the standard of living in the U.S.S.R. "The rate of progress by internal standards," he says, "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." If Mr. Smith's qualifications here are relaxed a little, then this point alone—quite apart from those discussed above—would seem to be decisive against his proposed re-definition of socialism.

RONALD L. MEEK

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THE DEFINITION OF SOCIALISM: A REJOINDER

MR. MEEK is less in disagreement with me than he supposes. In his opening paragraph he quotes me as arguing that "Socialism . . . a society in which all forms of economic conflict, and therefore all forms of undue group advantage, have disappeared . . . is compatible with either the public or the private ownership of the instruments of production." This is a complete misunderstanding: my argument that a socialist society would be possible only when the marginal efficiency of capital was in the vicinity of zero (which is no more than a restatement of the thesis of Marx and Engels in more precise economic terminology) completely rules out its private ownership. "Private ownership" of capital which yields no revenue is nonsense as a general basis for economic life.

There are two points in Mr. Meek's criticism of my article which need a serious reply. The first is that a redefinition of socialism is unnecessary and confusing. The second is that a careful study of the U.S.S.R. should reveal more exactly the nature of the economic conflicts which survive in a collectivist economy and the prospects of their removal. With the second I am in most complete agreement. But to undertake such an investigation, even if the relevant data were available, one needs to know what to look for. My article attempted to commence the definition of the suitable terms. I cannot avoid pointing out that Mr. Meek seems to find my definition, as far as it goes, very useful in his last paragraph, although I cannot understand why he proposes to discard a definition of socialism by means of which the rapid development of the U.S.S.R. towards a socialist society can, as he considers, be demonstrated so triumphantly.

Concerning the first point, however, we are in flat disagreement. The traditional definition of socialism has been the public ownership of the means of production. I was not the first to suggest that it was inadequate. It is hardly necessary for me to point out that a very large number of prominent socialists now disclaim this definition in the light of both British and Soviet experience: one could fill a page with references to statements by economists like Lewis and Jay and Durbin, or to official pronouncements by socialist

parties in Europe. Unfortunately there is no agreement upon the economic arrangements which the critics of free enterprise wish to substitute for it, nor upon any standards by reference to which the extent to which extensions of public ownership fall short of "Socialism" can, in economic terms, be measured. (I am not concerned with *political* criticisms of experiments in wholesale or partial state ownership of industry, except to say that if "democracy" is to be allied with public ownership to produce socialism the democratic voters must have some idea of what to vote for if democracy is to produce the desired result.) In the economic field, I have tried to produce a formula.

The argument may be rephrased. It is possible fairly easily to define conditions in which there *need* be no conflict in economic life. Most people would do a little work of some kind rather than be completely idle: all can work more easily the more and better the tools and the greater the mechanical power at their command. There need be no economic conflict in a world in which the marginal disutility of labour and the marginal efficiency of capital are both zero. The idea of no one having to work beyond the point at which effort is more irksome than idleness is simple enough; it involves, however, the necessity of his being able to earn *all* that he wants by that amount of labour, leaving no desire unsatisfied. That is where the importance of the second condition becomes clear. If in every trade all those tools and mechanical aids are available in which the labour saved exceeds, to however infinitesimal a degree, the labour tied up in the device, then human labour is lightened to the greatest degree compatible with the development of applied science at the time. If there is no scarcity of tools, then no problem of their distribution between one industry and another exists, and the task of keeping labour down to the "voluntary" level is lightened. Short of this point, economic conflict is inevitable, whether the state or private persons own the scarce land and capital and organise production.

A great deal of what is written about the economics of socialism is circular in argument. Two excellent examples, both models of lucidity and sound economic reasoning, are Pigou's *Socialism versus Capitalism* and Lerner's *Economics of Control*. The former defines socialism as the ownership of the greater part of the means of production by the state and their operation without the accumulation of profit (not, as he is careful to point out, with any necessary lessening "of the range over which the desire for personal pecuniary gain governs conduct.") The *fact* of profit being eliminated, while individuals and groups still in all other ways open to them "compete" for the share of the national output which they receive, opens the way to a general consideration of the "maximisation" problem, and to the re-affirmation of all those points concerning the desirability and the difficulty of controlling monopolist pressures, aligning private and social costs and products, and equalising real income without destroying incentive which

are familiar to all readers of the Cambridge classics. Lerner starts out with the problem of real income maximisation, defines socialism as the state ownership of capital and land and proves that the formal conditions of maximising real income *need* not involve socialism as defined. Both leave us with minimised areas of economic conflict, and are centred on the problem of conflict; there is therefore an almost complete certainty that they would leave the common man (or the common socialist) saying, "This is not socialism." There is no reason why the protest "This is not socialism" should have any meaning sufficiently precise to be capable of analysis. In so far as socialism is an emotional concept it can be used to cover a very wide range of incompatible discontents.

A collectivist society *may* achieve a standard of living higher than that of any alternative one, given the techniques and resources at its disposal. But, for all that economic analysis can tell us, Professor Lerner's "controlled economy" could do this just as well. All this abstracts from the problem of administrative efficiency: it may well be that a free-enterprise economy, stiffened by strategically placed and unpredatory monopolies and guided by a wisely directed central bank, would do better for artisans and clerks than would the collectivist economy for the general standard of its more equal citizens. It would seem that there is no "economics of socialism" in the sense of formulæ for the arrangement of economic life which would remove economic conflict while work is still irksome and tools still limited. Socialism is an economic concept, but it is one which is only partly capable of definition by reference to the ownership of the means of production.

As far ahead as we can see in Britain and similarly situated countries the practical problem is to accept and strive to mitigate the conflict inevitable in a society which runs because of the spur of permanently unsatisfied economic wants, relying for its motive power on making the worker, as consumer, want an unattainable standard of living so badly that he will work hard enough to maintain and improve his existing one. Whether the exhortation is in the hands of commercial advertising or of the state does not matter much. (It is an education in the unity of economic problems to drive across the two sectors of Berlin, from the ostentation of the Stalinalee and the nagging of the posters in the Communist sector to the blare of commercial publicity in the Western sector.)

The two halves of the world economy are both going the same way; the one technically more backward, paying lip service to socialism, without any tradition of political democracy, and handicapped by clumsy and obsolete techniques of economic analysis: the other richer, chiefly democratic in structure, nominally profit-motivated, aided both in organisation and projects for reform by a more efficient economic technique. The former depends on state initiative, hampered by the conservatism of its people and the reluctance of its peasantry to accept collectivism; the latter depends on the initiative of groups of persons in control of privately owned capital,

countered by the power of organised labour, with the state alternatively responding to the pushes of pressure groups on either side. All the machinery which the economists have designed for the mitigation of this struggle is available, and will no doubt be increasingly utilised, but the criterion of "socialism" as a practical critique of political life has probably become meaningless.

That is why the traditional definition of socialism is inadequate. Far be it from me to underestimate the virtues of ambiguity in the terminology of politics: the administrator and the reformer must have elbow-room in which to manoeuvre. But when a term, which commences by being a simple economic formula by means of which both the material standard of living of the masses is to be raised and social harmony is to be achieved, has come to be used to cover a wide range of proposals for social reform based, for the most part, upon some compromise between these two objectives, now recognised in some circumstances to be in opposition, ambiguity has gone too far. The paradox is not in my argument; it is in the situation which I analyse. The mist, if present at all, is on Mr. Meek's spectacles.

H. SMITH

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AN ACADEMY OF ECONOMICS

ONE of the difficulties of economics lies in the failure of the science to adhere to a strictly defined technical vocabulary. Different authors frequently coin or use new terms for concepts already known under other names. And even the same authors often use different terms for identical concepts for the sake of stylistic variation.

This does not mean that different terms should not be used for similar and, perhaps, even identical concepts. For different expressions often illuminate at an instant aspects which other terms may bring to the surface only through laborious definition. There is room for synonyms everywhere. Nor does it mean that the same term should not be used for different concepts. This may bring analogous and homologous relationships to light which otherwise might remain hidden. But in each such case it would seem imperative to state at the outset all necessary cross references and to explain why a specific term has been selected in preference to related terms.

But how can this be done in view of the constant influx of new terms coined every year by an increasing number of economic authors pursuing similar studies in the most distant corners of the globe? The answer seems to be a sort of international exchange, an Academy, which would do for economics what the French Academy does for the French language. It would study the terms proposed, officially adopt those to be used, define them authoritatively, state their intellectual origin and compile them in a

definitive dictionary. Similar to the work of the French Encyclopædists, this would not only provide an indispensable guide to terminology and the history of economic thought; it would, moreover, avert the principal danger to every linguistic discipline—the annihilation of a language through the indiscriminating absorption of an excessive number of words and its ultimate strangulation under the impact of its own slang.

The membership of such an Academy of Economics should be restricted to perhaps forty or fifty persons chosen from amongst the world's most outstanding economists. A dozen or so might be elected to lifetime chairs named after eminent economists of the past, the rest to tenure up to retirement age. Election to membership would confer the supreme honour of the profession.

New terms, concepts and formulations, emerging as a result of new developments and studies, could then be submitted, defended and argued in special Academy lectures, with the Academicians, in due course, pronouncing their verdict as to acceptance and inclusion in the official dictionary. Old terms would be re-examined upon request, and supplanted by better ones if new findings should justify such a change. And particularly significant contributions might be honoured by the use of the author's name as part of a concept's official designation. Economics has already done this in some instances such as Gresham's Law, Pareto's Law of Income Distribution, the Malthusian Doctrine or the Pigou Effect. But many others could be added, such as Gossen's Curve (illustrating diminishing utility), Tugwell's Theory of Consumer Disadvantage (justifying in certain cases public control of rates and services of private enterprises), the Zaharoff Exemption (after Sir Basil Zaharoff's remark that arms are the only commodity defying the law of diminishing utility: the more one has of them, the more one wants to have more), Murad's Law of Diminishing Net Investments and many others. Besides the implication of professional recognition, such designations would contribute greatly to economic literacy, providing a briefing in theory and, at the same time, the history of economic thought. Appealing, moreover, to man's delight in gossip, the presentation of concepts and formulations against the background of the person and work of their originators would enhance familiarity with, and interest in, the subject still further.

An Economic Academy would thus serve not only one but several purposes. It would, above all, provide an invaluable incentive to precision, linguistic elegance and scholarship. It would infuse academic discipline into a field whose spread, practical importance and swift change make it increasingly unsurveyable. It would furnish a universally applicable dictionary, fulfilling for economics the function Latin fulfils for the Catholic Church. But, in addition, in the absence of a Nobel Prize for contributions to the social sciences, it would represent a device for giving proper honour to outstanding economists. And, by personalising a number of significant

terms through the inclusion of their authors as part of the official designation, it would, in an increasingly collectivised and anonymous age, restore emphasis to the importance of individual accomplishment.

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L. KOHR

CANADIAN WHEAT GROWERS AND PRICE CHANGES

IN the ECONOMIC JOURNAL, June 1956, Miss Farnsworth and Mr. Jones cited an article of mine in their attack on beliefs that wheat farmers respond perversely to price changes. It must suffice here to make a brief comment.

Briefly, I agree with their general conclusion that in the aggregate wheat farmers behave orthodoxly in the face of price changes. My *Farm Economist* article never claimed to show any more than its own limited objective. My conclusion was neither generalised over time or place. Moreover, especially in the light of their own analysis, it is most surprising that they make no clear reference to the sixth stage of my analysis, which was to allow for the substitution effect as the price of wheat varied relatively to the prices of other field crops. This stage of the analysis was described in detail, and a long footnote set out the various alternative ways, which I had tried and rejected, of testing my hypotheses.

Miss Farnsworth's and Mr. Jones' main criticism concerning the original wheat-acreage statistics is in principle clearly justified. (Put not thy faith in Central Bureaux of Statistics!) However, at a later date I hope to show that by various adjustments it can be effectively met. Indeed, if one applies the corrections which they suggest in their Chart 1b to their Chart 1a it can be seen that their point is by no means fundamental.

During the period 1916-40 wheat acreages frequently varied without any compensating adjustment in the acreages under other field crops. Moreover, from the point of view of the wheat market it is the absolute variations in wheat acreages which are predominantly important. It is insufficient to consider only the substitution effect of a change in the price of wheat relative to the price of other field crops. This is my fundamental objection to Miss Farnsworth's and Mr. Jones' article.

Accordingly, it is not surprising that by reading off from their Chart 4a I calculate that their analysis yields an index of correlation of 0.06, whereas my original work provided one of 0.40. Partly as a result of their stimulus, I have re-worked my analysis so as to allow the relationship between wheat acreages and the real prices of wheat to become completely S-shaped. I will set out the theoretical justification for this in due course. The re-calculated relationships yield an index of correlation of 0.62 and, if allowance is made for a time factor, of 0.68.

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GEORGE ALLEN

SEQUENCE ANALYSIS AND THE THEORY OF THE RATE OF INTEREST—A REJOINDER

THERE is no objection to Professor Tew's criticism¹ of my model that it tells two stories about hoarding. I can see no reason, however, why an economic model should not tell two stories about the same thing. In fact, if one examines the stationary lagless model of the Keynesian system² one finds, to use Professor Tew's terminology, that the first equation— $i = L(Y, M)$ —and the next three equations together— $K = k(i)$, $S = s(Y)$ and $S = K$ —tell the same story, since the sum of the marginal propensities to save and to consume equals unity. Nobody, as far as I am aware, has taken exception to this system on such grounds.

Now it is the stationary nature of this (Keynesian) system which permits a proper solution. When, however, a lag is introduced and this stationary nature is not assumed, then the sum of the marginal propensities to supply investible funds and to consume is not *identically* unity. This, as I have tried to show,³ necessitates the introduction of an additional *independent* equation. It is my refusal to assume that the sum of these two propensities is unity (and here Professor Tew agrees with me⁴) that creates the problem.

I am firmly convinced that there is a problem, although I am not over-confident in my solution of it. However, I cannot accept Professor Tew's solution of dropping the equation which brings the money factor into the system. Such a course implies that

- (i) money has a part to play in a stationary system, and
- (ii) it has no part to play in a dynamic system.

This conclusion is unacceptable, since Professor Tew offers no explanation to justify the existence of such a state of affairs.

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THE NEW ECONOMICS CURRICULUM IN THE FRENCH FACULTÉS DE DROIT

IT is generally known that in France economics has for the past three-quarters of a century been taught in the *Facultés de Droit* as a supplement to legal studies. Certain changes, it is true, have been slowly introduced from above. At the turn of this century there was established the *Aggrégation des Sciences économiques*, a very difficult competitive examination for mature scholars, designed to select the future professors of economics. Since

¹ B. Tew, "Sequence Analysis and the Theory of the Rate of Interest," *ECONOMIC JOURNAL*, LXVI, 1956, pp. 533-5.

² See A. LL. Wright, "Sequence Analysis and the Theory of the Rate of Interest," *ECONOMIC JOURNAL*, LXV, 1955, p. 626.

³ See *ibid.*, p. 628.

⁴ See B. Tew, *loc. cit.*, p. 534.
No. 265.—VOL. LXVII.

then, this *Agrégation*—whose level is well above that of the doctor's degree—has supplied the *Facultés* with about half a dozen economists of the highest grade every two years. In total, there are some sixty to seventy such professors of economics, mostly engaged in teaching, but often performing in addition other services (writing, government advising, research). Professors of international repute, such as the late Professors Nogaro, Pirou and Rist, and Professors Baudin, Perroux, James, Guitton, among those still teaching, were the products of this *Agrégation*.

A second change, first introduced in 1925 and further developed after the liberation, has provided for a special doctor's degree in economics. As it is organised now, the curriculum for this—beyond the *licence* level—consists of two examinations and a thesis, and requires about three years. The programmes, which have a common basis but many different features from one *Faculté* to the next and from year to year, are fairly wide and certainly as sophisticated as a curriculum for graduates in Chicago, Harvard, London or Cambridge. In recent years the annual output of doctors in economics has been fluctuating between one hundred and two hundred. They usually find jobs in government and international bureaux, in public corporations or in big private firms. Even though business heads of the older generation are not prone to hire economists and to use their services, there has hitherto been no shortage of jobs for our doctors.

Since November 1955 a much more significant reform of the *Facultés de Droit* has been put into actual operation at the level of the *licence*. Its main features are these:

(a) The lengthening of the curriculum from three to four years, in order to abolish the supposedly "easy-going manner" of the *Facultés de Droit* and to discourage, from the start, the amateurs; in the first year, this objective was attained, at least in Paris, where the number of registrations fell by 50%.

(b) Specialisation into three "sections" (private law, political science and economics); but every student must attend some courses, particularly during the first two years, in fields other than the chosen one; to use the American expression, a student who "majors" in economics must do some private law and some political science (see the Appendix).

(c) Extension of the seminar system, with relatively small discussion groups, in place of the purely formal *ex cathedra* teaching; for instance, in the *Faculté* of Paris, it has been necessary to recruit some forty instructors, each to take charge of one group; in the smaller provincial universities the professor, with the help of an assistant or two, is usually able to supervise directly the work of all his students.

The new system will certainly provide students with a first-class knowledge and understanding of economics, probably superior to that of the

present doctors in economics, except that they will not have had the special training that comes from writing a thesis on a narrow subject. This, incidentally, will render obsolete the present doctors' curriculum and make necessary a further reform, now under consideration.

In addition to economics, the *Licenciés de sciences économiques* will have a fairly wide knowledge of law, government, administration and the like. They will, therefore, be well prepared for an inter-disciplinary approach to their problems. Yet one may ask whether it is really advisable to substitute a couple of semesters of private law and legal history for such subjects as accounting, mathematics, sociology, psychology, business management and similar studies.

Argument continues as to whether it has been wise to extend the share of economics within the *Facultés de Droit*, or whether it would not have been better to organise two or three specialised *Facultés des Sciences économiques*, or whether again it would not have been still better to create a couple of *Facultés des Sciences sociales*, more or less along the lines of the London School of Economics and Political Science and of the Oxford Faculty of Social Studies. I think I myself would favour this last solution, provided that teaching were not too fragmented.

It takes a long time before changes in curricula produce their full effect. We can, however, safely predict that around 1970, *rebus sic stantibus*, there will be over five thousand economists. To provide them with jobs, top administrators and business-men will have to recognise that an economist can be useful and is worth the money he gets.

One difficulty is that, for lack of an adequate supply of properly trained economists when they were needed, all sorts of pseudo-economists have been parachuted into our field: industrial advisers, financial counsellors, organisation "engineers," glorified accountants, management experts and even "*counseillers de synthèse*." Furthermore, every *Faculté* is now launching a school of business administration, whose students will compete with our future *licenciés*. But if, as I hope, the same actual persons become both *licenciés* and graduates in business administration, the competition may be harmless.

To those who wish to go into greater detail regarding the evolution of the teaching of economics in France I would suggest that they may like to consult the following works or articles:

Henri Hauser, *L'enseignement des sciences sociales. Etat actuel de cet enseignement dans les divers pays du monde* (Paris, 1903).

Gaëtan Pirou, "Les Facultés de Droit" in "L'enseignement économique en France et à l'étranger," *Revue d'Economie Politique*, 1937.

Robert Mossé, "Projet de réforme des Etudes économiques en France," *Economie Contemporaine*, June 1951.

Roland G. Beauvois, "A propos de l'enseignement économique dans

les Universités," *Revue de Sciences économiques* (Liège, Belgique, September 1953); there is much valuable material in this well-informed article, including an historical and international background.

The reader may also find interesting and wider problems raised in the Reports on Undergraduate and Graduate Teaching of the American Economic Association, and also the Proceedings of the Talloire Round Table on the University Teaching of Economics, organised by the International Economic Association,¹ which contains an interesting essay on the teaching of economics in France by Professor Emile James of the University of Paris.

ROBERT MOSSÉ

Grenoble.

APPENDIX

Curriculum of Courses for the Licence de Sciences Économiques

ECONOMIC SUBJECTS		NON-ECONOMIC SUBJECTS	
	No. of semesters. ²		No. of semesters. ²
<i>First Year :</i>			
General Economics (I)	2	Private Law and Legal Institutions	2
Financial Institutions	1	History (social and legal)	2
		Political Science and Constitutional Laws	2
		International Institutions	1
Total for the year: 10 semesters, ³ or 15 hours of lectures per week.			
<i>Second Year :</i>			
General Economics (II)	2	Private Law	2
Labour Legislation	1	History (social and legal)	2
		Administrative Law	2
		Criminal Law	1
Total for the year: as before.			

During the first and the second year, economics represents hardly one-third of the *ex cathedra* teaching. But students may choose seminars in economics and written examinations in economics. Practically, this amounts to devoting half of the time and energy to economics.

<i>Third Year :</i>			
History of Economic Thought	2	Business Law	2
Statistics and Methods of "Observation"	2	History of Political Ideas	1
Taxation	1		
Economic Fluctuations	1		
Social Security	1		
<i>Fourth Year :</i>			
Economic Systems	2	Optional	2
International Economics	1		
Management of the Firm and Accounting	1		
Economic Geography	1		
Fiscal Policies	1		

Notes. It should be remembered that when entering the *Faculté de Droit* the student, aged out nineteen, has a bachelor's degree, which requires a considerable amount of knowledge, including mathematics and/or philosophy. The new *licencié de sciences économiques*, when he emerges in July 1959, will have a wide education outside economics and will be better acquainted with economics than the former *Docteur es-sciences économiques*. The annual output of such *licenciés de sciences économiques* may be well over five hundred a year (this is a very conservative estimate).

¹ *The University Teaching of Social Sciences: Economics* (Unesco, 1954; obtainable from the E.S., price 7s.).

² 1 semester means 40 hours of lecturing at the usual rate of 3 hours per week. As a compulsory complement to this "ex cathedra" teaching there are about 3 hours per week of seminars.

CURRENT TOPICS

WE offer our best congratulations to our President, Sir Alexander Carr-Saunders, on the conferment in the New Year Honours List of a Knighthood of the Order of the British Empire. We are sure that all Fellows of the Society will be delighted at this recognition of his great services both to the London School of Economics and Political Science and to education in the social sciences throughout the Commonwealth.

WE congratulate also Sir Noel Hall on the conferment of a Knighthood. He served for a number of years on the Council of the Society. He has made an outstanding contribution to the improvement of business administration in this country as Principal of the Administrative Staff College at Henley.

WE record with great regret the death on January 21st of Sir Arthur Bowley, formerly Professor of Statistics in the University of London. He had been a member of the Royal Economic Society since 1893 and served for many years on the Council; in 1942 he was elected a Vice-President. We hope to publish an obituary notice in a forthcoming issue.

MR. S. G. CHECKLAND has been elected to the Chair of Economic History in the University of Glasgow.

THE following have been admitted to Life Fellowship of the Society:

Brodie, M. B.	McManus, M.	Patel, J. C.
Duhaut, H. R.	Mullan, J. B.	Siebenberg, F. J.
Kashiwazaki, T.	Neild, R. R.	Whatmore, P. W.
Kurihara, Prof. K. K.	Opie, R. G.	

THE following have been admitted to Fellowship of the Society:

Akinadewo, S. A.	Breier, Prof. F. A.	Drew, Wm.
Anderson, J. W.	Brown, A. G.	Duff, H.
Apara, O.	Camus y del Rio, E. F.	Duffy, J. P.
Aryee, C. A.	Chee, C. B.	Fee, T. C.
Booz, P.	Chiwuze, H. D. O.	Frank, A. G.
Bose, B. C.	Constantinou, A. M.	Franklin, D. W. V.
Bowes, C. J. L.	Cuff, P. B. H.	Geraghty, J. B.
Braae, G. P.	Das, V. K. R.	Ghosh, J. J.

Goss, R. O.	Kung, T. S. K.	Quinn, J. W.
Gupta, K. L.	Masilamani, W. L.	Rogers, J. W. T.
Hadjigeorgiou, A.	McCulloch, V. C.	Ruparelia, V. J.
Haigh, B. W.	McIntyre, M. A.	Rybczynski, T. M.
Hanauer, J. A.	Mettle-Nunoo, B. A.	Sagar, R. D.
Haring, J. E.	Mukerji, S. C.	Somasundaram, S.
Hines, Prof. L. G.	Nouth, P.	Sundram, S. T.
Jones, R. A.	Ølgaard, A. L.	Taylor, G. V.
Kenan, P. B.	Osibolu, Miss C. O.	Tripathy, S.
Kermode, G. O.	Panda, D.	Uma, K. I.
Kitamura, H.	Perryman, F. D.	Vasnaik, M. A. J.
Krishnamurti, Prof. L. R.	Platten, J. D. R.	Whitehouse, J.
	Price, E. H. M.	Williams, R.

THE following have been admitted to Library Membership of the Society:

Banco Nacional do Desenvolvimento Economico, Rio de Janeiro.
 Ellen Clarke Bertrand Library, Bucknell University, Pennsylvania.
 Humboldt State College Library, California.
 Korea Research Center, Seoul, Korea.
 Matthews Library, Arizona State College, Tempe, Arizona.
 National Planning Committee, Cairo.
 State Statistical Bureau, Calcutta.
 Volkswirtschaftliches Seminar, Universitat, Gottingen.

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- VOL. 119, PART 4, 1956. *Estimating Expenditure, Saving and Income from Household Budgets*: D. COLE and J. E. G. UTTING. *The Cost of Road Accidents*: D. J. REYNOLDS. *The New Zealand Agricultural Sample Survey*: W. B. TAYLOR and D. V. P. CLEMENT. *Some Theory of Index Numbers: II: Maintenance of Continuity by the Assumption of Proportionality of the New Index Number to the Old Index*: Y. P. SENG.

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- VOL. XXXII, No. 4, NOVEMBER 1956. *Concepts Used as Economic Criteria for a System of Water Rights*: S. V. CIRIACY-WANTRUP. *Diminishing Returns in the Depletion of Mines*: J. C. MURDOCK. *Railroad Consolidations and the Regulation of Abandonments*: M. CONANT. *Credit in an Expanding Economy: Should We Have Hundred Percent Agricultural Credit?*: C. MITCHELL. *The Problem of Allocating Capacity Cost*: R. K. DAVIDSON. *Property Taxes and Solutions to Fringe Problems*: B. G. ZIMMER and A. H. HAWLEY. *Measuring the Suburbanization of Manufacture*: L. GREBLER.

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- VOL. 32, No. 4, OCTOBER 1956. *Millionaire Cities, 1955*: A. M. LAMBERT. *Yugoslavia in Transition: Industrial Expansion and Resource Bases*: G. W. HOFFMAN. *Refugee Industries in West Germany after 1945*: C. C. HELD. *Cebu: Focus of Philippine Interisland Trade*: F. L. WERNSTEDT. *The Iron and Steel Industry in China*: M. ERSELCUK.

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- VOL. 102, No. 4, OCTOBER 1956. *Estate and Trust Income*: M. E. LANGIAR. *Depreciation Problems*: T. J. GRAVES.
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- VOL. XXII, No. 7, NOVEMBER 1956. *Les religieuses du diocèse de Tournai*: M. T. MATTEZ. *L'intérêt pour l'art musical*: R. HOEBAER. *Différences culturelles entre instituteurs flamands, francophones et hollandais*: C. LEPLAE.
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- o. 7, 1956. *Steadily Raise the Level of Economic Work. Improve Credit Issue and Accounting in the Economy*: P. NOSKO. *Meeting of Officials of the Credit Department of the State Bank. Ways to Lower Production Costs*: M. SAKOV. *Tasks of the State Bank in Organising the Circulation of Notes and Coin among Enterprises*: I. YAGODIN.
- o. 8, 1956. *The Next Tasks of the State Bank in the Sphere of Currency Circulation*: A. KUDRYAVTSEV. *A Meeting on Money Circulation. On Ways to Evaluate the Banking Relations of an Enterprise*: B. MITELMAN. *The Money and Credit System of Mongolia*: G. BALZHID. *New Mutual Relationships between the State Bank and the Long-term Investment Banks*: YA. GREBEN.
- o. 9, 1956. *The Circulating Capital of a Socialist Enterprise. The Issue of Credit to Industry in Czechoslovakia*: O. POHL. *Problems of Bank Control in the Distribution of the Wages Fund*: L. GALIMON. *Critical Remarks on Business Executives*: R. GRUTMAN. *New Regulations in State Bank Control over Small Wholesale Trade*: E. BOSHAKOV.

Vestnik Statistiki (Russian text)

- o. 3, 1956. *Lenin on the Work of the Central Statistical Administration. Thoroughly Study the Economics of Agriculture*: V. MANYAKIN. *On the Methodology of Computing the Real Wage Index in the U.S.S.R.*: M. EIDELMAN. *On the Use of the Index-numbers Method for Revealing the Influence of Changes in Product-mix upon the Index of Production Costs*: D. SAVINSKY. *On Sample Surveys of the Labour Input by Collective Farm Members and Their Families by Branch of Agricultural Production*: D. DUMNOV and V. SEDOV. *The Significance of A.I. Chuprov in the Development of Russian Statistics*: S. OSTROUMOV.
- o. 4, 1956. *Plan Results for the First Half of 1956. Data on the Great Victories of Socialism. The Statistical Analysis of the Effectiveness of Agrotechnical Measures*: I. PASKHAVER. *Methods of Computing Labour Productivity*: I. TARASOV. *The Calculation of Economies from Lowering Production Costs*: YA. KABACHNIK. *Economic and Cultural Construction in the Korean People's Democratic Republic*: S. POSTNIKOV. *Plans for Population Censuses in Capitalist Countries*: T. RYABUSHKIN. *The Operation of the Belorussian Statistical Administration*: S. MALYCHEV.

Ekonomista (Polish text, English and Russian summaries)

- o. 5, 1956. *Issue devoted to papers at the II Congress of Polish Economists, June 1956. Current Problems of Economics in Poland*: O. LANGE. *The Subject of Economics and Economic Laws*: E. LIPIŃSKY. *Some Problems of the Theory of Socialist Reproduction*: B. MINC. *The Dynamics of Investment and of the National Income in a Socialist Economy*: M. KALECKI. *On the Role of the Law of Value in a Socialist Economy*: W. BRUS. *Discussion at the Congress. Closing Speech*: O. LANGE. *Resolutions of the Congress*.

Gospodarka Planowa (Polish text)

- AUGUST 1956. *Investment in the Electric Power Industry during the Six-year Plan*: E. ZIÓŁKOWSKI. *Sources of Supply for Light Industry during the Five-year Plan*: J. KORDASZEWSKI. *Some Remarks on Planning the Full Utilisation of Industrial Capacity*: J. SROŃSKI. *Methods of Studying Agricultural Production*: A. GRABSKI. *The Need for On-the-job Training*: A. NOWICKI. *Some Remarks on Long-term Planning*: A. BRZESKI. *The Planning of Goods Transport*: A. DOWGIALLO, W. KWIATUSZYŃSKI and W. MAGIERA. *The Dynamics of Basic Production Factors*: K. ROMANIUK et al. *U.N. Statistics of the Foreign Trade of Socialist Countries*: J. WERNER.
- SEPTEMBER 1956. *Poland's Trade with the People's Democracies in Asia*: J. KOBRYNER. *Causes of Discrepancies between the Production of Building Materials and the Needs of the Building Industry during the Six-year Plan*: T. GRADOWSKI and A. KIERNOZYCKI. *Prospects for Rolling-mill Production*: K. ANDRYSIK. *The Development of State Farm Production in the Five-year Plan*: W. MISIUNA. *The Planning of Production and the Organisation of Supply and Sales*: R. KARSKI. *Some Remarks on Suitable Amendments in the Principles of Investment Planning*:

- A. KAUFMAN and H. SWIDZIŃSKI. *The Need for Changes in Financing Repairs and Investment*: H. SZCZEPANOWSKI. *More on Planning Trade Turnover in Czechoslovakia*: W. SZULC. *Is Further Development of River Navigation to the Advantage of the Polish Economy?*: R. FLAK.
- OCTOBER 1956. *Economic Problems of the Five-year Plan*: A. KARPIŃSKI. *The Prospects for Automation in Engineering*: J. KOPIŃSKI. *The Establishment of Reserve Capacity of Electric Power Stations in the Five-year Plan*: J. WAGNER. *Shortcomings in the Present Methods of Computing Real Wages*: K. RUDNICKI. *Long-term Planning of Specialised Man-power*: E. HALICKA. *Discrepancies between Procurement, Supplies and the Land Tax with Special Reference to the Łódź Voivodship*: A. GRABSKI. *Some Remarks on the Role of the Law of Value in a Socialist Economy and the Price System*: M. DOBB. *The Need for a More Active Participation of Local Government Organisations in Economic Administration*: CZ. BIELECKI.

Plánované Hospodářství (Czech text)

- No. 8, 1956. *The Main Trends of Technical Progress in the Second Five-year Plan*: J. VLČEK. *The Rise in Living Standards during the Second Five-year Plan*: V. RENDL. *The Methods and Tasks of the State in the Sphere of Agricultural Production*: J. MATOUŠEK. *Simplifying the Planning of Technical Progress in the Building Industry*: A. VANĚK. *Experience of Decentralisation of the Marketing of Chemicals*: A. STECH. *Problems Relating to the Improvement and Decentralisation of Supply Agencies*: M. KRŽAN. *Estimating the Requirements of the Economy*: V. KOŠK.
- No. 9, 1956. *The Character of the Second Five-year Plan and the Development of Basic Proportions*: J. KOLÁŘ. *Tasks in the Sphere of Wage Policy*: J. HRON. *Wage Adjustments in the Building Industry*: Z. KUTÁLEK. *Scope for Developing Trade in the Near and Middle East*: A. NUOŠKA. *The Attainment of a Higher Economic Efficiency of Construction by Improving Work on Designs and Projects*: J. MAREK. *The Great Economic Importance of Transferring Machinery*: V. VOITH.

Finansi i Kredit (Bulgarian text)

- No. 8, 1956. *A National Celebration. The National Income and the Public Accounts of Bulgaria*: G. BOKOV. *The Role of Credit and Saving in the Distribution of National Income in Bulgaria*: N. DATSKOV. *Unified Accounts for Discount Bills as a Contribution to Financial Stability of an Enterprise*: S. KITANOV. *Short-term Credit and the Strengthening of Economic Accounting*: D. KASABOV. *The Indivisible Fund of a Collective Farm and Setting Aside Sums Therefor*: K. ZANEV. *Practice in Monthly Advances to Collective Farm Members*: A. KUZNETSOV.
- No. 9, 1956. *Activate Interest in the Savings Month. A Continuous Increase in Savings Bank Deposits*: I. PALIISKI. *Short-term Credits to Co-operative Farms from the State Bank*: P. GENCHEV. *Some Questions on the Valuation of Capital Investment*: G. SHOPOV. *An Analysis of Trade Turnover in Consumer Co-operatives*: T. GANCHEV. *On Payments Arrangements*: G. KUZMANOV. *To Overcome Certain Difficulties in Servicing Co-operative Farms*: E. MIKHAILOV. *On the Improvement of Work in Assessing and Collecting Turnover Taxes*: S. VISULCHEV.

Ikonicheska Misl (Bulgarian text)

- No. 3, 1956. *A Programme for Rapid Progress in Agriculture and Stockbreeding. Investment Problems in Bulgaria*: K. DOBREV. *The Introduction of New Technology and its Maximum Utilisation in Industry*: T. POLYAKOV. *The Sources and Distribution of the National Income*: D. BALEVSKI and K. ZAREV. *The Development of Soviet Industry in the Sixth Five-year Plan*: L. GULMESOV. *Characteristics of the Transition Period from Capitalism to Socialism in the German Democratic Republic*: R. HAUKE. *The Evolution of the British Economic Situation since the Second World War*: S. MECHEV. *The Methodology of Labour Productivity Indexes*: A. AVRAMOV.

Kozgazdasagi Szemle (Hungarian text, English and Russian summaries)

- No. 10, 1956. *Accumulation and Monetary Accumulation*: M. GERÖ. *Factors of Economic Geography in our Long-term Planning*: G. MARKOS. *Specialisation and Co-operation in the Engineering Industry*: P. SANDOR. *Wheat Growing and its Utilisation in Hungary Prior to Liberation and Between 1950 and 1955*: B. CSEDES. *Hungarian-Soviet Economic Relations*: P. PETER. *Plans of Work of Our Sister Institutes. The Economic Situation in France*: A. N. Co-operative Farms in Yugoslavia: B. FAZEKAS. *Some Problems in Training Economists*: P. PILLIS and A. SIPOS. *A Few Problems of the Proper Harmonisation of Public and Individual Interests in Co-operative Farming*: M. BODNÁR.

Statisztikai Szemle (Hungarian text, English and Russian summaries)

- SEPTEMBER 1956. *Comrade Ernő Gerő in the Central Statistical Office. On Measuring the Volume of Industrial Production*: Z. ROMÁN. *The Theory of the Life Table and Methods of Its Construction*: E. PALLÓS. *Weighting Problems of Index Numbers (II)*: P. KÖVES. *Output Value and Technical Development*: F. LÁNYI. *The Role of Average Prices in the Statistical Analysis of Internal Trade*: I. SZIKINGER.

Probleme Economice (Rumanian text, French and Russian summaries)

- No. 7, 1956. *The Early Collaboration of Marx and Engels in the Creation of the Economic Doctrine of the Proletariat*: S. EMIL. *Leninist Teaching on the Place of Imperialism in History*: L. STROJA. *An Essay in Certain Aspects of Relations under Transition*: M. DIMA. *The Improvement of Planning Supplies*: S. DANIEL. *The Even Flow of Production in Industrial Enterprises*: C. BĂRBULESCU. *Ways to Improve Capital Investment in the State Sector of Agriculture*: I. MIHAI. *Fodder Supplies in Our Country*: C. ILCHIEVICI and V. NICA. *The Reconstruction and Development of the People's Democratic Republic of Korea*: F. DUCA. *Advanced Social-Economic Thought in the Rumanian Lands in the Nineteenth Century*: Z. ORENSTEIN.
- No. 8, 1956. *Towards a Reduction of Industrial Costs. The Prospects for Peaceful Competition Between the Two World Economic Systems*: GH. NISIPESCU. *Some Considerations on Wholesale Price-fixing*: I. RACHMUTH. *The Overcoming of Certain Obstacles to Cost Reduction in Industry*: S. ZEIGHER. *Socialist Competition in Agriculture*: I. ZUKERMAN and V. PORUMBESCU. *Improve the Training of Agricultural Economists*: M. NICOLAESCU. *The Economic Ideas of Stefan Zeletin, Apologist for Bourgeois Rumania*: E. GAAL.
- No. 9, 1956. *Problems of Specialisation in Engineering and Electrotechnical Industries*: A. IANCOU. *For Better Quality and Improved Variety in Textile Production*: D. SUCIU. *On the Utilisation of the Machine and Tractor Park of M.T.S.*: P. MOLDOVAN and I. BIANU. *The Influence of Certain Factors upon the Production of Marketable Grain in a Collective Farm in a Grain-growing Area*: S. HARTIA. *Factors Influencing Consumer Demand in Rumania*: I. IONESCO. *Dimitar Blagoev as an Economist*: J. NATHAN. *Some Economic Ideas of N. Sutu*: I. VEVERCA. *On the Problem of Wholesale Price-fixing*: I. ANGHEL.

NEW BOOKS

British

- ADLER (M. K.). *Modern Market Research. A guide for business executives.* London: Crosby Lockwood, 1956. 7½". Pp. 158. 15s.

[To be reviewed.]

- ALLEN (R. G. D.). *Mathematical Economics.* London: Macmillan, 1956. 9". Pp. xiii + 768. 63s.

[To be reviewed.]

- BENHAM (F.). *The Colombo Plan, and other essays.* London: Royal Institute of International Affairs, 1956. 7½". Pp. 89. 7s. 6d.

[To be reviewed.]

- COLE (G. D. H.). *The Post-War Condition of Britain.* London: Routledge & Kegan Paul, 1956. 9". Pp. xix + 483. 40s.

[To be reviewed.]

- DERRICK (P.). *A Co-operative Approach to Socialism.* London: National Labour Press for the Socialist Christian League (97a Stroud Green Road, London, N.4.), 1956. 8½". Pp. 62. 2s.

[This is a plea for the extension of the principle of "mutualisation" in industry. The author recommends as a very important step towards this objective the permanent statutory limitation of dividends. He considers the ways in which this could be done and answers a number of objections relating to possible effects on the supply of saving.]

DUFF (E.). *The Social Thought of the World Council of Churches*. London: Longmans, 1956. 9". Pp. 339. 25s.

[After introductory sections on the history and organisation of the World Council of Churches, Father Duff turns to his main theme, which is the social philosophy and policy that has been worked out by the Council. He sees the characteristic contribution of the Ecumenical Movement as showing a "Third Way" and helping to resolve the sterile opposition between out-and-out capitalism and communism.]

DUNSIRE (A.) (Ed.). *The Making of an Administrator*. Manchester: Manchester University Press for the Royal Institute of Public Administration, 1956. 7½". Pp. 125. 10s. 6d.

[To be reviewed.]

ELKAN (W.). *An African Labour Force*. Two case studies in East African factory employment. East African Studies, No. 7. Kampala, Uganda: East African Institute of Social Research, 1956. 9½". Pp. 59. 8s. 6d.

[This describes investigations carried out in two factories of the East Africa Tobacco Company in Uganda. It is a valuable contribution to the study of the supply of labour for urban employment in Africa. High turnover and absenteeism were among the chief sources of concern to the Company, and the author considers the extent to which these were due to particular aspects of the employer's policy and to more general conditions respectively. One of the factories studied is unusual in Uganda in offering a substantial amount of employment to women. The social and economic circumstances affecting the employment of women provides the subject of one of Mr. Elkan's most interesting chapters.]

GAITSKELL (H.). *Socialism and Nationalisation*. Fabian Tract 300. London: Fabian Society, 1956. 8½". Pp. 36. 2s.

[In this pamphlet, most of which was written several years ago, Mr. Gaitskell considers the traditional arguments for nationalisation in the light of recent experience and present circumstances. He argues that nationalisation is an instrument rather than an end in itself, and only one of a number of possible instruments. He believes that the policy of nationalisation so far pursued has on balance been successful, and that the traditional arguments for it, though in some respects weakened, have not been destroyed. At the same time he suggests that other means of extending the domain of public ownership may perhaps turn out to have more potentialities in the future.]

GOFFMAN (E.). *The Presentation of Self in Everyday Life*. Edinburgh: Social Sciences Research Centre, University of Edinburgh (39 George Square, Edinburgh 8), 1956. 8½". Pp. 162. 10s.

[This is a sociological analysis of conduct. Its starting point is the idea that conduct has always in greater or less degree an "expressive" aspect, i.e., a quality of conveying to the onlooker that the agent has certain personal attributes. This idea is then pushed further to provide an interpretation of conduct based on the analogy of a dramatic performance. Not merely does the individual play a role: members of a group, such as a family, a profession, etc., perform as a team to convey to outsiders an impression of the attributes of the group. The author develops his idea clearly and ingeniously and with many entertaining examples. The reader is left in a little doubt as to the extent to which this "dramaturgic" analysis of behaviour is intended as merely a helpful analogy or as something more than this.]

HAHN (L. A.). *Common Sense Economics*. London: Abelard-Schuman, 1956. 8½". Pp. 244. 18s. 6d.

[To be reviewed.]

HARROD (R. F.). *Foundations of Inductive Logic*. London: Macmillan, 1956. 9". Pp. v + 290. 24s.

[To be reviewed.]

HEYWORTH (LORD). *The Control Centre for an International Business: A Study of the Factors Relevant to the Location of its Headquarters*. The Stamp Memorial Lecture 1956. London: The Athlone Press, University of London, 1956. 8½". Pp. 28. 3s.

[The factors considered by Lord Heyworth are those affecting a holding company with subsidiaries operating throughout the world. His chief attention is devoted to questions of taxation—the taxation of staff salaries and company profits, and the arrangements in force in different countries for double-taxation relief. He also attaches importance to the supply of capital and managerial personnel, the stringency or otherwise of exchange control, company legislation and anti-monopoly policy. Lord Heyworth's comparisons have particular reference to the United Kingdom, the Netherlands and the United States as alternative control centres for an international business.]

HEYWORTH (LORD). *The Managers*. London: Unilever, 1956. 8". Pp. 18.

[This is the text of an address delivered by the chairman at the annual general meeting of Unilever on May 24, 1956. The speaker describes the procedure adopted in Unilever for the recruitment, training and promotion of managerial staff.]

HUNT (K. E.) and CLARK (K. R.). *The State of British Agriculture, 1955-6*. Oxford: University of Oxford Agricultural Economics Research Institute, 1956. 13". Pp. 128. 10s.

[This is a collection of tables and charts, not accompanied by any text. It is a most useful compilation. The very extensive data shown are not by any means confined to 1955-56. Most of the series are taken back to about 1936, and many of them to much earlier, and briefer comparative data are also given relating to agriculture in other countries.]

Industrial and Commercial Associations. *A Course of Studies Paper*. Henley on Thames: The Administrative Staff College, 1956. 9". Pp. 24. 3s.

[This paper contains a factual account of the structure and functions of the various organisations described by the title. These include trade associations, employers' associations, research associations, chambers of commerce and of trade, and national bodies such as the Federation of British Industries.]

INFIELD (H. F.). *The Sociological Study of Co-operation: An Outline*. Co-operative College Papers, No. 3. Loughborough: Education Department, Co-operative Union (Stanford Hall, Loughborough), 1956. 9". Pp. 72. 1s.

[The author has been a pioneer in the study of the social relations involved in the different types of co-operative organisation. He here describes the outlines of his conclusions on the subject and their significance for the future of the co-operative movement. Further chapters deal with methods of research in the field and two case-studies.]

INTERNATIONAL BANKING SUMMER SCHOOL. *International Banking and Foreign Trade*. Institutions, Policies, and Practices in the Western Hemisphere. A series of lectures delivered at the Ninth Session, Rutgers University, New Jersey, July 1956. London: Europa Publications for the Graduate School of Banking and the Institute of Bankers, 1956. 8½". Pp. 261. 30s.

[This contains ten lectures by American bankers and economists. The most substantial contribution is a long paper by Professor B. H. Beckhart on recent United States monetary policy, accompanied by twenty pages of charts.]

LEUBUSCHER (C.). *Bulk Buying from the Colonies*. A study of the bulk purchase of colonial commodities by the United Kingdom Government. London: Oxford University Press for the Royal Institute of International Affairs, 1956. 9". Pp. 206. 30s.

[To be reviewed.]

LICHFIELD (N.). *Economics of Planned Development*. London: The Estates Gazette (47 Museum Street, W.C.1), 1956. 9½". Pp. xxiii + 460. 47s. 6d.

[To be reviewed.]

LITTLETON (A. C.) and YAMEY (B. S.) (Eds.) for the Association of University Teachers of Accounting and the American Accounting Association. *Studies in the History of Accounting*. London: Sweet & Maxwell, 1956. 10". Pp. 392. 50s.

[This contains a collection of essays on the history of accounting from ancient times until about 1900. It contains twenty-four contributions, all but eight of which are published for the first time. The volume is sponsored jointly by the Association of University Teachers of Accounting and the American Accounting Association. The editors have sought to make the collection of interest both to specialists in the history of accounting and to economic and social historians generally. One of their major objectives, though not their only one, is to trace the origins and development of the technique of double-entry.]

London Correspondence Inward from Eden Colville, 1849-1852. Edited by E. E. RICH, assisted by A. M. JOHNSON. London: Hudson's Bay Record Society, 1956. 9½". Pp. cxv + 300.

[The bulk of the correspondence contained in this volume was written by Eden Colville, Governor of Rupert's Land, from Fort Garry in the Red River Settlement. Professor Morton's long introduction is largely concerned with the circumstances that led to Colville's appointment to this post.]

LOVEDAY (A.). *Reflections on International Administration*. London: Oxford University Press, 1956. 9". Pp. xiii + 334. 42s.

[To be reviewed.]

MYRDAL (G.). *An International Economy. Problems and Prospects*. London: Routledge & Kegan Paul, 1956. 9½". Pp. 381. 37s. 6d.

[To be reviewed.]

New Sources of Local Revenue. Report of a study group of the Royal Institute of Public Administration. London: Allen & Unwin for the Royal Institute of Public Administration, 1956. 9". Pp. 260. 25s.

[To be reviewed.]

PARSONS (T.) and SMELSER (N. J.). *Economy and Society. A study in the integration of economic and social theory*. In the International Library of Sociology and Social Reconstruction. London: Routledge & Kegan Paul, 1956. 9". Pp. xvii + 322. 35s.

[To be reviewed.]

ROBERTSON (A. H.). *The Council of Europe. Its structure, functions and achievements*. Published under the auspices of the London Institute of World Affairs. London: Stevens, 1956. 10". Pp. 252. 42s.

[The author describes the origins of the Council, its membership and structure, and the statutory provisions by which it is governed. He then treats its functions in the political sphere and in relation to economic, social, cultural and legal questions and to the problem of human rights. He concludes by assessing its achievements and prospects. He believes that though it is still in an early stage of its evolution, its success in establishing a vigorous Consultative Assembly has been an important one, and that further advances depend largely on the strength of the ideal of European unity among the members of the Assembly.]

ROGOW (A. A.) assisted by SHORE (P.). *The Labour Government and British Industry, 1945-1951*. Oxford: Basil Blackwell, 1955. 8½". Pp. vii + 196. 18s.

[To be reviewed.]

SAYERS (R. S.). *Central Banking after Bagehot*. London: Oxford University Press, 1957. 8½". Pp. 149. 18s.

[To be reviewed.]

STONE (L.). *An Elizabethan: Sir Horatio Palavicino*. London: Oxford University Press, 1956. 9". Pp. 345. 45s.

[This is the story not of an "Italianate Englishman" but of an Anglicised (and Anglicanised) Italian who started as the Antwerp agent of his family's alum concern and ended as a quarrelsome Cambridgeshire squire, with land also in Norfolk and Essex, a London house and a total estate (it was alleged) of £100,000. He had built up this fortune by his activities as a royal agent (filling the void left by the death of Gresham), as a roving Ambassador and as an astute speculator (save that he twice failed to bring off a corner in pepper). All this is narrated by Mr. Stone in a book make rather heavy going for the general reader. In addition, much light is thrown on the confused and hectic scene of the eighties and nineties; e.g., "the ramshackle system of governmental controls, patents and licenses"; and the peace negotiations of 1586 carried on secretly by four members of the Council, each in isolation from the rest, and with none of them giving the slightest information to the English general in the field! There are three interesting appendices, on the European money-market in 1587, and on the Intelligence Services of Walsingham and Robert Cecil.]

THOMPSON (L.). *The Challenge of Change*. London: Oxford University Press, 1956. 7". Pp. 127. 5s.

[This is an informal account of the Duke of Edinburgh's Study Conference on Human Problems of Industrial Communities within the Commonwealth and Empire, held in Oxford in July 1956. The author attended the conference as correspondent of the *News Chronicle*. His book draws extensively on material provided by speakers at the conference, but it is designed as essentially a personal view of the themes that were discussed. The style is light-hearted but the intention serious.]

WAGNER (G.). *The Bantu of North Kavirondo. Volume II: Economic Life*. Edited by L. P. MAIR. London: Oxford University Press for the International African Institute, 1956. 9". Pp. 184. 36s.

[This is an anthropological study descriptive of the economic life of the Logoli and Vugusu people in the Nyanza province of Kenya before the Second World War. The economist might expect this book to have something to say about the forces changing the African subsistence economy to the exchange economy, but its interest for economists is limited. Influences such as pressure of population on the land, the convenience of purchase of European manufactured products like salt or the hoe, or Christian missionary work, are only occasionally hinted at, for example, "... the economically advanced section consisted almost exclusively of Christians ... whose mode of life was guided by the application of the same principles [of uniform and persistent standards of consumption] ..." (p. 179). And again, apart from a paragraph on p. 97, there is no mention of the effect of the increasing subdivision of land on the productivity of African agriculture, and the economist will fail to discover in this book the extent and reason for the migration of African labour. It is only the last chapter of the book, and perhaps the sections on property rights and duties in land and cattle, which has interest for the economist. This chapter, apart from mentioning cases of African enterprise in the establishment of markets with little capital, describes the nature of the goods supplied and demanded by tribes, the nature of goods exported and imported into the area, and finally, on the basis of a sample (not adequately defined) of 344 families in South Maragoli, presents family budgets for the economically advanced, semi-advanced and conservative.]

WIGHAM (E. L.). *Trade Unions*. Home University Library, No. 229. London: Oxford University Press, 1956. 7". Pp. 277. 7s. 6d.

[This small book by the labour correspondent of *The Times* covers a wide field. It deals with all aspects of British trade unionism—its past, its present and its future, its activities at home and its relationships abroad. Particular attention is paid to the ten years since the Second World War and the many problems which trade unions have had to face during that period in their relations with their own members, with industry and with the State. The author considers that fundamental changes in trade-union structure and policy will be needed in the near future—changes which the trade-union movement has from time to time tentatively embarked upon, but never with sufficient determination to carry them to their necessary conclusion. The fundamental problem, he considers, is that of wages policy in full employment. He suggests various ways in which it could be tackled, but admits that there may be no practical method of dealing with it in a relatively free country. Yet, although he sees no sign of present willingness of trade unions to accept wage regulation, he considers that "they will have to come round to it in the end, though clearly there will have to be a national policy to deal with other forms of income as well."]

WIGHTMAN (D.). *Economic Co-operation in Europe. A study of the United Nations Economic Commission for Europe*. Published under the auspices of the European Center of the Carnegie Endowment for International Peace. London: Stevens, and Heinemann, 1956. 9". Pp. 288. 21s.

[Reviewed in this issue.]

Canadian

LOGAN (H. A.). *State Intervention and Assistance in Collective Bargaining. The Canadian experience, 1943-1954*. Canadian Studies in Economics, No. 6. Toronto: University of Toronto Press (London: Oxford University Press), 1956. 10". Pp. 176. 24s.

[This is a study of the Canadian system of state participation in collective bargaining since its inception during the War. The first eight chapters describe the forms this participation has taken in the country as a whole and in its leading industrial provinces. The two concluding chapters analyse the effects of the legislation and the chief issues that have arisen from the experience of its working to date. Especial attention is given to the conciliation system, which has attracted a particular amount of adverse comment.]

NEUFELD (E. P.). *Bank of Canada Operations, 1935-54*. Canadian Studies in Economics, No. 5. Toronto: University of Toronto Press (London: Oxford University Press), 1955. 10". Pp. 221.

[This lucidly written monograph treats its subject first by topic—relation between Bank and Government, objectives of policy, techniques of control—and then chronologically—pre-war, war-time and post-war. The author's appraisal is on the whole a favourable one, and he believes that the varied experiences the Bank has been through have equipped it with the prestige and the techniques that are the necessary though not sufficient conditions for success in the future.]

ROSENBERG (L.). Population Characteristics of the Jewish Community of Montreal. Canadian Jewish Population Studies. Montreal: Bureau of Social and Economic Research, Canadian Jewish Congress, 1956. 11". Pp. 58.

[This is a factual study based on Canadian census material. The characteristics analysed include ethnic pattern, conjugal condition, Jewish origin and Jewish religion, place of birth, size of family, language and mother tongue, higher education and school attendance.]

American

ADAMS (C. F.) and ADAMS (H.). Chapters of Erie. Ithaca, New York: Cornell University Press (London: Oxford University Press), 1956. 7½". Pp. 193. 11s. 6d.

[These three celebrated essays by the brothers Adams were first published in the years 1869-71. They are concerned with the Erie Railway wars of that time and the financial doings of Gould and Fisk.]

ANTHONY (R. N.) (Ed.). Automatic Data Processing Conference, September 1955. Proceedings. Boston, Mass.: Graduate School of Business Administration, Harvard University (London: Bailey Bros. & Swinfen), 1956. 8". Pp. 194. 28s.

[The purpose of this conference was to improve understanding between the experts in automatic data processing and the business-men who use their results. The text contains twelve addresses with discussion. The topics treated include the basic principles of automatic data processing, the issue between centralisation and decentralisation in this sphere and the criteria for selecting equipment.]

ATKINSON (T. R.). The Pattern of Financial Asset Ownership. Wisconsin Individuals, 1949. Princeton, New Jersey: Princeton University Press for the National Bureau of Economic Research (London: Geoffrey Cumberlege), 1956. 9". Pp. 176. 30s.

[Wisconsin State income-tax returns are used to analyse the composition of individuals' holdings of financial assets, with the individuals classified according to income, occupation and place of residence. The general outline of the results is much as might have been expected. The proportion of corporate equities to total financial assets rises with income, and in the upper income groups a particularly important place is taken by closely held or seldom traded stocks, especially in corporate real problems of small business is to obtain funds without diluting control. The chief purpose of the extensive detailed analysis of the data which the author engages in is to cast light on the flow of investment funds, and the bearing of the data on questions of income distribution is deliberately treated more lightly. The ratio of total financial assets to income in the different groups is, for example, not shown.]

BAIN (J. S.). Barriers to New Competition. Their character and consequences in manufacturing industries. Cambridge, Mass.: Harvard University Press (London: Oxford University Press), 1956. 9½". Pp. v + 329. 45s.

[To be reviewed.]

BLUMENTHAL (W. M.). Codetermination in the German Steel Industry. A report of experience. Princeton, New Jersey: Industrial Relations Section, Princeton University, 1956. 9". Pp. 114. \$3.00.

[Under the system of codetermination, as now laid down by law for the German steel industry, representatives of labour make up half of the board of supervision of a concern. The powers of this board are for the most part confined to broad strategic decisions, but a labour representative, the *Arbeitsdirektor*, is also added to the board of management, which is responsible for the day-to-day administration. This labour director shares with the technical director and the commercial director all the powers and responsibilities of the board. The present monograph is an assessment of the way the system has worked out. Its effects have been less radical than was expected. The labour representatives have not in any way lost their loyalty to the workers, but in practice a division of spheres of influence has commonly been arrived at by which they are given more or less undisputed control over questions of labour relations while the other members of management retain the chief authority in all other matters. Labour relations have in general improved under codetermination, and earnings of labour have risen by more than in other comparable industries. This has not been accompanied by a correspondingly faster rise in productivity, and the rise in labour cost has therefore been passed on to the consumer. In conclusion, the author suggests accomplished anything that could not be and has not been achieved in the United States by collective bargaining.]

BURNS (E. M.). Social Security and Public Policy. New York and London: McGraw-Hill, 1956. 9½". Pp. vii + 291. 41s. 6d.

[To be reviewed.]

CHRISTIE (R. A.). Empire in Wood. A history of the Carpenters' Union. Cornell Studies in Industrial and Labor Relations, Vol. VII. Ithaca, New York: Cornell University, 1956. 9½". Pp. xv + 356. \$5.50.

[This history of the United Brotherhood of Carpenters and Joiners of America is an unofficial one. The files of the Brotherhood were not made available to the author—hardly surprisingly in view of his evident dislike for many of the characteristics of the type of union it represents. Mr. Christie writes vividly. His narrative is largely concerned with conflicts between personalities and between the Brotherhood and other bodies. This emphasis stems from the character and purpose of the union itself. As interpreted by Mr. Christie, the prime aim of the Brotherhood as a national organisation has been to preserve within its jurisdiction all work in wood and all work also in materials that are now used where wood used to be. This aim of job-preservation in face of changing techniques has been achieved by an elaborate system of boycotts and alliances with other unions. Wage-determination and collective bargaining on other issues is carried out at the regional level and the central office of the Brotherhood is not normally concerned with them. Despite the great strength of the union, the wages of carpenters have barely held their own in relation to those in other building crafts, and Mr. Christie believes that this reflects the deliberate policy of the Brotherhood's leaders of subordinating all else to job-preservation.]

CRUM (W. L.). Fiscal-Year Reporting for Corporate Income Tax. National Bureau of Economic Research, Technical Paper No. 11. New York: National Bureau of Economic Research, 1956. 9½". Pp. 63. \$1.25.

[There has been an increasing tendency recently in the United States for corporations to file their income-tax returns for periods other than the calendar year. This reduces the peak load of auditing for the corporations and to some extent helps to even out the flow of tax receipts, but it adds materially to the difficulty experienced by government economists and others in interpreting the returns and basing forecasts upon them. In this paper Professor Crum provides an elaborate analysis of the extent to which non-calendar-year reporting of corporate income is practised, distinguishing between different lines of industry and different sizes of corporation.]

DAHLBERG (A. O.). National Income Visualized. A graphic portrayal of how economic activity is measured. New York: Columbia University Press (London: Oxford University Press), 1956. 12". Pp. 117. 28s.

[This contains an application of a visual device to illustrate the flow of national income. Fifty diagrams are accompanied by an explanatory text and an extensive collection of tables reprinted from the *Survey of Current Business*. The technique employed in the diagrams is in essence the same as that of the circular flow charts that have long been familiar in elementary treatments of social accounting. As used by Dr. Dahlberg, however, the charts are made a good deal more vivid and intelligible by having the flows of expenditure between the stylised houses ("consumers"), factories ("business"), banks, etc., shown as if seen from the air diagonally instead of in the usual two-dimensional plane. This device is used to show in considerable detail and complexity different aspects of the U.S. social accounts.]

FISHER (E. M.) and RAPKIN (C.). The Mutual Mortgage Insurance Fund. A study of the adequacy of its reserves and resources. New York: Columbia University Press (London: Oxford University Press), 1956. 9½". Pp. 162. 32s.

[The Mutual Mortgage Insurance Fund was established in 1934 by the Federal Housing Administration. Its function is to bear the contingent liability imposed by the system of federal guarantee of approved mortgages. If a mortgage is foreclosed, the mortgagee may transfer the property to the Federal Housing Administration, receiving in return a debenture of amount equal to that by which he is out of pocket. This debenture becomes payable in cash after a period of years. The subject of the present study is whether the resources of the Fund are sufficient to enable it to be self-supporting in the event of a major depression in the housing market. To some readers the problem may appear rather an artificial one, for if a really serious slump developed, would it very much matter if the Fund had to be supported from other public monies? But the conclusions of the study are in any case reasonably reassuring. In the course of their inquiry the authors provide much interesting information of a more general character about the Federal Housing Administration's operations and policies.]

KATZ (S. I.). Two Approaches to the Exchange-rate Problem: The United Kingdom and Canada. Essays in International Finance, No. 26. Princeton, New Jersey: International Finance Section, Princeton University, 1956. 9". Pp. 19.

[The author argues that the measures taken by the British and Canadian authorities in the last few years to overcome the disadvantages of fixed and flexible exchange rates respectively have

resulted in the experience of the two currencies being surprisingly similar, despite the large apparent difference in arrangements. Mr. Katz's account of developments since 1950 provides some interesting examples of the strengths and weaknesses of the two types of exchange-rate system.]

KAYSEN (C.). *United States v. United Shoe Machinery Corporation*. An economic analysis of an anti-trust case. *Harvard Economic Studies*, Vol. XCIX. Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1956. 8½". Pp. 404. 52s.

[To be reviewed.]

KENDRICK (J. W.). *Productivity Trends: Capital and Labor*. National Bureau of Economic Research, Occasional Paper 53. New York: National Bureau of Economic Research, 1956. 9". Pp. 23. \$0.50.

[This is a summary of part of a larger study of productivity trends in the United States in preparation at the National Bureau. It shows the rates of growth since 1899 of output per unit of labour input, output per unit of capital input and output per unit of "total" input. These are further analysed according to sub-periods and industry groups. Interesting conclusions include the establishment of a significant positive correlation between rates of growth of production and rates of growth of productivity in the comparison between industries, and of a negative correlation between each of these and changes in product prices. Further evidence is given of the now relatively well-attested tendency of the capital/output ratio to fall since 1919, after twenty years of little change since 1899. While the value of these and other findings is unquestionable, some doubts may be felt about the meaningfulness of the concept of output per unit of "total" input. Total input is measured as a weighted average of input of man-hours and input of capital, the latter valued at its (hypothetical) production cost in the base year. Quite apart from the difficulties of applying this measure consistently, a systematic bias is liable to be introduced as time goes on. A man-hour of labour applied as a direct input will rank as one man-hour, but a man-hour of labour applied indirectly in the making of capital equipment that assists production will tend to be rated at more than this, because the capital equipment produced and used as a measure of input will amount to more than the product of one man-hour of labour in the base year, on account of the increase in productivity in the capital-goods industries in the meanwhile. The same real input will therefore be given a higher or lower measure according to the way it is applied.]

KUHN (A.). *Labor: Institutions and Economics*. New York: Rinehart, 1956. 9½". Pp. 616. \$6.50.

[This is a comprehensive students' text-book with test questions and suggestions for further reading at the end of each chapter. The first part of the book deals with industrial organisation, institutions and collective bargaining. History and present structure are covered, but main emphasis is on policy, procedure, methods and relationships. Particularly full treatment is given to the theory and practice of collective bargaining and to the legislative provisions which form its background and so largely control its operation in the United States. The second part of the book, dealing with labour economics, is almost equally divided between wages and security of income. With regard to wages the author claims to steer a middle course between proponents of marginal productivity theory and the contentions of the institutionalists. Following this middle course, he reaches the conclusion that the approximate level of wage for a particular type of work within a particular labour market is determined by the marginal net revenue product of that labour in that market—"approximate" meaning within a margin of about plus or minus 33%; that within that range of indeterminacy that actual wage is determined by institutional factors; and that the employer then proceeds to adjust as best he can, by manipulating factors within his control, to the wage so determined by the institutional factors—an adjustment which probably, and particularly for direct production workers doing well-defined operations, brings the marginal net revenue product of the labour into reasonably close equality with the wage.]

LOYD (E. M. H.). *Food and Inflation in the Middle East, 1940-45*. Stanford University Food Research Institute, studies on Food, Agriculture and World War II. Stanford, California: Stanford University Press (London: Oxford University Press), 1956. 9½". Pp. 375. 48s.

[To be reviewed.]

MACK (R. P.). *Consumption and Business Fluctuations*. A case study of the shoe, leather, hide sequence. New York: National Bureau of Economic Research (London: Oxford University Press), 1956. 11½". Pp. 293. 60s.

[To be reviewed.]

MILLS (C. W.). *The Power Elite*. New York and London: Oxford University Press, 1956. 8½". Pp. 423. 36s.

[To be reviewed.]

MORTON (J. E.). *Urban Mortgage Lending: Comparative Markets and Experience*. Princeton, New Jersey: Princeton University Press for the National Bureau of Economic Research (London: Oxford University Press), 1956. 9½". Pp. 187. 32s.

[The chief purpose of this study is to summarise and compare the findings of a series of previous National Bureau publications on particular sectors of the urban mortgage market. The author describes the growth in the urban mortgage debt; the increased importance of institutional lenders—insurance companies, banks, mutual savings banks, and savings and loan associations; the role of federal government guarantees; the characteristics of outstanding mortgages; and the lending experience to date. Some of his findings run contrary to commonly held beliefs, and not all of them are entirely comforting. He shows, for example, that the least favourable experience before the war was with those classes of loan that are still predominantly made without the benefit of federal insurance or guarantee—in other words the guarantees are being given chiefly to the sectors of the market that need them least. Another conclusion that emerges clearly, though the exact reasons for it are less clear, is that loans made shortly before a downturn in general activity are more than usually liable to end in default.]

MUMMERY (A. F.) and HOBSON (J. A.). *The Physiology of Industry: being an exposure of certain fallacies in existing theories of economics*. Reprints of Economic Classics. New York: Kelley & Millman, 1956. 8". Pp. 215. \$5.00.

[This is a photographic reprint of the first and best-known of Hobson's works.]

O'NEILL (J. T.). *Policy Formation in Railroad Finance*. Refinancing the Burlington, 1936-1945. Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1956. 9½". Pp. 234. 36s.

[The purpose of this book is to trace the formation and application of the policy adopted by the Chicago, Burlington and Quincy Railroad to refinance a very large block of bonds maturing in 1944. The author does not seek to assess the merits of the policy, which actually proved very successful, but rather to describe its development in the light of day-to-day decisions. One of the chief factors influencing financial policy was the fear that prospective changes in the capital structure of rival railroads would put them in a strong position in the event of rate competition unless the Burlington's own burden of fixed charges could be reduced.]

OWEN (W.). *The Metropolitan Transportation Problem*. Washington, D.C.: The Brookings Institution, 1956. 9½". Pp. 301. \$4.50.

[The author analyses the way in which city growth and the increased dependence on private cars have brought about the present transport problem in the largest American cities. Recent experience has seemed to suggest that the demands of the traffic are literally insatiable: in Los Angeles, for example, the tremendously ambitious programme of road-building appears to have achieved little if any reduction in congestion. Much of the author's attention is devoted to the issue between public and private means of transport. In his concluding chapters, Mr. Owen emphasises the need to consider the traffic problem in the broader context of town planning.]

PALMER (G. L.). *Philadelphia Workers in a Changing Economy*. Industrial Research Department, University of Pennsylvania, Research Studies, No. XXXVIII. Philadelphia, Pennsylvania: University of Pennsylvania Press (London: Oxford University Press), 1956. 9½". Pp. 189. 48s.

[Since 1921 an extensive programme of research into labour market conditions in Philadelphia has been carried out at the Wharton School of the University of Pennsylvania, and many monographs and articles have been published on the basis of it. The purpose of the present volume is to draw together and place in perspective the findings of the programme as a whole. Dr. Palmer traces the growth of employment in different industries in Philadelphia in the present century and describes the impact of depression and war on the labour market. In a concluding chapter she considers the implications of her findings for those responsible for planning the economic development of cities.]

People, Housing and Rent Control in Buffalo. Report of the Temporary State Housing Rent Commission of New York. New York: Temporary State Housing Rent Commission, 1956. 9". Pp. 139.

[This is an elaborate study of the present housing situation in Buffalo, with special reference to rented accommodation. Some of the conclusions and methods give the study a more than merely local interest. Although building was very active between 1950 and 1955, the vacancy rate for all dwellings did not rise over the period. At the same time the amount of rented accommodation actually declined. Rent control was lifted from a substantial proportion of rented dwellings during the period, and this makes possible some interesting comparisons between controlled and uncontrolled property. It is found, for example, that the number of persons per room differs by

only a very small amount between controlled and uncontrolled dwellings, and does not differ at all for households of given size. This cannot, however, be taken as a decisive disproof of the doctrine that rent control leads to underoccupation, for a number of reasons which the authors point out. A special feature of Buffalo's housing problem arises from the large recent influx of negroes, who are concentrated in a few areas. The housing standards of the non-white population are kept down not merely by their less than average incomes but also by the large measure of discrimination practised against them by landlords.]

REITZEL (W.), KAPLAN (M. A.) and GOBLENZ (C. G.). *United States Foreign Policy, 1945-1955*. Washington, D.C.: The Brookings Institution, 1956. 9½". Pp. 535. \$4.50.

[Since 1947 the Brookings Institution has published a series of annual studies on current problems of United States foreign policy. The present volume grows out of these studies. It is designed to provide a broader assessment of the reasons underlying the most important policy decisions. It is thus on a more general level than the Institution's previous publications, the book retains the characteristic approach developed in them. The essence of this approach is that the issues of foreign policy are studied from what is thought to be the angle of the policy makers themselves, who are presented with concrete issues calling for choice between alternative lines of action.]

ROGIN (L.). *The Meaning and Validity of Economic Theory*. A historical approach. New York: Harper & Brothers (London: Hamish Hamilton), 1956. 8½". Pp. 697. 52s.

[To be reviewed.]

SPENGLER (J. J.) and DUNCAN (O. D.) (Eds.). *Population Theory and Policy*. Selected readings. Glencoe, Illinois: The Free Press, 1956. 9½". Pp. ix + 522. \$7.50.

[This contains reprints of thirty-eight articles and other readings, chiefly by American authors. The papers are arranged in groups according to subject, and each section is preceded by a brief statement by the editors to provide the framework. The field covered is confined mainly to the more theoretical or general aspects of population movements and their implications, since readings on specific demographic problems have been assembled in a companion volume entitled *Demographic Analysis: Selected Readings*.]

WALKER (K. F.). *Industrial Relations in Australia*. Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1956. 9½". Pp. xv + 389. 60s.

[This book is partly a description and assessment of the Australian system of industrial relations as a whole and partly a more detailed treatment of seven different industries. While the arbitration system forms the background to almost the whole of Australian industrial relations, the author's aim is not, in the main, to deal with the arbitration procedure as such, but to consider the inter-action of the parties within an environment of which this forms part. The diversity of experience of industrial relations in the individual industries examined ranges from harmonious and co-operative in furniture manufacturing and metal-mining to hostile and embittered in coal-mining and stevedoring. The author adduces many reasons in the nature, history and organisation of the industries for this differing experience. With one exception, i.e., the pastoral industry, it is in the industries where relations are poorest that the largest role is played by the arbitration system. Of the arbitration system in general the author's main tentative conclusions are that as a means of preventing stoppages of work it has been a failure; that its influence in building constructive and co-operative industrial relations is by no means clear and that it has probably encouraged intransigent and irresponsible attitudes; and that it has accelerated the growth of trade unions and employers' organisations and the establishment of collective bargaining.]

VON WIESER (F.). *Natural Value*. Edited with a Preface and Analysis by William Smart. Reprints of Economic Classics. New York: Kelley & Millman, 1956. 8½". Pp. 243. \$7.50.

[*Natural Value* was one of the earlier of Wieser's major works, being published in 1889. It is an exposition of the Austrian theory of value and distribution, and does not have the sociological slant characteristic of Wieser's later work. The present reprint is a photographic reproduction of the English edition published in 1893 under the editorship of William Smart.]

YOUTSLER (J. S.). *Labor's Wage Policies in the Twentieth Century*. New York: Twayne Publishers, 1956. 8½". Pp. 344. \$5.00.

[This book summarises the nature of the wage claims made from time to time by American labour, the arguments advanced in support of them and the course of negotiations in regard to them. In addition to a short survey of wage theory and a general account of the policies of the

central workers' organisations, the book includes separate chapters which give a more detailed account of the specific demands put forward in the present century by the trade unions in the clothing, paper, steel, automobile, textile and electrical industries. In these chapters some information is also given about trade-union organisation and the nature and methods of negotiation in the industries concerned. As the author states, "the amorphous mass of material and the length of the period covered in the study" make it difficult for him to present conclusions. The most notable feature which appears to be common to most of the industries examined is the widening, in the war and post-war period, of the nature of claims to include not only straight wage demands but many fringe benefits financed by industry in supplementation of social-security plans.]

ZALEZNIK (A.). *Worker Satisfaction and Development*. A case study of work and social behavior in a factory group. Boston, Mass.: Graduate School of Business Administration, Harvard University (London: Bailey Bros. & Swinfen), 1956. 8". Pp. 148. 16s.

[This is an interesting addition to the literature on the small group, which the Harvard Business School has done so much to create. The workers in the group studied had widely different backgrounds, and their work was not such as to require a great deal of co-operation. None the less, a fairly clearly developed social structure was found to obtain among them. The evidence leads the author to postulate two hypotheses: first, that a work group will as a rule spontaneously order its relationships so as to achieve a certain minimum level of efficiency on the job and so as to satisfy the social needs of the workers at a level they have been conditioned to expect; secondly, that work groups tend to become "frozen" at this minimum level in the absence of any positive challenge from the leadership.]

German

BOHNSACH (E.). *Flüchtlinge und Einheimische in Schleswig-Holstein*. Kiel: Institut für Weltwirtschaft an der Universität Kiel, 1956. 9½". Pp. 77. DM. 7.0.

[The position of refugees from the Eastern territories is compared with that of the resident population of Schleswig-Holstein by analysing changes in occupation and social status since 1939 on the basis of a sample survey.]

Germany 1945-54. Cologne: Boas International Publishing Company, 1956. (Copies obtainable in England from Messrs. Richard Law, 81 Shaftesbury Avenue, London, W.1.) 12". Pp. 738.

[This is an elaborate descriptive survey of the West German economy in the style of a gazetteer. It is printed on heavy art paper and profusely illustrated. Well over half of its space is devoted to accounts of the history and present activities of individual business enterprises.]

Dutch

BRAND (W.). *Het Streven van de Economisch Onontwikkelde Landen naar een hogere Levensstandaard*. Leiden: Stenfert Kroese, 1954. 9". Pp. 240. Dfl. 12.0.

[This is a detailed review of the problems of underdeveloped countries. The causes and symptoms of a low standard of living are discussed by examining the specific problems for each factor of production (land, capital, labour and administrative technique in Government and industry). The next chapter treats the availability of internal financial resources and the relation of inflation to development. Finally, foreign investment and the current programmes of international aid are discussed. The author is a member of the United Nations staff, and he evidently has a first-hand knowledge of the problems concerned. Throughout the book examples of actual cases are given in great detail, and the emphasis is on quantitative description and historical and institutional analysis rather than on explanation in terms of a general abstract model.]

Swiss

SGHENKMAN (J.). *International Civil Aviation Organization*. Geneva: Librairie E. Droz, 1955. 10". Pp. 410.

[This is a comprehensive study of ICAO, the specialised agency of the United Nations responsible for civil aviation. After an introductory section on the political history of civil aviation and the origins of ICAO, the author describes the structure and working of the organisation and its activities in the technical, economic and legal spheres.]

Norwegian

AUKRUST (O.). Nasjonalregnskap. Teoretiske prinsipper. (National Accounts. Theoretical principles.) Samfunnsøkonomiske Studier, 4. Oslo: Statistisk Sentralbyrå, 1955. 9½". Pp. 123.

[The purpose of this volume is to explain the theoretical basis of the definitions and tables contained in an earlier publication of the author, entitled "National Accounts 1930-39 and 1946-51." One of the features of the Norwegian approach to the problems of social accounting is that stress is laid on the rigorous distinction between real and financial transactions. The book is in Norwegian, but there is a fifteen-page English summary.]

Finnish

HONKO (J.). Koneen Edullisin Pitoaika ja Investointilaskelmat. (The economic life of a machine and calculations concerning the economics of capital investments.) Helsinki: Liiketaloustieteellinen Tutkimuslaitos, 1955. 9½". Pp. 276.

[This appears to be a useful contribution, considerably dependent upon the recent work of continental capital theorists, to an important subject. A translation of at least the theoretical sections would seem to be worthwhile. The outline of the author's argument, as emerging from the thirty-five-page English summary, is as follows. One of the central problems of capital theory and of applied business economics is to determine the optimum economic life of a durable producer's good such as a machine. In a broader context, this is referred to as the determination of the optimum investment period. Two optimum lives are distinguished: with and without replacement. An initial problem is to decide what is maximised. It is argued that the choice between the two usual rules, maximise internal rate of return and maximise the present value of the stream of net revenues, depends upon the methods of finance—whether there is more or less access to the loan market. The actual analysis of the machine's economic life is in terms of factors influencing depreciation. This is largely an original approach, although there is reference in the text and in the comprehensive bibliography (which contains U.S., British and continental writers) to the suggestions of Bain and others. The factors considered are: those costs which depend upon the machine's life; demand for the product; technical changes; and prices. There is discussion of the effect of changes in these factors upon the working of existing machines. The work concludes with a detailed study of practical investment calculations, mainly of types evolved in America.]

Israel

THE FALK PROJECT FOR ECONOMIC RESEARCH IN ISRAEL. Second Annual Report, 1955. Jerusalem: The Falk Project for Economic Research (24 Hillel Street), 1956. 9½". Pp. 103.

[This contains a series of outline reports on research findings by staff members. Information is included on eighteen current research projects on Israel's economy, classified under the headings of human resources and economic performance.]

HALEVI (N.). Estimates of Israel's International Transactions, 1952-1954. Jerusalem: Falk Project for Economic Research in Israel, 1956. 9½". Pp. 139. \$2.00.

[The author's purpose is to present estimates of Israel's balance of payments which are more detailed and more explicit in treatment of sources and methods than any previously prepared. No attempt is made to interpret the findings. Certain alternative methods are suggested for presenting the balance-of-payments statistics in a way appropriate to Israel's special circumstances, in particular the unique importance of unilateral transfers. On the average of the three years 1952-54, the balance of unilateral transfers to Israel amounted to over half of gross debits incurred on account of imported goods and services.]

Egyptian

MYRDAL (G.). Development and Under-development. A note on the mechanism of national and international economic inequality. National Bank of Egypt Fiftieth Anniversary Commemoration Lectures. Cairo: National Bank of Egypt, 1956. 9½". Pp. 88.

To be reviewed.

Official

BRITISH

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD. Domestic Food Consumption and Expenditure, 1954. Annual Report of the National Food Survey Committee. London: H.M. Stationery Office, 1956. 9½". Pp. 89. 5s.

[This report is the fifth in its series. It follows the same general lines as its predecessors, with some amplifications. The level of the diet during 1954 is found to have been in practically all respects the highest on record. The full effects of derationing on the structure of demand were not felt till the end of the year, and this topic is therefore given only brief treatment. Despite rationing, class differences in expenditure on food showed some tendency to decline in 1954.]

DUTCH

Scope and Methods of the Central Planning Bureau. The Hague: Central Planning Bureau, 1956. 9½". Pp. 88.

[The techniques of economic planning used in the Netherlands since the War have been the subject of much interest to econometricians and other observers elsewhere. A wide welcome will therefore be given to this exposition of how the Central Planning Bureau does its work. The first part describes the organisation of economic policy-making in the Netherlands and how the Central Planning Bureau fits into the machinery of government. The second and longer part is concerned with the actual techniques of planning, both the drawing up of the yearly plan and the Bureau's rather less well-known work in the sphere of long-term planning. The details of the models currently in use are provided in appendices. Comparisons are also given of forecasts and events.]

INTERNATIONAL

EUROPEAN COAL AND STEEL COMMUNITY. Fourth General Report on the Activities of the Community (April 11, 1955 to April 8, 1956); 9"; Pp. 277. Speech by Monsieur René Mayer, President of the High Authority before the Common Assembly; 8½"; p. 50. Strasbourg: European Coal and Steel Community, 1956.

[The report describes the details of the High Authority's activities during the year, while M. Mayer, in his address, considers them in a broader context. The seller's market for coal and steel that prevailed during the year presented certain problems which the High Authority tried to cope with without losing sight of its more long-term objectives. One of the most important developments in the course of the year was the institution of through-rates for fuels and ores on the railways in the countries of the Community.]

INTERNATIONAL LABOUR OFFICE. Production and Employment in the Metal Trades. The problem of regularisation. Geneva: International Labour Office, 1956. 9½". Pp. 121. 7s. 6d.

[The sources of demand for metal products are classified as goods in process, consumers' durables, producers' durables, government use, inventories and exports. The factors affecting demand and the measures available to stabilise demand are analysed for each of these classes. Other chapters deal with frictional unemployment and the relation between production and employment. The treatment draws on empirical evidence, as well as theoretical considerations, but the authors do not set out to give a systematic survey of the current situation or prospects. While the chief emphasis is on the metal trades as such, it is fully recognised that many of the issues involved in overcoming instability in this industry apply to capital-goods industries generally, and these broader issues accordingly take up much of the space of the report. Its scope is thus so wide that on many aspects of the subject it is not able to go very deep. None the less, it contains much useful material.]

INTERNATIONAL LABOUR OFFICE. Social Aspects of European Economic Co-operation. Report by a group of experts. Geneva: International Labour Office, 1956. 9½". Pp. 179. 9s.

[To be reviewed.]

The First Ten Years of the International Monetary Fund. Washington, D.C.: International Monetary Fund, 1956. 11". Pp. 47.

[A survey of the Fund's policy and activities to date. It contains some well-presented information, but its tone is one of official optimism rather than of critical analysis.]

UNITED NATIONS. World Economic Survey, 1955. New York: United Nations, 1956. 11". Pp. 201. 14s.

[To be reviewed.]

UNITED NATIONS FOOD AND AGRICULTURE ORGANIZATION. The State of Food and Agriculture 1956. Rome: F.A.O., 1956. 11". Pp. 144. 7s. 6d.

[This report represents a new departure in its series. Only about half of it is devoted to a review of developments during the year, instead of the whole of it, as in former years. In addition, the report contains two special studies, intended to be the first of a series, on particular problems of a more long-term character. The two subjects treated this year are factors influencing the growth of international trade in agricultural products and trends and outlook in world fisheries. Both these studies contain valuable and original work, but the former is naturally of more general interest. It is found that a fairly sharp distinction can be drawn between two classes of agricultural products: those that can be produced in the major industrial countries or else can be replaced by synthetic substitutes and those that cannot. International trade in the second class of product has grown more or less in step with world economic activity as a whole. Until 1930 much the same was true of the first class of products. Since then the volume of international trade in most of these products has actually declined, despite the great increase in world incomes. The report contains much further interesting detail which cannot be briefly summarised.]

UNITED NATIONS FOOD AND AGRICULTURE ORGANISATION. Yearbook of Food and Agricultural Statistics. Vol. IX, Part 2, 1955. Trade. Rome: F.A.O., 1956. 10½". Pp. 320. 17s. 6d.

[This contains data on international trade in agricultural products in 1954 and preceding years. Most of the statistics are in physical units, but the first chapter gives summary tables on the values of agricultural commodities and groups of commodities traded.]

UNITED NATIONS TECHNICAL ASSISTANCE COMMITTEE. Eighth Report of the Technical Assistance Board. New York: United Nations, 1956. 11". Pp. 104. 7s.

[This contains a detailed record of the progress of the Expanded Programme of Technical Assistance for Economic Development during 1955. Briefer particulars are given of future plans.]

THE ECONOMIC JOURNAL

JUNE 1957

ADAM SMITH'S APPROACH TO THE THEORY OF VALUE¹

I

It has been powerfully argued by Dr. Emil Kauder that "the analysis of subjective elements in economic valuation starts with Aristotle," and that "French, Italian and Swiss authors of the enlightenment have so perfected this analysis, that it might have been possible during the time of Adam Smith to base a system of political economy entirely on marginal utility calculation."² We are not, of course, attempting any kind of assessment of Dr. Kauder's learned case, but aim only at calling attention to two points of contrast concerning Adam Smith's treatment of value. These points come at such a vital turning-point in the history of economic thought that they deserve more emphasis and examination in the many discussions of Smith's fundamental ideas than they have hitherto received.

First, there is the contrast between Smith's treatment of value and that of his Scottish predecessors, Gershom Carmichael and his teacher Francis Hutcheson; and secondly, there is the contrast between Smith's own treatment in his *Lectures* of 1762-63 and that in the *Wealth of Nations*. The doctrines on value taught by "the never-to-be-forgotten Dr. Hutcheson" had come from Puffendorf via Gershom Carmichael. Before Puffendorf these ideas can be traced back through Grotius to the Aristotelian tradition. Hutcheson's treatment of value anticipates not so much the more one-sided utility theory of Jevons and Menger, but rather the well-balanced, dual, "both-blades-of-the-scissors" analysis of Marshall. Whether or not Smith did know, or could have reasonably been expected to explore, much of the relevant writings of Davanzatti, Montanari, Galiani, Turgot, Condillac and Bernoulli (set out so illuminatingly by Dr. Kauder), the ideas of Puffendorf, Carmichael and Hutcheson were fully at his disposal to build on had he wished. It is interesting to see to what extent Smith, in the *Wealth of Nations*, chose to alter decisively the emphasis of his approach to value at the

¹ It is a pleasure for one of the authors (W. L. Taylor) to record the helpfulness, counsel and stimulating suggestions, and to acknowledge the valuable co-operation he received, from Mr. T. W. Hutchison of the London School of Economics in the preparation of an earlier draft of this paper.

² E. Kauder, "Genesis of the Marginal Utility Theory," *ECONOMIC JOURNAL*, Vol. LXIII, September 1953, pp. 638 ff.

expense of the ideas of scarcity and usefulness stressed by Hutcheson (and to some extent by Smith himself in his *Lectures* in 1762–63) in the direction of a one-sided, almost exclusive emphasis on labour and cost of production.

Puffendorf's brief discussion of value lays direct emphasis on the two basic elements of usefulness and scarcity,¹ fundamental concepts which were clearly indicated and transmitted by Puffendorf and his Scottish followers to Adam Smith.

Puffendorf's ideas on value came to Hutcheson via Gershom Carmichael (1672(?)–1729), Hutcheson's teacher and immediate predecessor in the Glasgow Chair of Moral Philosophy, and the first professorial occupant of that most celebrated of chairs. Carmichael translated Puffendorf's *De Officio* into Latin and added a critical expository commentary in footnotes. Hutcheson himself said that Carmichael was "by far the best commentator" on Puffendorf and that "the notes are of much more value than the text." To the brief chapter on value Carmichael adds some half-dozen notes including some of the greatest acuteness, which show a clear and masterly grasp of the various fundamental elements of the value problem, as, for example, in the following summary:

"In general we may say that the value of goods depends on these two elements, their *scarcity* and the *difficulty of acquiring them*. . . Furthermore, scarcity is to be regarded as combining two elements: the number of those demanding (the good) and the usefulness though to inhere in the good or service and which can add to the utility or pleasure of human life."²

In another note Carmichael lays further emphasis on the subjective element by pointing out that the usefulness or "aptitude," which is a essential constituent of value, may be real or imagined (p. 249).

¹ Here is an English version of some of the relevant passages in Puffendorf's *De Officio*, Chapter XIV: "The natural Ground of the *Common Value*, is that Fitness which any Thing or Action has for supplying, either mediately or immediately, the *Necessities* of Humane Life, and rendering it some more *easy* or more comfortable. Hence it is we call those things which are not of any Use to us, *Things of no value*. There are nevertheless some things most useful to Humane Life, which are not understood to fall under any determinate Price or Value"; (e.g., the upper Regions of the Air, the Sky, and the *Heavenly Bodies*, the clear Light of the Sun, the serene and pure Air) . . . the necessity of the thing or its extraordinary Usefulness is not always regarded; but on the contrary we see those things are of the least account or Value, without which Human Life is least able to subsist; and therefore not without the singular Providence of Almighty God, Nature has been very bountiful in providing plentiful store of those things. But the *rarity* or *Scarceness* of Things conduces chiefly to the enhancing their Value. . . . "The *Whole Duty of Man According to the Law of Nature*, by the famous Civilian Samuel Puffendorf. Translated by F. C. (London, M D C XCI), pp. 165–7.

² F. Hutcheson, *Introduction to Moral Philosophy*, 1747, p. i.

³ See p. 247 n. of Carmichael's edition of Puffendorf's *De Officio* (2nd ed., Edinburgh, 1724): "In genere hic dici potest. Pretium rerum ex his duobus capitibus pendere, *Indigentia*, et *Aptitudine*, quam isti rei vel operae inesse putant, qua ad vitae humanae usum aut voluptatem aliqui conferre possit." Very little seems to have come down about Carmichael, though he was the founder of the Glasgow school of moral philosophy. For further details of his life and career, see W. L. Taylor, "Gershom Carmichael, a Neglected Figure in British Political Economy," *The South African Journal of Economics*, Vol. 23, September 1955, pp. 251 ff.

Hutcheson's teachings on value follow very closely those of Puffendorf, further sharpened and developed by his almost forgotten teacher, Carmichael. These ideas have not been completely neglected, since Edwin Cannan quoted two or three paragraphs on the subject from the *Introduction to Moral Philosophy* (1747).¹ But Hutcheson's brief treatment deserves considerably more attention than it has yet received, both for its own sake and in contrast to the treatment of Adam Smith in the *Wealth of Nations*. Hutcheson's fullest discussion comes on pp. 53–5 of Volume II of his *System of Moral Philosophy* (1755):

"The natural ground of all value or price is some sort of *use* which goods afford in life; this is prerequisite to all estimation. But the prices or values in commerce do not at all follow the real use or importance of goods for the support, or natural pleasure of life. . . . When some aptitude to human life is presupposed, we shall find that the prices of goods depend on these two jointly, the *demand* on account of some *use* or other which many desire, and the *difficulty* of acquiring, or cultivating for human use."

"*Use*" is defined by Hutcheson as:

"Not only a natural subserviency to our support, or to some natural pleasure, but any tendency to give any satisfaction, by prevailing custom or fancy, as a matter of ornament or distinction."

"*Difficulty of acquiring*" is explained in terms of scarcity as:

Not only a great labour, or toil, but all other circumstances which prevent a great plenty of the goods or performances demanded. . . . Price is increased by the rarity or scarcity of the materials in nature, or such accidents as prevent plentiful crops of certain fruits of the earth; and the great ingenuity and nice taste requisite in the artists to finish well some works of art, as men of such genius are rare. The value is also raised, by the dignity of station in which according to the custom of a country, the men must live who provide us with certain goods, or works of art."

Hutcheson summarised as follows:

"When there is no *demand*, there is no price, were the *difficulty* of acquiring never so great; and were there no *difficulty* of labour requisite to acquire, the most universal *demand* will not cause a price; as we see in fresh water in these climates. Where the demand for these two sorts of goods is equal, the prices are as the difficulty. Where the difficulty is equal, the prices are as the demand" (italics supplied).

This discussion aims at drawing attention to some significant contrasts in Smith's treatment of value in the *Wealth of Nations*. The famous licit treatment of utility and value, consisting of the single paragraph "value-in-use" and "value-in-exchange," appears in Book I, Chapter IV. This brief discussion is rounded off by a lengthy elaboration of a labour and cost of production analysis and of a labour standard of value ("utility" or

¹ See E. Cannan, *Review of Economic Theory* (London, 1929), p. 160.

"value-in-use" having been dismissed from the scene). Various other aspects of value theory are touched on in passing, for example, in Book I, Chapters V, VI and VII. Again in Chapter II, Part II, in discussing the prices of the precious metals, Smith states that the demand for them arises partly from their utility, and partly from their beauty, and mentions that the qualities of utility, beauty and scarcity are the basis of the high prices of the precious metals. But unlike his immediate Scottish predecessors, who placed the term and concept of scarcity in a central and dominant position in their treatment of value, Smith, in these few digressions from his definitive treatment of value, includes the idea of scarcity implicitly, but not explicitly.

(a) In contrast with Hutcheson's emphasis on "some sort of use" being "a natural ground of all value or price," Smith lays it down (Book I, Chapter 4) that "utility" or "value-in-use" is not a necessary ingredient of exchange value, since things "which have the greatest value in exchange have frequently little or no value in use" (or "utility"), e.g., diamonds.¹

(b) Whereas Carmichael and Hutcheson by "use" or "usefulness" meant something closely similar to the concept of utility as required and employed in modern value theory (i.e., power to satisfy any kind of want, "real" or "imagined," basic or ornamental), Smith, in the *Wealth of Nations*, resorts to a narrower ethically tinged sense of "utility" (according to which diamonds have little or no utility).

(c) While Smith makes only passing reference to the fundamental term "scarcity" and makes no reference to it at any critical point in his discussion of value, both the term and the concept of scarcity (or "difficulty") had a very central place in the chapters of Puffendorf and Hutcheson and had been very clearly emphasised in the two sentences of Carmichael.²

The broad general influence of Hutcheson on Smith seems generally to

¹ L. H. Haney, *History of Economic Thought* (New York, 1936), p. 217, points out that Smith's distinction between value-in-use and value-in-exchange seems to correspond with the idea of *valeur usuelle* and *valeur venale* as held by Quesnay and the Physiocrats.

Paul H. Douglas, in his lecture "Smith's Theory of Value and Distribution" in *Adam Smith, 1776-1926; Lectures to Commemorate the Sesquicentennial of the Publication of the "Wealth of Nations"*, edited by J. M. Clark (Chicago: The University of Chicago Press, 1928), p. 78, goes so far as to say of Smith's treatment of "utility" in the *Wealth of Nations*: "Not only is utility not a determinant of exchange value, but—and here Smith goes farther than Ricardo and later exponents of the labour theory of value—it is not even a necessary prerequisite."

² Halévy remarks on Hutcheson's discussion of "use" and value, that his language is "more exact than Smith's on two points: By 'use' Hutcheson, differing from Adam Smith, means not only natural or reasonable utility, but also any aptitude to produce a pleasure which is founded on custom or fashion: and, above all, by 'difficulty of acquiring,' he means not only the amount of work necessary in order to produce or to obtain the object, but, in a more general way, the scarcity of which this difficulty is only a particular instance." Elie Halévy, *The Growth of Philosophic Radicalism*, translated by Mary Morris, with a Preface by A. D. Lindsay (London, 1928), p. 96. According to Halévy, Smith "had the choice between two perfectly distinct traditional doctrines" on and that represented by Puffendorf and Hutcheson, who based value on utility and scarcity, question" why Smith and subsequent economists chose to follow what he describes as the tradition of Locke. Whether or not this is a fully satisfactory description of Locke's ideas on value, it seems quite clear that Smith could have chosen, but in the *Wealth of Nations* all but completely discarded, the most important elements in the doctrines of Puffendorf and Hutcheson.

have been assumed, or even sometimes explicitly stated, to cover their ideas on value, as for example, when Smith's distinguished biographer, John Rae, wrote that Hutcheson's "remarks on value contain what reads like a first draft of Smith's famous passage on value in use and value in exchange."¹ It is suggested, on the contrary, that the texts justify us in suggesting that the differences, as they stand, have far more fundamental implications than any similarities, and that these differences are all the more crucial considering that we are surely here at a major turning point in the history of economic thought.

II

In the light of this first contrast between Hutcheson's ideas on value and those of the *Wealth of Nations* some further examination and emphasis may be appropriate regarding the contrast between Smith's treatment of value in the *Lectures* of 1762-63 and his definitive treatment in the *Wealth of Nations*.² The second contrast is based on two passages in the *Lectures*:

(a) The two opening sections of the division of the *Lectures* devoted to political economy are entitled (by Cannan) *Of the Natural Wants of Mankind* and *That all the Arts are subservient to the Natural Wants of Mankind*. Cannan points out that there is nothing corresponding to these two sections at the beginning of, or later on in, the *Wealth of Nations*, though almost all the other important sections of this part of the *Lectures* match up with the opening chapters in the *Wealth of Nations*. He wrote—

"It is not easy to explain why the first two sections were omitted from the *Wealth of Nations*, and the fact will be regretted by those who ask for a theory of consumption as a preliminary to the other parts of political economy."³

From the opening sentences Smith links his general subject of *Cheapness and Plenty* ("or, which is the same theory, the most proper way of procuring wealth and abundance"), directly with the ideas of plenty and scarcity; and like Puffendorf and Hutcheson, and unlike his own later positive treatment in the *Wealth of Nations*, Smith introduces this fundamental concept into his explanation of the water-and-diamonds paradox.

"It is only on account of the plenty of water that it is so cheap as to be got for the lifting; and on account of the scarcity of diamonds (for their real use seems not yet to be discovered) that they are so dear."⁴

¹ See J. Rae, *Life of Adam Smith* (London, 1895), p. 14. This passage is quoted approvingly by W. R. Scott, *Francis Hutcheson* (Cambridge, 1900), p. 237, who adds, however: "It should be noted that while Hutcheson emphasises the position of labour he does not make it the sole distinguishing characteristic of wealth, for he also adds the limitation of supply and appropriation—as for instance, 'the rarity or scarcity of the materials in nature etc.'" Surely this is an absolutely fundamental addition by Hutcheson, particularly as Hutcheson, as in one of the quotations above, relates scarcity to demand.

² See E. Cannan, *Review of Economic Theory*, p. 164, and Marian Bowley, *Nassau Senior and Classical Economics* (reprinted New York, 1949), pp. 67-9, who have also touched on the differing treatments of value in Smith's *Lectures* and the *Wealth of Nations*.

³ E. Cannan, *Lectures of Adam Smith* (Oxford, 1896), Editor's "Introduction," p. xxvii.

⁴ *Ibid.*, p. 157.

Moreover, Smith in this opening section is mainly concerned to point out that most of the production of a community, when any considerable division of labour has developed, is for meeting not basic "natural" wants but those springing from the love of variety or delicacy of taste, on account of which gems of diamonds, for example, are "much esteemed by us," though iron is far "more useful."

Certainly these two opening sections in the *Lectures* are, at most, general discussions of "wants and their satisfactions," yet surely their presence marks a most significant contrast with what has often not unreasonably been construed to be the one-sided general emphasis on labour and production in the *Wealth of Nations*.

(b) The second point of contrast relates to Section 7 (in this division of the *Lectures*), *What Circumstances regulate the Price of Commodities*, as compared with the corresponding Chapter VII in the *Wealth of Nations* on natural and market price. In this chapter we are simply told about market price that it—

"is regulated by the proportion between the quantity which is actually brought to the market, and the demand of those who are willing to pay the natural price."¹

We are given no further word of explanation or analysis of "demand" beyond that we are to understand by "demand," "effectual demand" and not the "absolute" demand which a poor man might have for a coach and six (*ibid.*). While Puffendorf, Carmichael and Hutcheson explicitly put the term and concept of scarcity in a crucial and vital place in their analysis, Smith makes no direct reference to "use" or usefulness, and only includes the concept of scarcity in an implicit fashion, e.g.—

"A competition will immediately begin among them, [buyers] and the market price will rise more or less above the natural price, according as either the greatness of the deficiency, or the wealth . . . of the competitors happened to animate more or less the eagerness of the competition. Among competitors of equal wealth and luxury the same deficiency will generally occasion a more or less eager competition, according as the acquisition of the commodity happens to be of more or less importance to them."²

These ideas of scarcity and utility are basically essential for any satisfactory treatment of value theory; yet Smith tended to turn away from them and emphasise the role of labour.

In the *Lectures* we are given three determinants of market price:

"First, the demand, or need for the commodity. There is no demand for a thing of little use; it is not a rational object of desire.

Secondly, the abundance or scarcity of the commodity in proportion to the need of it. If the commodity be scarce, the price is raised, but if the quantity be more than is sufficient to supply the demand,

¹ A. Smith, *Wealth of Nations*, Cannan Edition (London, 1950), Vol. I, p. 58.
² *Ibid.*, pp. 58–9.

the price falls. Thus it is that diamonds and other precious stones are dear, while iron, which is more useful, is so many times cheaper, though this depends principally on the last cause, viz.:—

Thirdly, the riches or poverty of those who demand" (p. 176).

The *Lectures* do not go further on this subject than these headings. But the explicit presence of these ideas, the perceptive connection and lucid linking together in a basic and fundamental explanation of utility, scarcity and demand (in the manner of Hutcheson and Carmichael) may be held to mark a certain contrast with the treatment devoted to this problem in the *Wealth of Nations*.

In direct contradiction with the famous statement in the *Wealth of Nations*, it is noteworthy in the above passage that diamonds in fact have, and must have, considerable "use" from the fact of their being demanded, and very much demanded, since their price is raised thereby above the price of iron, in spite of the latter being "more useful" (i.e., having a greater total utility). It has been noted above that Smith had previously held that no "real use" had yet been discovered for diamonds, so his treatment of use and utility appears somewhat inconsistent in the *Lectures*. But Smith here is inconsistently right, and we prefer economists who are inconsistently right to those who are consistently wrong.

It would be dangerous to lay much store on the precise wording of the ideas presented in the *Lectures*, and it is quite impossible (as Scott argued against Cannan) to conclude from the omission of a subject or idea from the *Lectures* that it had not occurred to, or been treated by, Smith in 1762–63. But the approach to and ideas on value of the Aristotle–Puffendorf–Carmichael–Hutcheson tradition are all explicitly, if not so very compactly and consistently, set out in the *Lectures*, and it can at least be safely assumed that they are not the invention of a note-taker. In fact, according to Scott,¹ it can be assumed that Smith probably gave them a much fuller treatment than is apparent from the text of the notes.²

Referring to Smith's treatment in the *Wealth of Nations*, Dr. Kauder concludes his review of seventeenth- and eighteenth-century utility theorists with the following judgement on Smith:

"Yet it was the tragedy of these writers that they wrote in vain, they were soon forgotten. . . . Instead, the father of our economic

¹ W. R. Scott, "The Manuscript of An Early Draft of Part of *The Wealth of Nations*," *Economic Journal*, Vol. XLV, September 1935, p. 431.

² The manuscript of the opening chapters of *An Early Draft of the Wealth of Nations*, (c. 1763) (printed by W. R. Scott in his *Adam Smith as Student and Professor*, pp. 322 ff.) dates apparently from 1763, just after the *Lectures*, but may already be said to mark a transition towards the *Wealth of Nations*. The manuscript volume begins with a chapter headed "Chapter 2," the substance of which was to become Chapters I and II in the *Wealth of Nations*. The Chapter I still apparently intended, but not in fact included in the 1763 manuscript, would presumably have covered the subject of wants and their satisfaction, discussed in the first two sections of the *Lectures*, but finally omitted from the *Wealth of Nations*. The chapter on price in the manuscript (Chapter 3) is simply an outline of headings which follows the *Lectures* in setting out three determinants of market price and specifically mentions needs and scarcity, but even more briefly than in the *Lectures*.

science wrote that water has a great utility and small value. With these few words Adam Smith had made waste and rubbish out of the thinking of 2,000 years. The chance to start in 1776 instead of 1870 with a more correct knowledge of value principles had been missed" (p. 650).

These are rather strong words, and in spite of the tantalising anticipations before 1776 of modern utility theory to which Dr. Kauder (from post-1870 hindsight) has been able to refer, it may still appear an unreasonably harsh judgment. But Smith certainly did know the ideas on value of Hutcheson and Carmichael, which also had roots two thousand years old in Aristotle, and had, in fact, expounded them in his *Lectures*.

If the above quotation from the *Lectures* (p. 176) on demand, use and scarcity had appeared in the text of the *Wealth of Nations*, and if, on the other hand, the famous paragraph in the *Wealth of Nations* on value-in-use and value-in-exchange (where it is suggested that utility is *not* a necessary prerequisite of value-in-exchange) had occurred in the *Lectures*, then it could be undoubtedly claimed that, at this point, the *Lectures* give a garbled and incomplete account of Smith's ideas. It could also be pointed out that the correct and definitive account could be found, where one would expect to find it, in the *magnum opus* which took him so long to write. But as it is, the "correct and definitive" treatment comes second-hand from much abbreviated notes of earlier lectures, and the garbled and incomplete version in the finished *magnum opus*. It seems that there may always remain a certain rather fascinating aura of mystery as to why the most crucial elements in these ideas were hidden in the background of the *Wealth of Nations* almost as though by some deliberate process of censorship.

If one is an upholder of the labour theory of value one can wholeheartedly applaud the new and different emphasis Smith adopted in the *Wealth of Nations* in his treatment of the fundamentals of value. But if one considers that the ideas of scarcity and "usefulness" are basic and essential for any satisfactory treatment, or if one even defines the subject-matter of economic science in terms of the scarcity concept, then there can be only regret for Smith's new emphasis given with such vastly influential consequences in the *Wealth of Nations*, which led on to at least a serious under-emphasis on, and, at times, to the almost complete eclipse of, these ideas in British political economy for nearly a hundred years.¹ Smith's treatment of value appears

¹ The eloquent comments of Paul H. Douglas may be recalled: "By failing to follow up the hints which these writers (Locke and Harris) had developed, Smith helped to divert the writers of the English Classical school into a cul-de-sac from which they did not emerge, in so far as their value theory was concerned, for nearly a century, while he also helped . . . to give rise to the economic doctrines of nineteenth-century socialism. . . . There are, it seems to me, few more unfair instances in economic thought than the almost complete unanimity with which the English-speaking economists of the chair have heaped condemnation upon the over-worked and poverty-stricken Marx, who worked under such great difficulties, and, save for the comments of Jevons and a few others, have heaped praises upon Smith and Ricardo. The failure was the failure not of one man but of a philosophy of value, and the roots of the ultimate contradiction made manifest to the world in the third volume of *Das Kapital* lie embedded in the first volume of the *Wealth of Nations*," (*op. cit.* pp. 80 and 95).

as a profoundly consequential divagation from the main path of European thinking, a divagation very many of the steps in which had subsequently to be retraced.

III

* It is one thing to pose a problem in the transmission of ideas; but it is another and most unsatisfactory thing to leave it as an unsolved problem. Dr. Kauder attempts no solution of the problem of why Adam Smith "made waste and rubbish out of the thinking of two thousand years"—if one excludes the cheap corollary that it must be because Adam Smith was neither as learned nor as perceptive as Dr. Kauder himself. But, as has been shown above, the pupil of Francis Hutcheson and the lecturer of 1762–63 could hardly make use of the bluff Johnsonian *riposte*, "Sir, it was pure ignorance."

It is, of course, rather hard to saddle so unoriginal and derivative a writer as the Adam Smith of this Schumpeterian age with making waste of so many years of effective thought with these few words: "water has a great utility and a small value."¹ For these few words are indeed even more than second-hand. The contrast also goes backwards almost 2,000 years in the history of thought; the very phrasing is an echo of the same illustration given by John Law in 1705,² and the same way of putting it is shared not only by Francis Hutcheson, who taught him, but even by Samuel Puffendorf, who was put forward by Dr. Kauder as a model whom Adam Smith would have done well to follow.

"Those things are of the least account of Value [remarked Puffendorf] without which Human Life is least able to subsist; and therefore not without the most singular Providence of Almighty God, Nature has been very bountiful in providing a plentiful store of those things. [But] the wanton Luxury of Mankind has set *extravagant Rates* upon many things which Humane life might very well be without, for instance upon *Pearls and Jewels*."³

Admitting all the myopia with which Smith may have viewed the proposition, it is difficult to sustain that by adopting it he was discarding the valuable traditions of 2,000 years. He used few words because he was merely echoing something he regarded as traditional, trite and obvious, and, in doing so, can hardly be accused of drawing a fresh curtain of his own devising over a long tradition of price theory based on utility.

It might be remembered that Von Wieser himself treated this "paradox of value" with considerably more respect. Indeed, he started his great work on *Natural Value* by pointing out that it would appear obvious to any

¹ E. Kauder, *op. cit.*, p. 650. Adam Smith's "few words," in fact, have a homelier ring than those ascribed to him. "Nothing is more useful than water; but it will purchase scarce any thing; scarce any thing can be had in exchange for it. A diamond, on the contrary, has scarce any value in use; but a very great quantity of other goods may frequently be had in exchange for it" (*Wealth of Nations*, Cannan edition (London, 1950), Vol. I, p. 30).

² Conveniently reproduced in E. Cannan, *Review of Economic Theory* (London, 1929), p. 159.

³ Samuel Puffendorf, *op. cit.*, pp. 167–8.

intelligent business-man, as it did to the early theorists, that the value of things was derived from their utility. But facts, including the paradox that "things which have a great deal of use have often a smaller value than those which have little use," showed that this conclusion was not so obvious, after all, but on the contrary, "as often and as strikingly, that value is in agreement with the exact antithesis of use—namely with costs."

As a result, Von Wieser pointed out, for a long time many of the best writers on value refused to consider utility as the source of value, but asserted that the value of goods comes from the difficulty of their attainment and is proportionate to it. On the other hand, most of those who have based their theory on utility have been manifestly unsatisfactory:

"They have either placed themselves in contradiction to the facts . . . without explaining away the contradiction, or laid so much stress on these facts that, in the end, they can scarcely be distinguished from those writers who have rejected the principle of utility, except by their express avowal of that principle."¹

One could hardly deny that Daniel Bernoulli, as early as 1738, had made an attempt—in the diagram and accompanying explanation given by Dr. Kauder—to give geometrical representation to the use of the differential calculus to represent the diminishing marginal utility of additions to a man's fortune. But it is done upon the basis of an assumption concerning the relationship between this marginal utility and the size of the man's existing fortune which is purely arbitrary (viz., inverse proportionality), and his geometry does no more than illustrate the assumption. Adam Smith would not have flinched from the interpersonal comparison or from the assumption that the marginal utility of an addition to (or, at any rate, subtraction from) the greater fortune was less than that of a similar addition to the smaller fortune.² But he was certainly suspicious enough of the Political Arithmetician to distrust the spurious trick of pretending to give precise measurement to what was mere assumption.

It is not immediately apparent from Bernoulli's explanation (as there given) that the relative curve SS_1 in the diagram (SS in the text) represents, as it must, the total utility derived from additions to a basic fortune; its shape depends upon the particular—and unconvincing—assumption made, and it surely postulates a good deal of post-1870 hindsight to read into this apparently rather inadequately explained diagram what we are told Adam Smith might have built upon in 1776.

The marginal-utility analysis which was developed after 1870 was an analysis applied to the problem of individual values, on the basis of different quantities of individual commodities already possessed or different rates of acquisition of commodities. There is no hint that Bernoulli's purely formal

¹ F. Von Wieser, *Natural Value*, English Translation by Mrs. C. Malloch, ed. W. Smart (London, 1893), pp. 3-5.

² Adam Smith: *Theory of Moral Sentiments* (1759), Bohn Standard Library Edition (London, 1853), Pt. III, Ch. 3, p. 195. "The poor man must neither depend nor steal from the rich, though the acquisition might be much more beneficial to the one than the loss could be hurtful to the other."

illustration of what can be interpreted as a particular rate of diminishing marginal utility of money can be applied to the problem of individual prices. Moreover, on a straightforward interpretation of the wording given, Bernoulli's discovery would seem to have taken place in the course of a piece of reasoning which assumes implicitly that the total utility of 100,000 ducats is the same as the total utility of 50,000 ducats!¹ It is true that, with post-1870 hindsight we can interpret otherwise the statement "then for the wealthier person one ducat is worth as much as one half ducat for the poorer person." But the obvious pre-1870 reading would have been that Bernoulli's "worth" of each ducat or half-ducat was something capable of addition to give this surprising result; only since 1870 could the more sophisticated reading be generally adopted, that it means only "marginal utility" and that summation is impossible.

When Adam Smith is blamed for not building out of these thoughts the new science of political economy, the question surely arises whether one could have expected him to build upon a foundation of such arrant nonsense as this last supposition must at the time have appeared to be. But why did he not, in the *Wealth of Nations*, build upon his own earlier propositions that the market price of a commodity was based on:

"First, the demand, or need for the commodity. . . . Secondly, the abundance or scarceness of the commodity in proportion to the need of it. . . . Thirdly, the riches or poverty of those who demand. . . ."?²

The answer would appear to be, in the first place, that Adam Smith felt that this sort of subjective analysis was leading nowhere. It had not so far proved capable of being employed in any actual quantitative measurement, while even had he been aware of Bernoulli's illustration, since this posited equal utilities derived from the possession of two very different fortunes, it might not have proved very encouraging to pursue it further.

That Adam Smith turned his back upon utility largely because it did not seem to provide more than vague generalisations is not difficult to imagine. Yet perhaps he did not turn his back upon it so decisively as is usually supposed.

Two fundamental ideas running through the *Wealth of Nations* may be regarded as evidence of this. The first is the stress which Adam Smith laid upon men's propensity to barter as the origin of a socio-economic organisation based on the division of labour. It would seem doubtful that Adam Smith had really abandoned the primacy of subjective estimates of utility as a determinant of value, when his whole system is bound up with the existence of a society in which the different individuals implicitly offer: "Give me that which I want, and you shall have this which you want," in which "every man thus lives by exchanging, or becomes in some measure a merchant, and the society itself grows to be what is properly a commercial

¹ E. Kauder, *op. cit.*, p. 648.

² *Lectures*, pp. 176-7 (see above p. 187).

society.”¹ Clearly this depends upon different subjective valuations of the objects of exchange.

The second lies, of course, in his stress on there being a necessary connection between the apparently independent sets of prices comprised under his classification of “natural price” and “market price.” This was already formulated in the *Lectures* (p. 173), but it formed a more important feature of the *Wealth of Nations*. The “Early Draft” published by Professor Scott is clearly a link between Adam Smith’s earliest formulation and his final one, for it sets out both elements of which only one, a piece (and that a different one each time) is stressed almost to the exclusion of the other in the *Lectures* and in the *Wealth of Nations*.²

What is the essential difference between the *Lectures* and the *Wealth of Nations* in this respect? Surely that, although in the *Lectures*, Adam Smith asserts that:

“Of every commodity there are two different prices, which though apparently independent, will be found to have a necessary connection, viz. the natural price and the market price.”³

it there remains little more than an assertion.

His supply-and-demand formula refers only to market price. His natural price formula is applied only to the natural price of labour, and hardly goes beyond—if indeed it goes as far as—Cantillon. But in the *Wealth of Nations*, on the other hand, new stress is given to the determinants of natural price, by way of the model, designed to explain at one and the same time both value and distribution, for which he may have been indebted either to the Physiocrats⁴ or to James Oswald of Dunnikier.⁵ The component parts of the price of every commodity can be resolved into the shares of wages, profits and rent, and—

“as the price or exchangeable value of every particular commodity, taken separately, resolves itself into some one or other, or all of those three parts; so that of all the commodities which compose the whole annual produce of the labour of every country, taken complexly, must resolve itself into the same three parts, and be parcelled out amongst different inhabitants of the country, either as the wages of their labour,

¹ *Wealth of Nations*, Cannan Edition (London, 1950), Vol. I, pp. 16 and 24. One is tempted to bring in collateral evidence from the still more uncompromising exponent of a labour-theory-of-value, David Ricardo. In his chapters on the incidence of taxes, Ricardo shows his awareness of a theory of consumer’s demand in such characteristic passages as this: “Whatever habit has rendered delightful will be relinquished with reluctance . . . but this reluctance has its limits. . . . One man will continue to drink the same quantity of wine, though the price of every bottle should be raised three shillings, who would yet relinquish the use of wine rather than pay four. Another, will be content to pay four, yet refuse to pay five shillings. . . . Every man has some standard in his own mind by which he estimates the value of his enjoyments, but that standard is as various as the human character.” (D. Ricardo, *On the Principles of Political Economy and Taxation*, Ch. XVI (ed. P. Sraffa and M. H. Dobb) (Cambridge University Press, 1951), Vol. 1, p. 241).

² W. R. Scott, *Adam Smith as Student and Professor* (Glasgow, 1937), pp. 345–6.

³ *Lectures*, p. 173.

⁴ *Ibid.*, Cannan’s introduction, pp. xxx–xxxi.

⁵ W. R. Scott, *Adam Smith as Student and Professor*, pp. 117–18, 320–1.

the profits of their stock, or the rent of their land. . . . Wages, profit and rent are the three original sources of all revenue as well as of all exchangeable value.”¹

Thus the unifying analysis is that there is everywhere an “ordinary,” “average” or “natural” rate of wages, profit and rent which determine “natural” prices of commodities. National output (= income) is equivalent to the total contribution of the three factors of production co-operating through the division of labour. National income (= output) is distributed as the payment for the services of these factors. Individual “natural” prices are determined by this distribution, though they also determine the distribution, just as in Marshall’s analogy, “when several balls are lying in a bowl, they mutually govern one another’s positions.”

Just in the same way as, in the *Lectures*, Adam Smith virtually confined himself to a rather superficial supply-and-demand theory of market price, though asserting a connection with market price and mentioning quite incidentally that “labour . . . is the true measure of value” (p. 190), so now in the *Wealth of Nations*, without abandoning the explanation of market price *via* utility and scarcity inherited through Hutcheson, Puffendorf and the Scholastics, he concentrated upon what now appeared to him to be the more important phenomenon of “natural price” or normal value, for which the traditional utility approach appeared inadequate.

The explanation must be that, in the *Wealth of Nations*, Adam Smith had cast his thought in a more ambitious role. His eyes were set, not on the transient determination of market values but on a long-term demonstration of the causes of the variations in the *Wealth of Nations* in which alone could he make clear:

“That there is in every country what may be called a natural balance of industry, or a disposition in the people to apply to each species of work precisely in proportion to the demand for that work.”²

In the *Wealth of Nations* Adam Smith was studying the influence of society and social institutions upon material welfare, leaving aside the various technical considerations which previous authors had always mixed up with these. In his *Introduction and Plan of the Work* he made the main points of his analysis quite clear. He was interested in the social causes which determine real national income per head. The first major influence of social organisation upon economic welfare, as thus conceived, is exerted through the division of labour. Hence Adam Smith first devoted attention to the reasons why the division of labour leads to an increased produce (Book I, Chapter I) and next considered the principle from which the division of labour draws its force, namely, mutual exchange (Chapter II). Then he discussed the limits which determine how far the division of labour may proceed (Chapter III).

¹ *Wealth of Nations* (Cannan edition), Vol. I, p. 54.

² W. R. Scott, *Adam Smith as Student and Professor*, p. 346.

The division of labour is, on the one hand, derived from a human propensity to exchange, and on the other hand, it gives rise to the importance of exchange in developed communities. Exchange, in turn, is facilitated by the use of money, discussed in Chapter IV, and gives rise to the problems of value discussed in Chapters V–VII. He shows that the acts of production and valuation proceed *pari passu* with the distribution of the National Product amongst the owners of the co-operant factors of production. And so he goes on to discuss wages (Chapter VIII) and profits (Chapter IX), connecting them in Chapter X by discussing the principles which give rise to differences in earnings for different employments of labour and capital—which, incidentally, throws further light upon the share of those two components of the natural price of commodities. Chapter XI completes the general picture (and Book I) by discussing rent and the influence of the progress of the economy upon the distribution of the product between landlords, wage-earners, merchants and master-manufacturers. It contains a long digression upon a practical question, to which further reference will have to be made, viz., the complications introduced by variations and the value of silver itself (the standard measure of value as price) during the past four centuries.

With increasing division of labour, the economic and social importance of capital is enhanced, hence in Book II Adam Smith discussed capital in greater detail in five separate chapters, whose inter-relationship was explained in a short introduction. In Book III he discussed, with a wealth of comparative historical illustration, the “different progress of opulence in different nations.” This is bound up with differences of economic policy, such as are discussed in Book IV, which is in the main a discussion of and an attack upon mercantilistic principles of regulation which have hindered the achievement of a greater national product through the more effective division of labour. Having thus, in Books III and IV, examined the influence of the state upon economic welfare, in Book V he discussed what expenditure the state ought to undertake and how it ought to raise the necessary revenue if it was to promote the general welfare at least cost.¹

It is evident that the *magnum opus* was cast in the mould of a powerful unifying conception. Now within this framework it is clear that the measurement, in real terms, of the “wealth” of nations, and in particular of its progress, would seem to call for some unvarying standard of value which would enable valid comparisons to be made through time. For this purpose, market values which depended on momentary whims and fashions on the market, on temporary relationships between supply and demand, did not appear satisfactory. For this reason, if for no other, it does not appear inexplicable that Adam Smith no longer paid so much attention to the lines of

¹ While this analysis of the leading features of the *Wealth of Nations* is based essentially on Adam Smith's own account of his intentions in the *Wealth of Nations* itself and on an assessment of how far he succeeded in carrying them out, based upon the book as a whole, its formulation has undoubtedly been influenced by the similar one of N. G. Pierson in “Het begrip van volksrijkdom,” *Verspreide Economische Geschriften, DI I, De methode en theorie der Staathuishoudkunde* (Haarlem, 1910), pp. 52–3.

argument taken over from Hutcheson, which had served well enough in the *Lectures*.

He now made much more of the distinction between natural (*i.e.*, normal or long-run) price and market price. He showed that over a long enough period, market price must be sufficient to cover all costs included in the natural price, *i.e.*, the sum of the normal wages, profit and rent of the co-operant factors of production. He elucidated the relationship further by demonstrating that owing to immobilities (*e.g.*, monopolies, lack of knowledge of alternatives, etc.), market price might be kept for quite long periods above the natural rate. Incidentally, in discussing the case of the market price falling below the natural price, he brought in the concept of a margin at which the market price for the whole supply is fixed, *i.e.*, a concept of a marginal demand price falling in much the same category as that implied in Ricardo's remarks quoted in note 1 on p. 192:

“When the quantity brought to market exceeds the effectual demand, it cannot all be sold to those who are willing to pay the whole value of the rent, wages and profit, which must be paid in order to bring it thither. Some part must be sold to those who are willing to pay less, and the low price which they give for it must reduce the price of the whole.”¹

In the *Wealth of Nations* also, he made very much more of the distinction between the “real” and the “nominal” price of commodities. He discussed the advantages of making long-term calculations in corn rather than money, on the grounds that corn was more likely to maintain stability of its own value. But, as a solution to the problem of finding an invariable standard of value, he plumped for labour.

It is worth while to look at Smith's own statement of the reasons for his choice:

“But as a measure of quantity, such as the natural foot, fathom or handful, which is continually varying in its own quantity, can never be an accurate measure of the quantity of other things; so a commodity which is itself continually varying in its own value, can never be an accurate measure of the value of other commodities. Equal quantities of labour, at all times and places, may be said to be of equal value to the labourer, in his ordinary state of health, strength and spirits; in the ordinary degree of his skill and dexterity, he must always lay down the same portion of his ease, his liberty and his happiness. The price which he pays must always be the same, whatever may be the quantity of goods which he receives in return for it. Of these, indeed, it may sometimes purchase a greater and sometimes a smaller quantity; but it is their value which varies, not that of the labour which purchases them. At all times and places that is dear which it is difficult to come at, or which it costs much labour to acquire; and that cheap which is to be had easily, or with very little labour. Labour alone, therefore, never varying in its own value, is alone the ultimate and real standard

¹ *Wealth of Nations* (Cannan Edition), Vol. I, p. 59.

by which the value of all commodities can at all times and places be estimated and compared. It is their real price; money is their nominal price only."¹

This is clearly based upon a definite psychological assumption regarding the disutility or real cost of labour. The assumption is surely erroneous; but the problem involved is of such fundamental importance that there is little mystery about the reasons why Adam Smith, once having set his mind to this problem of inter-temporal comparisons, should have put aside his earlier approach to problems of value based on the ideas of scarcity and usefulness in favour of "a one-sided, almost exclusive emphasis on labour and cost of production." Nor, indeed, are the ideas of scarcity and usefulness abandoned; they are merely taken for granted. When Adam Smith, in the passage just quoted, or in the succeeding one, plumped not merely for labour but for the amount of labour commanded in the market, as providing the measure of the real price of everything, he was not excluding those inevitable market forces; he was merely tackling a different problem:

"The real price of every thing, what every thing really costs to the man who wants to acquire it, is the toil and trouble of acquiring it. . . . That money or those goods . . . contain the value of a certain quantity of labour which we exchange for *what is supposed at the time to contain* the value of an equal quantity . . . it was not by gold or by silver but by labour, that all the wealth of the world was originally purchased; and its value, to those who possess it, and who want to exchange it for new productions, is precisely equal to the quantity of labour which it can enable them to purchase or command."²

As Malthus put it, accepting Samuel Bailey's view that "value, in its nate sense, appears to mean the esteem in which any object is held," he held on that very basis choose the amount of labour commanded by the commodity at two different periods as providing the most certain measure of changes in the esteem in which it was held.³

Unfortunately, while upon Adam Smith's assumptions regarding the real of his labour always remaining the same to the labourer, the amount of our commanded would provide a standard measure of value, this must be regarded as irrelevant to the problems of what determine values, since no

¹ *Wealth of Nations* (Cannan Edition), Vol. I, p. 35.

² *Ibid.*, Vol. I, pp. 32-3.

³ T. R. Malthus, *Definitions in Political Economy*, 1827 (reprinted New York, 1954), pp. 126, 165. In fact, Malthus went further, and while rejecting the "labour embodied" as the measure of the value of a commodity, still asked "whether the labour required to produce a commodity does not, beyond all comparison, express more nearly the esteem in which the commodity is held than a reference to some other commodity, the producing labour of which is utterly unknown, and may therefore be one day or one thousand years?" Malthus was the economist amongst Smith's immediate successors to whom the importance of the problem of making valid comparisons through time was most apparent, and his remarks therefore form a valuable commentary upon Adam Smith's intentions. See also his *Principles of Political Economy*, 2nd edition, 1836 (reprinted New York, 1951); especially the "Advertisement," pp. vii-xi, and Chapter II, especially Sections V-VI, pp. 93-122.

satisfactory explanation is offered as to why the price of any article should be such as to *command* any given quantity of labour. The different nature of the problems was obscured by an attempt to link "labour" in another way with the problem of normal or "natural" values, in which an illegitimate transference was attempted from a simplified model of a primitive society to a realistic model of a more developed one.

In assessing the component parts of "natural" prices of commodities, which are equivalent to the total factor payments necessary to ensure continuity of supplies to the market, Adam Smith made the amount of labour *expended or embodied* in production the sole source of the particular value of commodities in primitive communities, to which "natural" profit and "natural" rent had to be added in the case of more developed communities.¹ But he gave no satisfactory explanation of these added elements; and he left a confusion here which Ricardo (who seems to have had a different view from the one put forward here regarding Adam Smith's intentions) confounded still further in his attempt to bring in logical consistency.²

If a true explanation is given here of the reasons for Adam Smith turning from "scarcity and utility" to a labour theory of value, did he not, in fact, do more for the progress of economics by a grand failure in an impossible but fundamental task, than he would have done, had he been content to add a seventh rung or even to strengthen some of the existing steps in the rickety ladder of subjective-value theory such as, according to Dr. Kauder, it appeared in 1776? Economics has remained less than a science because, in spite of all efforts, no firm basis has yet been discovered for the measurement of real national income or for relating changes in the product with changes in welfare. But it would have remained mere *dilettantism* had the attempt to make a genuine Inquiry into the Nature and the Causes of the *Wealth of Nations* not been undertaken.³ If Adam Smith committed some folly in his attempt to forge a labour theory of value into a tool for use in this great task, perhaps it was because—

"At that period of history this theory was worth being taken up by any gifted genius who could make it throw a first ray of light into the dark mass of economic phenomena. . . . A great thought may in the long run turn into a childish error."⁴

¹ *Wealth of Nations*, Bk. I, Ch. VI.

² Although this is a rather lengthy survey, it is doubtful if, in fact, it adds anything to the sympathetically critical analysis in Marian Bowley, *op. cit.*, pp. 67-74.

³ Some ingenious attempts to measure relative economic welfare per head in different countries may turn out to be mere sophistications of Adam Smith's measuring rod of "labour commanded." Thus if one tries to measure comparative real earnings in terms of Colin Clark's "International Units," the result will be to price the earnings of labour in terms of a basket of commodities valued at constant dollar prices based on the years 1925-34. This is merely an inverse relationship linking commodities and the amount of labour exchangeable for it, to the one put forward by Adam Smith. But one can sympathise with Clark's impatience with those who are content to take up a mere *non possumus* attitude. See Colin Clark, *The Conditions of Economic Progress* (London, 1951), Ch. 2.

⁴ F. Von Wieser, *op. cit.*, p. 202.
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Finally, even upon the assumption that the marginal-utility revolution of the 1870s at last illuminated all, and that costs can be firmly put in their place as opportunity costs or displaced alternatives, what is the fundamental-factor scarcity that makes it necessary for alternative uses of factors to be foregone? Could it be that in his ordinary state of health, strength and spirits, in the ordinary degree of his skill and dexterity, the output of a man's labour is limited by his finding labour irksome?

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PROTECTION AND REAL WAGES: A RESTATEMENT

IN a paper¹ which is now one of the classics in the literature of international trade, Stolper and Samuelson asserted that, in a two-factor economy, the absolute real wage of the scarce factor would be raised by protection. The effects of protection on real wages had been previously thought to have been confined, in general, to raising the relative share of the scarce factor, with the absolute real wage being increased only in the case of a minor and immobile factor.

The Stolper-Samuelson proof ingeniously avoided the index-number problem—formerly believed to have stood in the way of reaching definite conclusions—by choosing a two-factor, two-commodity model, and showing that the marginal physical productivity of the scarce factor would be raised, under protection, in the production of *both* commodities. Thus, the demonstration went, the real wage would increase in terms of either commodity or any fixed basket of the two commodities.

It is the purpose of the present paper to show that, in some respects, Stolper and Samuelson merely succeeded in avoiding the frying-pan for the fire. For, while they showed that, if the production pattern shifted in a particular direction as the result of protection, the direction of change of the real wage of any factor was independent of demand conditions, they ignored the fact that the demand conditions are important in determining the direction in which the production pattern moves in the first place. In other words, if the real wage goes up, or goes down, it does so in terms of either good as the wage-good, but whether the movement is up or down to start with may depend on which good is the wage-good.

This is not a criticism of Stolper and Samuelson's real contribution, which was to show that protection could raise the absolute real wage (not only the relative share) of one factor, but of the actual formulation of their theorem. This paper does not deny that protection will raise the real wage of one of the factors, but shows that no general statement about which of the factors this will be can be deduced from the relative "scarcity" of the factors in the Stolper-Samuelson sense.

Although the Stolper-Samuelson theorem "Protection raises the real wage of the scarce factor" is shown to be an incorrect generalisation, a restatement in the form "Protection raises the real wage of the factor in which the imported good is relatively more intensive" has general validity. This correct restatement of the protection and real wages theorem is shown to throw a different light on the United States and Australian cases from that given by Stolper and Samuelson.

¹ Wolfgang F. Stolper and Paul A. Samuelson, "Protection and Real Wages," *The Review of Economic Studies*, Vol. IX (November 1941), pp. 58-73; reprinted in *Readings in the Theory of International Trade*.

I

The general assumptions of the present analysis are exactly those used by Stolper and Samuelson. The economy is assumed to produce only two commodities, using only two factors, and both commodities are produced by the use of both factors. The production functions are assumed to be homogeneous of the first degree, so that a doubling of both factor inputs will exactly double the product. There is full employment of both factors, perfect competition internally and the country faces fixed terms of trade which are unaffected by its own actions.

Although the two commodities (henceforth, beer and clothing) use both factors, they use them in different proportions for any given relative factor prices. Beer, the more capital-intensive good, will use a higher ratio of capital to labour at any given ratio of interest to wages than will clothing, the more labour-intensive good. As the ratio of interest to wages rises, the capital/labour ratio will decline in both industries, but the ratio will always continue to be greater in the manufacture of beer than of clothing.

Since there is perfect competition, the values of the marginal products (in terms of either good) of labour and capital in the beer industry must be equal to the respective values (in terms of the same good) of the marginal products of the same two factors in the clothing industry. Given the total quantities of labour and capital in the economy, these conditions are sufficient to determine, except for one remaining degree of freedom, all the variables in the economy. If the remaining degree of freedom is used up by allocating a price ratio between the two commodities (*i.e.*, the terms of trade), then, for this price ratio, the allocations of both factors between the two industries, the marginal productivities of the factors in the two industries and the production of the two commodities are all determined.

The economy under discussion can be analysed geometrically in a form of the well-known Edgeworth-Bowley box diagram. This is shown in Fig. 1, where the horizontal sides of the box represent the total quantity of capital in the economy and the vertical sides the total quantity of labour. Labour and capital used in beer production are measured from *B* along *BD*, *BA* respectively, and the quantities used in clothing production from *C* along *CA* and *CD*. Thus any point in the box represents some allocation of the two factors between the two industries.

At the point *P*, for example, the labour and capital used in beer production are given by *PN*, *PR*, and the labour and capital used in clothing production by *PM*, *PS*. *P* will lie on isoquant contours (equal-product curves) *bb* and *cc*, from whose labels can be read the respective amounts of beer and clothing produced with the particular factor allocations given by *P*. These contours are shown cutting each other in the diagram, so that *P* is not an optimum allocation, since, by moving along *bb* until it is tangential to the clothing isoquant *c'c'* at *Q*, there is an increase in the production of

clothing and no decrease in the production of beer. The series of points like *Q* represent the allocations which will be reached under perfect competition, and *BQC* is the "contract line." The term has been inherited from the original use of the box diagram in bargaining and allocation problems: it is somewhat inappropriate here, and "equilibrium curve" might be a better choice if it did not lack conformity with the previous literature on the subject.¹

The contract line in Fig. 1 lies wholly to the south-east of the diagonal *BC*. This is because beer production is more capital-intensive than clothing production, so that at the same relative marginal productivities for the

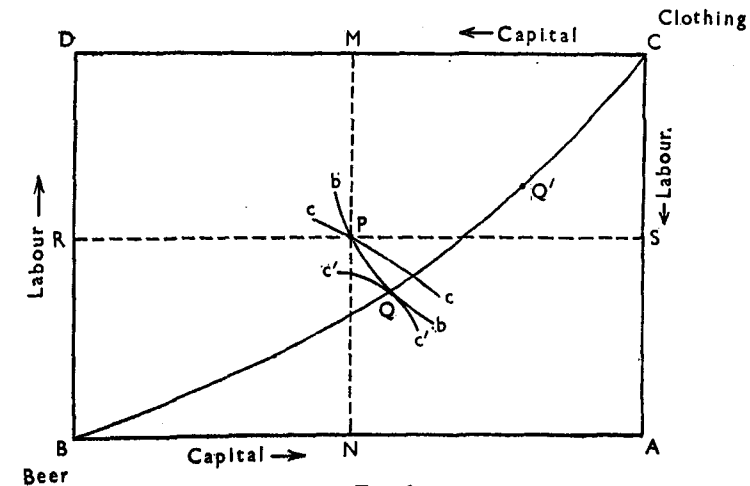


FIG. 1

factors in both industries, as is the case along the contract line, the ratio of capital to labour is greater in the beer industry than in the clothing industry. That is, the angle *QBA* is less than the angle *QCD*, so that *Q* lies below *BC*.

Now the original Stolper-Samuelson demonstration was this. If, as has been drawn in Fig. 1, the economy as a whole has a high ratio of capital to labour (labour is the "scarce" factor) then, under free trade, it will produce more beer (the commodity intensive in the abundant factor, capital) and less clothing than in isolation. Hence, if *Q* in Fig. 1 represented the pattern of production in isolation, then the pattern of production under free trade would be some point, like *Q'*, lying along the contract line, but closer to *C*.

Protection will cause a movement in the general direction *Q'Q*, away from the free-trade point towards the self-sufficiency point. Since the angles *QBA*, *QCD* are less than the corresponding angles *Q'BA*, *Q'CD*, protection will raise the ratio of capital to labour in *both* industries. The marginal physical productivity of labour will rise in both industries, so that the real wage of labour, the scarce factor, will rise in terms of beer or clothing or any combination of the two.

¹ The Stolper-Samuelson article (*op. cit.*), in particular.

II

Although this proof removes the index-number problem in the sense of showing that any rise in real wages will be a rise in terms of both goods, this very approach introduces new complications in the form of demand conditions.

Suppose, initially, that the wage-good is consumed only by wage-earners, and that this is the only good that they consume. Wages must either be paid in the wage-good or else, if paid in the other good, traded for the wage-good. If beer is the wage-good, then the total demand for beer is equal to the product of the total labour force and the marginal physical product of labour in the beer industry: this is the wage-bill of the economy expressed in terms of beer. Since the internal supply is equal to the production, the net demand for imported beer is:

Net beer imports = (Labour force) $\times$ (Marginal product of labour in beer) — (Production of beer)

$$\text{or} \quad I_B = L \cdot MPL_B - Q_B \quad . \quad . \quad . \quad . \quad (1)$$

where I_B is the net import of beer *when beer is the wage-good*, Q_B the production of beer, L the labour force and MPL_B the marginal product of labour in beer manufacture.

Referring back to Fig. 1, any movement along the contract line in a south-westerly direction (from C towards B) decreases both the labour (L_B) and capital (K_B) employed in the beer industry. Hence Q_B declines, L is constant and MPL_B , which depends on the ratio L_B/K_B , shows changes of only the second order, so that I_B will increase for a movement in this direction. In other words, at a point on the contract line near C beer will be exported ($I_B < 0$), while at a point near B beer will be imported ($I_B > 0$).

At some point in between, the net import of beer will be zero. At this point $L \cdot MPL_B = Q_B$ and this point, a vital one for the succeeding analysis, will be referred to as "the break-even point when beer is the wage-good."

Suppose now that clothing were the wage-good instead of beer. Considering still the demand for beer, this now comes only from the capitalists, and the net import of beer is given as follows:

$$I'_B = K \cdot MPK_B - Q_B \quad . \quad . \quad . \quad . \quad (2)$$

where I'_B is the net import of beer *when clothing is the wage-good*, K the total capital in the economy and MPK_B the marginal productivity of capital in the beer industry.

Just as I_B in (1) increases for movements along the contract line in a south-westerly direction, so does I'_B in (2). I'_B changes to a lesser extent than I_B (since the second-order changes in MPK_B work in the opposite direction to Q_B , while those in MPL_B work in the same direction), but the direction of change is the same.

As was the case when beer was the wage-good, the net import of beer

when clothing is the wage-good will be large and positive near B and large and negative near C . In between, there will be a point at which $I'_B = 0$, the break-even point when clothing is the wage-good.

It will be shown that the two break-even points, that when beer is the wage-good and that when clothing is the wage-good, do not generally coincide, and this lack of coincidence renders uncertain the effect of protection on the real wage of any factor, given only its relative scarcity.

III

In order to investigate the relationship between the two break-even points (at which the economy is just self-sufficient in beer and, of course, in clothing as well), that when beer is the wage-good and that when clothing is the wage-good, it is necessary to indulge in some simple algebraic manipulation.

Since the production functions have been assumed (as an essential part of the original Stolper-Samuelson argument) to be homogeneous of the first degree, they satisfy, as is well known, the Euler identity. In the case of beer, this can be expressed in the form

$$L_B \cdot MPL_B + K_B \cdot MPK_B = Q_B \quad . \quad . \quad . \quad (3)$$

where the symbols have the same meaning as in II.

From (3), by rearranging terms,

$$K_B \cdot MPK_B = Q_B - L_B \cdot MPL_B$$

$$\text{Hence} \quad \frac{L}{L_B} \cdot K_B \cdot MPK_B = \frac{L}{L_B} \cdot Q_B - L \cdot MPL_B \quad . \quad . \quad . \quad (4)$$

At the break-even point when beer is the wage-good, $I_B = 0$ and, from (1), $L \cdot MPL_B = Q_B$. Substituting in (4),

$$\begin{aligned} \frac{L}{L_B} \cdot K_B \cdot MPK_B &= \frac{L}{L_B} \cdot Q_B - Q_B \\ &= \left(\frac{L}{L_B} - 1 \right) \cdot Q_B \\ &= \frac{L_C}{L_B} \cdot Q_B, \text{ where } L_C \text{ is the labour em-} \end{aligned}$$

ployed in the clothing industry, since $L_B + L_C = L$.

$$\text{Hence} \quad MPK_B = \frac{L_C}{L \cdot K_B} \cdot Q_B$$

From (2),

$$\begin{aligned} I'_B &= K \cdot MPK_B - Q_B \\ &= \frac{K}{L} \cdot \frac{L_C}{K_B} \cdot Q_B - Q_B \\ &= \left(\frac{K}{L} \cdot \frac{L_C}{K_B} - 1 \right) \cdot Q_B \quad . \quad . \quad . \quad (5) \end{aligned}$$

Taking stock of the situation, what equation (5) gives is the net import of beer which would occur if clothing were the wage-good, at terms of trade which would make the economy just self-sufficient in beer if beer were the wage-good. If, in (5) $I'_B \neq 0$, then the economy would be trading when clothing was the wage-good at those terms of trade which would make it self-sufficient if beer were the wage-good. That is, although these terms of trade correspond to the break-even point when beer is the wage-good, they do not correspond to the break-even point when clothing is the wage-good. Hence, if $I'_B \neq 0$, the two break-even points do not correspond. If, on the other hand, $I'_B = 0$ in (5), then the two break-even points are the same.

A glance at (5) shows that whether $I'_B \geq 0$ depends on whether $\frac{K}{L} \cdot \frac{L_C}{K_B} \geq 1$, that is, on whether $\frac{L_C}{K_B} \geq \frac{L}{K}$.

This condition is most clearly appreciated geometrically. In Fig. 2 (which is a reproduction of the relevant elements of Fig. 1), X , Y , Z are three

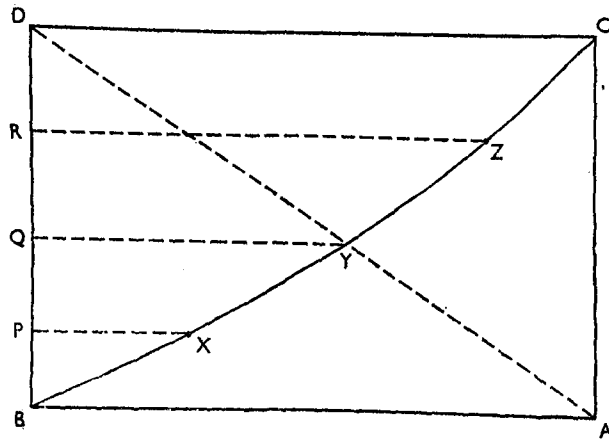


FIG. 2

possible positions for the break-even point when beer is the wage-good. Consider the value of I'_B in (5) at each of these points.

Suppose that X represented the break-even point when beer was the wage-good. Then $L_C = DP$, $K_B = PX$. Clearly, in this case, $\frac{L_C}{K_B} \left(= \frac{DP}{PX} \right) > \frac{L}{K} \left(= \frac{DB}{BA} \right)$, so that $I'_B > 0$ and the country would import beer if clothing were the wage-good. Since I'_B diminishes for a movement along the contract line away from B , the break-even point when clothing is the wage-good must lie between X and C .

Similarly, if Z represented the production pattern at terms of trade

corresponding to the break-even point with beer as wage-good, then $\frac{L_C}{K_B} \left(= \frac{DR}{RZ} \right) < \frac{L}{K} \left(= \frac{DB}{BA} \right)$ and the country would export beer at these terms of trade if clothing were the wage-good. By the same argument as used previously, it can be shown that the break-even point with clothing as the wage-good must lie between B and Z .

In both the above cases, where the break-even point for beer lies at a point on the contract line above or below its intersection with the diagonal AD , the two break-even points (for beer as wage-good, and for clothing as wage-good) fail to coincide. Only if the break-even point for beer as wage-good lies at Y , on the diagonal AD , is it true that $\frac{L_C}{K_B} \left(= \frac{DQ}{QY} \right) = \frac{L}{K} \left(= \frac{DB}{BA} \right)$, so that $I'_B = 0$ when $I_B = 0$, and the two break-even points correspond.

The particular case that leads to identity of the break-even points requires special coincidences among the structural parameters of the economy. Contrary to what may intuitively be expected, the occurrence of this case seems to depend primarily on the factor intensities of the production functions and to have little to do with the relative endowment of the factors.¹

By reversing the argument, and considering the sign of I_B at points where $I'_B = 0$, it can be shown that, if one break-even point lies on one side of the diagonal AD , the other will lie on the other side, both coinciding at the point which lies on the diagonal itself.

IV

The significance of what has been demonstrated can now be analysed.

It is clear that, if the country does not trade at all its outputs and allocations are fully determined, since only at the break-even points are its net demands for the two goods zero. Which of the two break-even points represents the no-trade position will depend on which of the two goods, beer or clothing, is the wage-good.

If the country is engaged in trade, with no trade barriers of tariffs, its outputs and allocations will be given by some point on the contract line—

¹ This is certainly true if the production functions are of the Cobb-Douglas type, for then the relative factor endowment is wholly irrelevant to whether the break-even points coincide or not.

Assume production functions $Q_B = L_B^\beta K_B^{1-\beta}$, $Q_C = L_C^\gamma K_C^{1-\gamma}$. Then $MPL_B = \beta \frac{Q_B}{L_B}$, $MPL_C = \gamma \frac{Q_C}{L_C}$. At the break-even point for beer as wage-good, $L \cdot MPL_B = Q_B$, i.e., $L_B = \beta L$. Similarly, at the break-even point for clothing as wage-good, $L \cdot MPL_C = Q_C$, so that $L_C = \gamma L$. Since $L_B + L_C = L$, the break-even points coincide if, and only if, $\beta + \gamma = 1$, i.e., $\beta = 1 - \gamma$. This implies that one commodity is exactly as labour intensive as the other is capital intensive. This coincidence is a property of the production functions only, and quite independent of factor endowments.

The break-even points will differ most when β , $1 - \gamma$ differ most, that is, when β and γ are both very small or very large. This will be the case when the productive methods are both capital-intensive or both labour-intensive, although to different degrees.

the point at which the relative prices of the two goods are equal to the terms of trade, which are assumed to be given.¹

Suppose now that, at given terms of trade, the country imposes a tariff. It is clear that the point which represents the equilibrium of the economy will move in a direction away from the free-trade point towards the no-trade point, the extent of the movement depending on the size of the tariff.

The exact effect of the tariff on the real wages of the factors can now be analysed in terms of the preceding discussion. Suppose, for concreteness, that X is the break-even point when beer is the wage-good. Then, since (as was shown in III) the break-even point with clothing as wage-good must lie on the other side of the diagonal AD , it may be supposed to be Z . The analysis is essentially of the same type if the positions of the two break-even points are reversed. There are three possible cases:

(1) If the terms of trade are such (*i.e.*, favourable to beer) that the free-trade position of the economy is represented by a point on the sector CZ of the contract line, then the Stolper-Samuelson conclusions hold unreservedly. For, if beer were the wage-good, then protection would result in a movement towards X , the break-even point for beer as wage-good. Similarly, if clothing were the wage-good, protection would result in a movement towards Z , the break-even point with clothing as wage-good. In either case, since the free-trade point lies in the section CZ , the movement is in a south-westerly direction. Such a movement will increase the ratio of capital to labour in both industries, raise the marginal productivity of labour in both industries and increase the real wage of labour in terms of either beer or clothing.

(2) If the terms of trade were such that the free-trade position were represented by a point on the sector BX of the contract line, then the situation would be the exact reverse of the preceding case, and the real wage of labour would fall (in terms of both goods) as a result of protection. This case can, in general, be ruled out, since the economy has been assumed to be relatively abundant in capital, which means (if it means anything) that the occurrence of terms of trade distinctly unfavourable to the capital-intensive good should be unlikely.

(3) If the terms of trade are such that the free-trade position falls within the sector XZ of the contract line (*i.e.*, the sector lying between the two break-even points), then the Stolper-Samuelson conclusions no longer hold, and no unambiguous statement can be made about the effect of protection on real wages in terms of factor endowments only. For, if beer were the wage-good, protection would result in a movement towards X , the break-even point with beer as wage-good. This movement would be in a south-westerly direction, and would result in an

¹ Note that the free-trade point is independent of demand conditions. These determine the actual amount of trade which takes place at this point, however.

increase in the real wage of labour, as in (1). But, if clothing were the wage-good, protection would cause a north-easterly movement (towards Z , the break-even point with clothing as wage-good). This would lower the capital-labour ratio in both industries and cause a decline in the real wage of labour as in (2).

V

Before summarising the position and examining the general relationship between protection and real wages, it is necessary to determine the effect on the analysis of the capitalists also consuming the wage-good.

Suppose that beer is the wage-good. Then, if the capitalists also consume beer, the demand for beer will be greater, at all points, than if it were consumed only by the workers. Hence the break-even point with beer as wage-good will be further away from the point B in Fig. 2 than it was previously, since the economy will now be self-sufficient only if it produces more beer than it did before.

If clothing were the wage-good, then its consumption by capitalists would diminish the demand for beer, and the break-even point with clothing as the wage-good would be closer to B (*i.e.*, lower beer production) than previously.

The effect of the capitalists' consumption of the wage-good would be, therefore, to shift the break-even point with beer as the wage-good towards C , and the break-even point with clothing as the wage-good towards B . The net effect on the distance between the break-even points depends on their initial situation. If the break-even point with beer as wage-good was originally below the diagonal AD (*i.e.*, a point like X), so that the break-even point with clothing as wage-good was above the diagonal (a point like Z), then the capitalists' consumption of the wage-good would bring the break-even points more closely together.

If, on the other hand, the break-even points were disposed in the opposite manner, with that for beer as wage-good above the diagonal (in position Z) and that for clothing as the wage-good below the diagonal (position X), then consumption of the wage-good by the capitalists would increase the divergence between the break-even points.

If the break-even points were coincident when the capitalists did not consume the wage-good, then they would not coincide if the capitalists did consume the wage-good.

It is clear, then, that a removal of the original assumption that the wage-good was not consumed by the capitalists merely makes the already indefinite situation more indefinite. Given the production functions, the factor endowments and the terms of trade, therefore, but not the consumption patterns of the wage-earners and capitalists, it is quite impossible to determine whether the imposition of a tariff will raise or lower the real wage of any factor, since the positions of the break-even points remain unknown.

CONCLUSION

It has been shown that the Stolper-Samuelson theorem, when expressed in the form given it by its authors, "international trade necessarily lowers the real wage of the scarce factor expressed in terms of any good,"¹ cannot be regarded as a true universal proposition, even in the two-factor, two commodity case.

The non-universality of the theorem is due to incorrect formulation: if the scarce factor is defined as that which is used more intensively in the good of which more is produced in isolation than in trade (the only acceptable definition), then the previous analysis has shown that different wage-good may make for different factor scarcities. In this sense, the Stolper-Samuelson formulation is meaningless, since the phrases "real wages . . . in terms of any good" and "scarce factor" represent incompatible concepts.

Now the generality of the Stolper-Samuelson formulation breaks down only in the cases when the free-trade point lies between the two break-even points, so that, in order to reach a true universal formulation of the protection and real wages theorem, it is necessary to concentrate on this case. The clearest way to see the situation is in tabular form. The table below summarises the possibilities (as analysed fully in Section IV) for an economy in which the demand conditions are unknown, considering only the ambiguous cases where the free-trade position lies between the break-even points.

Break-even point which is closest to <i>B</i> (Fig. 2).	Wage-good.	Good imported.	Effect of protection on real wage of labour.
That with beer as wage-good	1. Beer	Clothing	Rise
	2. Clothing	Beer	Fall
That with clothing as wage-good	3. Beer	Beer	Fall
	4. Clothing	Clothing	Rise

The Stolper-Samuelson proof of the irrelevance of the index-number problem as such holds, it should be noted. If the real wage rises, it rises in terms of *both* goods; the problem is to define the situations in which the rise will occur.

Given only the production functions, the factor endowments and the terms of trade, but not the conditions of demand, there is no reason, *a priori* to assume that the free-trade position does not lie between the break-even points and, if it does, any one of the four cases tabulated above might represent the position. If the situation were represented by cases 1 or 4, real wages would be increased by protection, but, if it were represented by cases 2 or 3 the real-wage level would be lowered by a tariff.

In terms of factor scarcities, the only statements that can be made about the effects of protection on real wages are in terms of probabilities. It is, in

¹ *Loc. cit.*, p. 346, in *Readings in the Theory of International Trade*.

the first place, always more probable that protection will raise real wages (of labour) the higher is the ratio of capital to labour in the economy, since a higher capital/labour ratio will give a free-trade point closer (for given terms of trade) to *C*, and thus more likely to lie outside the two break-even points.¹

Given this over-riding condition, it is the more probable that real wages will be increased by protection (using the results of Sections III, IV and V):

- (a) If the wage-good is the capital-intensive good (beer)—
 - (i) the *less* the capitalists consume of the wage-good;
 - (ii) the *more* capital-intensive is the wage-good.
- (b) If the wage-good is the labour-intensive good (clothing)—
 - (i) the *more* the capitalists consume of the wage-good;
 - (ii) the *less* capital-intensive is the wage-good.

To obtain a universally valid general statement about the effect of protection on real wages it is better to scrap the "scarce factor" approach altogether. Reference to the tabulation given previously shows that, in the cases (1 and 4) in which the real wage of labour is raised by protection, the common factor is that clothing—the labour-intensive good—is imported. In other words, what is necessary in order to determine the effect of protection on real wages is, not the relative endowment of the factors, but the factor intensity of the imported good. For it is universally true, in a two-factor, two-commodity economy, that protection will always raise the real return to the factor which is used most intensively in the imported good.

The true general theorem of protection and real wages is, therefore, that: *Protection will raise the real wage of labour if, and only if, the country imports the labour intensive good.*

This is true regardless of which good is the wage-good, and which factor is "scarce" in whatever sense is given to the word. It is important to note that, since the analysis has been carried out entirely in terms of the home country, the factor intensity of the imported good is to be reckoned in terms of the productive process in the *importing* country, not in the country of origin.

The reformulation of the theorem makes important differences to any attempts to assess real situations. It throws more light on, for example, and makes a more definite case for, the wages arguments in favour of the Australian tariff. For Australia exports, in the main, wool, which is distinctly land-intensive. Therefore her imports are, relative to her own production functions, relatively labour-intensive. Protection would increase real wages in Australia (assuming it can be simplified to a two-factor economy), and

¹ It is not difficult to show that, in the Edgeworth box diagram, an increase in the capital/labour ratio will result in the point which corresponds to any given price ratio, being further (proportionately) up the contract line towards *C* in the new box than in the old. The nomenclature refers to Fig. 2.

would continue to do so as long as wool remained the chief export, whatever the ratio of land to labour. This removes the tentativeness of Stolper and Samuelson's "in Australia, where land may perhaps be said to be abundant relative to labour." The fact is, that one is more likely to know whether imports are labour-intensive or not, than to be able to assess the relative scarcity of factors.

A particularly interesting case is that of the United States. When he simplified it to a two-factor model, Leontief¹ found that its imports were capital-intensive (in terms of United States production functions). If Leontief's findings are accepted, then protection will tend to lower real wages and raise profits—exactly the opposite of the conclusion reached by Stolper and Samuelson on the assumption that labour was "scarce."

Without necessarily siding with Leontief on a contentious issue, it is worth pointing out that the analysis in this paper indicates the possibility of the real wage of "scarce" labour being lowered by protection. In terms of the model used here, this would occur if the free-trade point lay between the two break-even points. In particular, it would occur if the United States exports were wage-goods (in terms of her own consumption patterns, Chevrolet cars are a wage-good) and if the relatively more labour-intensive good were, itself, still quite strongly capital-using. Since the United States (considering the trade in finished goods) does tend to export mass-produced items (wage-goods) and import luxury goods, and since her labour-intensive industries are highly capitalised by the standards of other countries, there is some resemblance to the model.

These attempts to push economies into two-factor, two-commodity strait-jackets should not be taken too seriously, of course, but they provide material for interesting armchair speculation.

Finally, it should be noted that, although the present model (as was the Stolper-Samuelson model) is cast only in the two country, two commodity mould, it is clear enough that the thesis is true that differences in demand functions between different sections of the community will, as a result of changing aggregate demand following shifts in relative factor prices, render more uncertain the effects of protection on real wages than would otherwise seem to be the case.

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ON THE ORIGIN OF "OLIGOPOLY"

SEVERAL years ago at a meeting of business-men and academic economists, the president of a (very) large corporation delivered himself without restraint on his opinion of the fellow, whoever he was, who was responsible for having introduced the word "oligopoly" into the language of economics. Impressed with the blackness of my offence, I rose after he had finished to acknowledge my guilt, and to assure him that, in spite of the severity of his language, there were no hard feelings on my part for his having unwittingly let me know what he really thought of me, by contrast with his very amiable conversation of earlier in the afternoon. After all, there was no reason why a prominent industrialist should not resent being called by such a horrible name; and no reason at all why he should have any knowledge as to its origin, since most professional economists for some mysterious reason appear to be equally in the dark about it.

It is true that the word came into general usage so quickly with the increased development in the early thirties of interest in the subject, that it was naturally applied at once to earlier writers. The result was that references such as to "Cournot's theory of oligopoly," etc., became frequent, and it was easy for the general economist to suppose that the word had been in common use for a long time. But many of those with a special interest in economic theory or in the monopoly problem, who therefore are aware that it is of recent origin, seem to have only the vaguest notions, if any, as to where it came from.¹ The matter is of some interest, not only for the word itself but also for its subject matter as a segment of economics. It may therefore be in order to set down a few facts and even to include a reminiscence or two.

My own development of a theory designed to challenge the conventional dichotomy between competition and monopoly raised difficult problems of terminology, especially since there appeared to be not one, but two, leading phases of such an intermediate theory, viz., (1) numbers and (2) substitution.²

¹ Fritz Machlup, after referring to a "probably first" earlier use of the word (mentioned in the second edition of *Monopolistic Competition*, p. 8 note, and to be discussed shortly), continues: "It was, however, only the appearance of the books by Edward H. Chamberlin, Joan Robinson and Heinrich von Stackelberg in 1932 [*sic*] and 1934 respectively, which firmly established the word oligopoly in economic terminology" (*The Economics of Seller's Competition*, p. 349, note 8). There was no need, however, for the familiar grapeshot with respect to the books in question. Mrs. Robinson could hardly have contributed to "establishing" the word, since she never used it, and did not even say anything about the problem, describing it (correctly) as "not to her purpose" (*Imperfect Competition*, p. 21); and Stackelberg, who later used its German equivalent in his *Marktform und Gleichgewicht*, 1934, explicitly acknowledges (p. 2, note 1) its origin in *Monopolistic Competition*.

² Actually the problem of small numbers was investigated first, and "product differentiation" was discovered as a complication of the oligopoly problem. Vestiges of this bit of history can be found in the early part of Chapter I; as, for instance, in the third paragraph. The strange accusation has been made that the theory "neglects" oligopoly (K. W. Rothschild, "Price Theory and Oligopoly," *Economic Journal*, September 1947, pp. 301-2). The fact is that it was born out of oligopoly.

¹ Wassily Leontief, "Domestic Production and Foreign Trade: The American Capital Position Re-examined," *Proc. Amer. Philos. Soc.*, XCVII (September 1953), pp. 332-49. Reprinted in *Economia Internazionale* VII (1954), pp. 9-38.

Leontief's conclusions have been subjected to considerable scrutiny and criticism. For a view of the matter which is largely consistent with the analysis of the present paper see Stefan Valavanis-Vail, "Leontief's Scarce-factor Paradox," *The Journal of Political Economy*, LXII (December 1954), pp. 523-8.

The word in most common use at the time for the numbers phase—"duopoly," denoting two sellers—was evidently too narrow, and "oligopoly" was coined to indicate explicitly the greater generality of the problem.¹

There was no word in use at all at that time for the substitution phase of the problem, since it hardly existed as a theoretical category. In the first edition it was called both "product differentiation" and "monopolistic competition," with strong emphasis on the latter phrase, although this latter had been used by Pigou (1924) specifically to describe the small numbers problem.² But beginning with the second edition (1937), the more general sense of the phrase "monopolistic competition" was stressed to include both "product differentiation" and "oligopoly," as in the general thesis of the book, which aimed to blend monopoly and competition in their two phases, and of course in its title.

In the real world the most common case is certainly "differentiated oligopoly," or small numbers *plus* a differentiated product; and it would seem that this would be "monopolistic competition" *par excellence*, since it qualifies by both the broad and the narrower use of the phrase. Yet the very success of "oligopoly," together with what seems to be a strong human penchant for mutually exclusive categories, has led many to say that, since "differentiated oligopoly" is oligopoly, *ergo* it is not monopolistic competition. Thus is monopolistic competition converted from an almost universal phenomenon, which it surely is (in either sense), to the relatively unimportant one of differentiated products in the restricted case of "large numbers."³

It is at least an amusing story to recount why it was that my own use of "oligopoly" in print did not date from 1929, when Chapter III of *Monopolistic Competition*, entitled "Duopoly and Oligopoly," appeared as an article in the *Quarterly Journal of Economics*. The reason is that it was vetoed by F. W. Taussig who, then editor of the *Journal*, thought the word a monstrosity and crossed it out. Since my own bargaining power was weak at the time, protests were of no avail, and the article bore the title: "Duopoly: Value Where Sellers are Few."⁴

When, freed from the Taussigian veto, the word did finally appear in *The Theory of Monopolistic Competition* in February 1933, I was unaware of any prior use of it in print. However, two earlier uses have since been pointed out to me. In 1936 Arthur W. Marget wrote me that he had run across it in the literature of money and banking, viz., in Karl Schlesinger's *Theorie der Geld- und Kreditwirtschaft* (1914), where in the German text the adjective "oligopolistische" is used several times (but no theory of the subject

¹ *Monopolistic Competition*, p. 8, "Duopoly" as a term for the general problem has now almost disappeared from use, as has the notion that the treatment of this important though highly special case is adequate to the general problem. R. F. Kahn, however, preferred it not only "for the sake of brevity and of simplicity" but also (very rightly) of "euphony" ("The Problem of Duopoly," *Economic Journal*, March 1937, p. 1 note).

² Cf. *Monopolistic Competition*, Preface, first sentence.

³ And usually under the still more restricted assumptions which yield the "tangency solution,"

⁴ *Quarterly Journal of Economics*, November 1929.

developed). This information was added in the second edition of *Monopolistic Competition* (1937).¹ Schlesinger's use of the word had gone unnoticed until then, and was clearly without influence. It was, for instance, unknown to Schumpeter (see *Journal of Political Economy*, 1934, p. 250) and to Stackelberg, writing (in German) a major treatise on the subject in 1934 (cf. note 1, p. 211 above).

A much earlier use of it has since come to my attention, viz., in the original Latin of St. Thomas More's *Utopia* (1518). It is mentioned in Eli Heckscher, *Mercantilism*, Vol. I, on p. 273, where the following quotation from More is given: "Quod si maxime increseat ouium numerus, precio nihil decrescit tamen; quod earum, si monopolium appellari non potest, quod non unus uendit, certe oligopolium est." Heckscher comments that "the English translation omits this statement."

The first English translation of the *Utopia* was by Ralph Robynson in 1551, and the standard edition, edited by J. H. Lupton (Oxford, 1895), gives both the original Latin and the Robynson translation, as follows: "And though the numbere of shepe increase neuer so fast, yet the pryce falleth not one myte, because there be so fewe sellers." (The Robynson text continues: "For they be almoste all commen into a fewe rich mens handes, whome no neade driueth to sell before they lust; and they luste not before they may sell as deare as they lust.") Lupton's comment is as follows: "Here again Robynson curtails his rendering of the Latin. More makes an antithesis between *monopolium* and *oligopolium*. We have 'monopoly,' but not 'oligopoly' (the sale by a few), and so cannot preserve the point of the sentence. Burnet renders: 'Tho they [the sheep] cannot be called a Monopoly, because they are not engrossed by one Person, yet they are in so few Hands, and these are so rich, that' &c."

Other English editions in the main follow Robynson, but even where the translation varies, I have never found "oligopoly," but always "sale by few persons," "a few rich men" or variations on these. Perhaps the explanation is to be found in an editorial comment in the edition by J. Churton Collins (Oxford, Clarendon Press, 1904). The translation (p. 17) follows Robynson, and Collins comments (p. 163): "More's antithesis between *monopolium* and *oligopolium*—a word coined by himself—cannot be rendered in English." (!) At any rate, it wasn't.

I have searched through a number of French, German, Spanish, Italian and Dutch translations of the *Utopia* in the Harvard University Library, but found only the equivalents of "few sellers," with great stress on "the rich." The search was not exhaustive, however, because of an irrepressible feeling after a time that diminishing returns had more than set in. In a French edition of 1643 (printed in Amsterdam) we find "les riches"; but in another of 1789 we find "oligopole" with the following footnote of explanation: "oligopole, commerce dont s'emparent un petit nombre d'hommes. L'oligopole comprend encore les privilèges exclusifs, dont on n'a pas assez

¹ P. 8 note.

démontré l'abus."¹ It may be noted that, although the earlier Italian editions which I saw spoke only of the few and of the rich, a very recent one (edited by Tommaso Fiore, Bari, Gius. Laterza & Figli, 1942, p. 26) translates "un oligopolio." Perhaps the untranslatable *oligopolium* will now return to *Utopia* in other languages than Latin with the help of modern economics.²

Oligopoly is certainly not a difficult word to coin, and after the belated discovery of these two earlier uses, in Schlesinger and in More's *Utopia*, one may well expect it to turn up again, perhaps in an antique poem or a Greek play. But even if other casual examples are found, it seems certain that there will be none which bore any fruit in economic literature. The reason is that, although oligopolistic forces have certainly been of great importance throughout history (they must surely have been more important in past centuries than in the present one), they have been *recognised* by economists as important only in recent years.

I should like to "reminisce" for a moment and recall the state of "duopoly" theory as it appeared to me when I began to look into it in 1924-26. At that time not more than a very small number of economists had even noticed the problem; and I believe it is not an exaggeration to say that, to the extent that it was recognised at all, it was regarded as a mere theoretical curiosity. The "literature" consisted in a chapter by Cournot, an article by Edgeworth, a few pages³ or paragraphs or even lines here and there and a few footnotes, including the inevitable one by Marshall. Both Cournot and Edgeworth had written much earlier (1838 and 1897); each had his followers, and on the whole Cournot was either accepted blindly or considered as having been "refuted" by any of several people, notably by Edgeworth. Everyone sought "the" solution, and I can recall no hint of my own general position that the problem is a manifold one, with a large number of different answers depending on which of many possible assumptions is made.⁴ And I remember that the discovery that this was so seemed

a major step forward in my own progress with the problem.¹ Although this view (for which I believe I may claim some responsibility) has gained a substantial following in recent years, it by no means prevails, and many to-day are still looking for the answer. I have even heard it seriously proposed by one of our newer crop of mathematical economists that what we must do is to "define the problem in such a way that the answer will be determinate."

As for subdivisions within this manifold problem, it seemed that a major distinction must turn on whether the fact of mutual dependence is (1) "ignored" or (2) "recognised." Both of these categories are very general. With respect to the latter in particular, "what each seller thinks the other is likely to do" appears to have many different aspects and involves a variety of uncertainties and hence of "conjectures," including conjectures, not as to what the other will *do*, but as to what his conjecture will be, and so on indefinitely. It invites manoeuvres for positions of advantage, including those of the "leader-follower" relationship (in the ordinary sense of "price leadership," and also in the totally different Stackelberg sense, which excludes this). *In itself* it raises *special* problems of the short and long run, including time lags; of perfect and imperfect knowledge; of "rational" and "irrational" conduct; of security or risk; and in general, of "warfare," including tactics and game theory. Like the broader subject of oligopoly, of which it is a part, it is not a problem but a family of problems, with a family of different solutions, depending on how it is conceived, *i.e.*, on what "assumptions" are made. It has in fact received extensive development in the indicated directions in recent years, and from a variety of different sources.²

A feature of "duopoly" theory in the mid-twenties was that it ignored almost entirely the "mutual dependence recognised" solutions—that phase of the subject which is now thought by many to be the essence, or even the very definition, of the oligopoly problem. Such recognition is, of course, foreign to both the Cournot and Edgeworth solutions, which, as has been pointed out above, dominated the scene.³ Irving Fisher, advancing the game analogy (chess) for the first time to my knowledge (1898), and H. L. Moore (1906) had both criticised Cournot on this score, but neither one carried the matter further. Pigou (1924) again presented the chess analogy, but seemed to think that it led to Edgeworthian oscillation (although proposing a new set of limits which has always been completely mysterious to

¹ *Monopolistic Competition*, Chapter III, *passim*, but especially pp. 30 and 37. Stackelberg, who traces the history of the subject in exhaustive detail, classifies me together with Zeuthen, as an "eclectic," and mentions no one earlier in that category (*op. cit.*, p. 83).

² Among these sources—and also as a part of the state of "duopoly" theory in the middle twenties—should be mentioned the "solution" given by Bowley in 1924 (*Mathematical Groundwork of Economics*, p. 38). With essentially Cournotian equations, but differentiating without the Cournot assumption that for each seller the supply of the other is fixed, he came out with an equation for each seller containing the derivative of the output of the other with respect to his own. His conclusion was that the problem cannot be solved without evaluating these derivatives (see my Appendix A).

³ A possible ambiguity should be guarded against. The emphasis must be on the word "mutual": each seller recognised his own dependence on the other, but not the other's dependence on him.

¹ *Paris chez Blanchon*, 1789, pp. 34-5. (In the library of Professor Léon Dupriez of the University of Louvain, Belgium, and shown to me by him.)

² Although the word is now common in the technical economic literature of various languages, I have not found it in any general dictionary of a language other than English, nor have I found it in any dictionary published in England. Its first appearance that I know of is in *Webster's New Collegiate Dictionary* (G. C. Merriam & Co., Springfield, Mass., 1949), where it is defined as "virtually exclusive control of an industry by a few corporations *covertly allied*" (italics added). This, I fear, does represent a widely current conception of the term. A decided improvement has been made in the 1951 edition, where the definition is: "Control by a few competing sellers of the amount and price of a given product or service to a large number of buyers."

So far as I know, no other of the great proliferation of new terms which has been proposed in this area: monopsony, polypoly, heteropoly, pliopoly, etc., etc., has advanced beyond the stage of technical jargon.

³ Three pages in Pigou's *Economics of Welfare*, 2nd edition, 1924, form a chapter.

⁴ Pareto's "refutation" of Cournot, and his position that the problem is "overdeterminate," should receive specific mention. Although he was perhaps "on the right track," his conception of the problem seems to me to go completely astray (cf. *Monopolistic Competition*, second page of Appendix A). Were it not for this fact, "overdeterminateness" might be interpreted as implying that the problem was a manifold one.

me); and three years later (1927) Wicksell, arguing also for the recognition of mutual dependence, rejected Edgeworth *because* he had ignored it, and favoured Cournot (who had equally ignored it!). To me at that time, the real problem seemed to be to develop "mutual dependence recognised" as a separate category, and to make clear that it had nothing to do with either Cournot or Edgeworth, both of whom had, on the contrary, assumed that mutual dependence was ignored.

I take this opportunity finally to comment on a phase of the "mutual dependence recognised" category, which has become so important in the recent development of the theory. The solutions under this heading in my own case were multifarious, involving time lags, frictions and a variety of uncertainties.¹ They all took, however, as their point of departure, a conception of the fundamental nature of the problem which has been much misunderstood, and has even been rejected as "incorrect" by Stackelberg.² It involves the distinction between (1) the *direct* effect which a seller has upon price and (2) the *indirect* effect, which includes the moves his rival makes as a consequence of his own; and holds that for a seller to take the second as well as the first into account is fully consistent with *independent* action.³ Although the solution if *each* seller thus takes account of his *total* influence on the price may be the same in terms of prices, outputs and profits as if there were an agreement, there are excellent reasons for making clear that no agreement is involved—not even "tacit" agreement, quasi-agreement or "spontaneous co-operation." In other words, this is a *legitimate* solution of *oligopoly*, consistent with complete independence of the sellers, and not to be excluded on the false ground that there is an agreement in *some* sense, and hence monopoly.

In defence of this view, an appeal to the analogy of chess may be useful. Clearly if a chess player decides against a particular move because the responses to it which his rival would make would be damaging to him, he cannot be accused of "spontaneous co-operation"; and he should hardly be *required* by the rules to make the move on the ground that otherwise he would be entering into a "conspiracy in restraint of chess," or into an agreement with his rival. Why, then, should a business-man who acts with equal (and rather ordinary) intelligence in deciding not to make a price cut, be accused (either by economists or by Attorneys General) of "collusion," or of *tacitly* "co-operating" with someone? The point is that the idea of "co-operation" in *any* sense is *unnecessary* to the result.⁴

The chief difficulty (and it appears to be very great) in recognising a distinction between: (1) independent action on the part of each com-

petitor with regard to the *full* effect of his acts, and (2) non-independent action, or collusion (actual or tacit), is that (under certain simplified conditions of symmetry) the quantitative, or mathematical, "solutions" are the same.¹ It is a familiar case of where mathematics, if its limitations are not recognised, may easily obscure or cover up economic distinctions of the greatest importance for a truthful theoretical explanation of a phenomenon, and hence also for policy. If, in order to prevent certain undesirable economic results, "agreements in restraint of trade" are prohibited, and if it appears that the same results may follow when there are no such agreements, the means are not effective to achieve the end. And if it is sought in practice to achieve the end by arbitrarily treating as collusion all cases of mutual dependence recognised in the sense here meant,² or even all cases of "price rigidity," the falsity of the explanation is not likely to be without consequences. One can well imagine, for instance, that businessmen who would like to be independent, when legally harassed for "spontaneous collusion," might in desperation actually engage in collusion for the purpose of moving their prices about from time to time in inconsequential ways, so as to give the *appearance* of not colluding!

To return to the theory, it seems impossible to handle this idea of the *indirect* effects of independent action by the use of the technique of "conjectural variations"—the derivative, $\frac{dx_2}{dx_1}$,³ of one output (price) with respect

to the other—which Hicks once described as "opening a path towards a general theory."⁴ The reason is that there are no conjectural variations,⁵

¹ An element of paradox in the argument must also be partly responsible: it is *because* the individual seller has *no* (appreciable) influence on the price in the case of large numbers that the price falls, and it is *because* the individual seller has an appreciable influence in the case of small numbers that it does *not* fall. (Cf. *Monopolistic Competition*, p. 49 and top of p. 53.) The difficulty is illustrated by a letter I once received pointing out very politely that there was evidently a "typographical error" at the top of page 53! It is also illustrated by a criticism on the part of Stigler, in which he dismisses the argument as "equally applicable if there are a million producers," thus merely revealing that he did not understand it. ("Notes on the Theory of Oligopoly," *Journal of Political Economy*, June 1940, p. 525.)

² "Joint maximisation," although technically unobjectionable as a description (under special assumptions) of the *result*, unfortunately is heavy with the connotation of joint *action*, which may or may not be present. ³ See the reference to Bowley, above, p. 215 note 2.

⁴ "Annual Survey of Economic Theory: the Theory of Monopoly," *Econometrica*, January 1935, p. 13. His sketch of the path, however, brings out its limitations. It is confined to *quantity* variations (which are described at one point as "similar" to price-cutting!), and progresses from the Cournot case through successive assumptions that first one, and then both, of the sellers "takes as his conjectural variation the reaction curve of his rival" (p. 15), following the case of both with the observation that "there does not seem to be any reason why we should stop here." But there is a very good reason, and it is that we should have stopped much earlier. To illustrate what is happening: under the simple conditions of a straight-line demand curve and no cost curve (see my p. 32), if one seller behaves this way he will produce $\frac{1}{2}$ and the other $\frac{1}{2}$, leaving $\frac{1}{2}$ unproduced; if both behave in this way, each will produce $\frac{1}{2}$, leaving $\frac{1}{2}$ unproduced. But, although the mathematics are undoubtedly correct, what possible reason could there be for two sellers in the real world actually choosing such outputs? Is this not another illustration of the *substitution* of mathematics for economics?

⁵ To say that there are no conjectural variations (derivatives) is, of course, not at all the same thing as to say that the derivatives are zero. For instance, if it is quantities that are being adjusted, this latter gives the Cournot solution.

¹ *Monopolistic Competition*, pp. 50–3. It has seemed to me over the past twenty years that, although there is good cause for concern about oligopoly, the alarm felt by students of policy problems in the United States is excessive, being based erroneously on the *identification* of oligopoly, first of all with "mutual dependence recognised," and secondly, with this under a particular set of highly simplified assumptions.

² *Op. cit.*, p. 85. It is also rejected as the "first degree of collusion," by R. F. Kahn (*op. cit.*, p. 8). ³ Cf. *Monopolistic Competition*, p. 31.

⁴ Of course, agreements, both actual and tacit, are extremely common in reality, and there is certainly no intention to deny them where they are in fact present.

since each seller simply adopts the (joint) optimum figure, being confident that the other(s) will do the same. Likewise there are no reaction curves, for there are no "reactions."¹ In the simple case of two sellers (under symmetrical conditions) the attempt to plot a "reaction curve" for each will simply show that each is *independent* of the other—in other words that the concept of a "reaction" does not apply.² A general theory in terms of "conjectural variations," in addition to many other objections to it, would automatically rule out the recognition of "indirect effects" as a part of the oligopoly problem.

The Stackelberg approach is an example of this. His basic conception of the problem in terms of the reaction of each seller to a decision of the other taken as a datum, excludes indirect effects by definition; and these latter, rejected by the theory, naturally come to be interpreted as "co-operation."³ In effect, the reasoning is that if A is charging \$1, the best price for B is evidently 99 cents, with no ifs, ands and buts about it. The fact that B may, *consistent with independence*, decide to charge \$1 and divide the market with A at that figure, rather than oblige A to lower his price to 99 cents, where he will again share the market with him, and *less profitably*, is not regarded as "legitimate."⁴

These final comments on conjectural variations seem to lead us again not only to the conclusion that oligopoly has no single solution; but beyond this to an appreciation of the pitfalls which beset any attempt to bring its multifarious solutions within the embrace of any single formula. It is a disturbing and recalcitrant problem, especially to the mathematically minded theorist who insists upon having "the answer."

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¹ It is true that decisions are taken on the basis of reactions which *would take place if the decisions were different*. But the key is that they are not themselves reactions to decisions actually taken by rivals.

² The logical (and mathematical) distinction between this and market sharing, or between this and "price leadership," should be made clear. In the symmetrical case (for simplicity), under market sharing each puts on the same output as the other, and under "price leadership" each charges the same price. The conjectural variation, whether in quantities or prices, therefore = 1, since any change by either party will be imitated by the other. Reaction curves exist in this case, although the answer cannot be obtained without added information merely by solving them, since the curves are identical for both sellers, and therefore coincide throughout.

³ His theory also admits only *quantity* adjustments in the case of a homogeneous product. Price adjustments are excluded on the ground that price differences are inconsistent with a homogeneous product. This seems to be a case where Cournot "refutes" Edgeworth, instead of the reverse, as was thought for so long. At any rate, this purist *logical* position taken by Stackelberg cuts off a substantial part of the *real* problem, and thus allows only solutions of the unrealistic Cournot type for homogeneous oligopoly. (Cf. my own treatment of this issue in *Monopolistic Competition*, Chapter III, especially pp. 35-43, 50-3.)

⁴ Fellner has also recognised this limitation on the Stackelberg approach (*Competition Among the Few*, pp. 116 ff.), and himself gives great importance to the part played by regard for the "indirect consequences of individual policies." But he does not draw the sharp distinction between this and co-operation which is here insisted upon—not even in describing my own position (see p. 40, for instance, where "indirect consequences" slips over into "co-operation").

MALTHUS AND THE UNDERDEVELOPED AREAS

I

IN recent discussions attempts have been made to apply the Malthusian theory to the underdeveloped areas, identified in practice with the poor areas of Asia, Africa and Latin America, rather than to the western world. Unfortunately, there is still widespread disagreement on the interpretation of the writings of Malthus. It is possible, however, to avoid much unnecessary controversy by separating the question whether the Malthusian theory constitutes an internally consistent, logically valid conceptual scheme from the question whether it is adapted to the interpretation of events in the world of our experience. And since conditions in that world are continually changing, the additional question arises, whether it is more relevant to some periods of history than to others.

The social theory that lies at the roots of the doctrine of Malthus rests upon four premises:¹ first, the natural indolence of man; second, the necessity of food for the survival of Man, as of all biological organisms; and third, the existence in Man of a strong urge for the fulfilment of sexual impulses. The second forces Man to overcome the first so far as may be necessary to provide himself with the means of subsistence, and the third reinforces the second by compelling him to stir himself to the greater activity needed to provide for a family as well as for himself. These biological needs and impulses are among the mainsprings of human progress and creative achievement, operating through the institution of the family to overcome natural sluggishness and inertia. They cannot, however, be realised unless Man uses restraint and exercises control over his biological impulses. The effort and sacrifice which this necessitates are foreign to the "natural man," who is always in danger of lapse and of surrender to impulse and passion. So great is this danger that mankind oscillates uneasily between the course dictated by reason and the course dictated by inclination, between the course dictated by duty and the course dictated by pleasure.

The fourth premise consists in the limitation of the supply of land. It is from this that the idea of diminishing returns emerges.

"... by the laws of nature in respect to the powers of a limited territory, the additions which can be made in equal periods to the food which it produces must after a short time, either be constantly decreasing, or, at the very most, must remain stationary . . ."²

This premise is essential to the Malthusian scheme: it constitutes the only effective argument that can be used in reply to those who have pointed out

¹ Malthus's exposition was far from tidy: his premises were not all neatly assembled in one place. In addition to the *Essay*, his article in the Supplement to *Encyclopedia Britannica*, 1824, now reproduced in *Introduction to Malthus*, ed. D. V. Glass (London, 1953), should be consulted.

² Reproduced in *Introduction to Malthus*, *op. cit.*, p. 143.

that food grows and multiplies by equally if not more prolific and lavish means than those which provide for human reproduction. The space required to produce the means of subsistence for a man is much greater than the space which he occupies; he can therefore never reach the point of "standing room only"!

On these four premises the main structure of the Malthusian theory is built. The pressure of numbers on the means of subsistence is regarded as beneficial and as responsible not only for the improvement of the material conditions of life but also for the creative achievements of mankind generally. This hypothesis has a limited resemblance to Toynbee's hypothesis that moderate physical obstacles to material advance have supplied the main stimulus to the growth of civilisations. Holding that population pressure was the mainspring of human effort, Malthus was consistent in condemning devices for indulging biological impulses without adding to population. The benefits that might accrue—and, as we shall see, they would not always accrue—from smaller numbers would be more than offset by diminished production. "Neo-Malthusianism" is wrongly designated. Under the guise of adding a corollary to the Malthusian scheme, it eliminates one of the four central pillars which hold it together, and gives it a lop-sided appearance which those who called for the change then wrongly declare to have been in the original structure.

But it was only through appropriate social and political institutions that population pressure could fulfil its function as a stimulus to human effort and a precondition of human advance. The place of the family in human society must be maintained, and parents must be held responsible for the entire maintenance of their children, otherwise the need for restraint would be removed, early and improvident marriages would become general and productive effort would slacken. Presumably death-rates would rise, and population, perhaps after an initial spurt, would fall below its previous level, following a decline in the willingness, through the removal of the stimulus, to work. Thus the last state would be worse than the first, and the later population smaller than the earlier.

But the family was not the only institution given a leading place in the Malthusian scheme. It would be of little avail to leave the economic responsibility for the rearing of children to parents unless they were guaranteed in the possession of the fruits of their labours. The government must therefore uphold the security of private property "by a code of just laws, impartially administered." But it could only do so under a regime in which civil liberties were assured, and experience showed that civil liberties only flourished alongside political liberties. Moreover, neither civil liberty nor political liberty could be complete without general education; it was only when family responsibility, general education, and civil and political liberty were firmly established that the individual formed the habit of "looking before and after" and planning for the future, not only for himself

but also for those related to him and for whom he had special economic responsibilities.

It follows logically from Malthus's economic and social theory that the closer a society approaches to the ideals of stable government, impartial justice, free institutions, free enterprise and a conservative family structure, the larger both population and production will be. When, under wisely conceived social institutions, looking before and after has become a habit and a sustained practice among the greater part of the population, marriage will be postponed until the future parents can see their way to support a family from their own resources. The birth-rate will be lowered, but the death-rate will be lowered still more. Productive activity will be at its highest and the land will be improved and put to its best uses.

But the supply of land is limited, and the expansion of the virtuous society would ultimately be checked. It is not necessary to suppose that the check would be a final one, at least until after a long period. After all, it was Malthus who spoke approvingly of "making two blades of corn grow where one grew before." But such improvements could not be continuous, and it is arguable that they have ultimate limits. All that need be affirmed at this point is that, according to the Malthusian theory, a stage will be reached in the history of the most virtuous society with the best of social structures, where all the cultivable land is occupied and producing the greatest quantity of produce of which it is capable in the light of existing knowledge. Indeed, the more virtuous the society, the sooner will that point be reached. If virtuous social institutions were to be maintained, the age of marriage would then have to be raised to a point where the birth-rate would be lowered until, without any increase in the death-rate, the population would be stabilised.

Once reached, it was not necessarily fixed for all time. An improvement in the arts of cultivation would permit some resumption of expansion, so long as social institutions were not allowed to deteriorate and the age of marriage was not reduced further than was justified by the growth of produce. A limited advance only would be possible, and in time the age of marriage would have to be raised again and the population stabilised once more.

But Malthus did not believe that these ideal conditions, in which reason and prudence prevailed to the uttermost, had been characteristic of historic times. The absence of civil and political liberty in most societies had led to arbitrary exactions, unjust and discriminatory laws and maladministration of justice, which had prevented the individual from enjoying the fruits of his labour. The ignorance of the masses had been inimical to the growth of foresight and prudent planning, or indeed to any regard at all for the future. Even when the governing classes had been inspired by good intentions, their benevolence had often been spasmodic and misplaced. Both arbitrary exactions and misplaced benevolence had encouraged laxity in private life, early and improvident marriages and an irresponsible attitude towards both

labour and procreation. Hence production of necessities fell far short of that which the supply of land and the state of technology would permit. High birth-rates were offset by high death-rates, which kept the population within the limits of the food supply. Thus population failed to increase as much as it would have increased under wisely conceived social organisations: the smaller population in a society where vice prevails is worse off than the larger population in a society where virtue is triumphant.¹

Summing up, it may be said that the Malthusian theory has two aspects. Population pressure is conceived of as manifesting itself in two forms: first, as a continuous social process and second as leading to a climax or series of climaxes. The first form is present virtually without interruption in all societies, except possibly in the very early stages of occupation of new and almost uninhabited countries. The second consists in a discontinuous and irregular series of events. These two aspects of the theory are wholly compatible with one another and are consistently related to one another in a single conceptual scheme. There is thus no ground for Professor Bowen's charges² that they are "in flat contradiction to one another," or that Malthus "succeeded in inextricably muddling them together." It is possible on empirical grounds to criticise some of Malthus's historical applications of his theory, but such criticisms do not affect the consistency of the conceptual scheme itself. In the Malthusian view social and political institutions change from time to time and with them the degree of foresight and restraint shown in different societies. They differ also from place to place at any one time. Thus the Malthusian scheme leaves the way open for both temporal changes and spatial differences in the state of population, arising from social influences and, at times, apart from or only indirectly related to differences in the quality and quantity of natural resources. The scheme as a whole is likely to survive the most severe logical scrutiny.

II

The logical consistency of a conceptual scheme gives no assurance of its relevance to and usefulness for the interpretation of events. The premises may be wrongly chosen or their comparative importance wrongly assessed. And when attempts are made to apply to contemporary events a conceptual scheme constructed in the past, another danger arises. In studies of human societies, new conceptual schemes are invariably influenced by the social and economic conditions and by the habits of thought of the times when they are constructed. But when populations grow, when technology advances, and when social and political conditions change unevenly in different parts of the world, the choice of premises and the comparative weights given to the premises chosen may be in need of revision. A century and a half has passed

¹ See especially Malthus's *Encyc. Brit.* article in *Introduction to Malthus, op. cit.*, pp. 150-1.
² Cambridge Economic Handbook, *Population*, p. 101.

and great social and economic changes have taken place since the Malthusian theory was first expounded. Its power of survival in the world of ideas is impressive. It has had its periods of boom and slump, but up to now it has not failed to recover, and the suddenly increased concern over the economically poorer areas of the world appears to be giving it a new lease of life. All these things give a special interest to an inquiry into the relevance of Malthus's premises in his own time and still more in our time.

First, it must be asked whether or not any of the premises were misplaced or wrongly weighted in respect to the conditions of the late eighteenth century as well as to those of a later time. Actually, none of them can be dismissed as either completely erroneous or completely irrelevant. But, regardless of changing conditions, the premise that Man will not exert himself unless he is obliged to support a family solely by his own exertions may be set aside as too extreme. It is an exaggeration of a valid but more limited observation that many people work harder than they would otherwise do in order to establish and maintain a family. The spread of birth control affects this tendency only in degree. For the majority of people, the desire for offspring seems to be as instinctive as the desire to mate. The desire to bring up a family whose size is voluntarily controlled may be as strong an incentive to exertion as the enforced duty to bring up a family whose size is uncontrollable, particularly when parents also aim at maintaining or raising a standard of wants which includes the preparation of children for adult life as well as their maintenance in childhood. Malthus himself recognised and encouraged this aim when he placed education and civil rights among the foremost requirements of an enlightened society.

If the control of births in wedlock does not have the disastrous effects on economic effort and creative activity which Malthus believed it would have, the menacing climax or series of climaxes foreshadowed in the longer-run aspects of his theory, which might be avoidable under present mortality rates only by postponement of marriage well beyond the late age found in Ireland to-day, can be escaped through more widely acceptable means. At present this means of escape is more practicable in western societies than in the underdeveloped areas and affects the applicability of the long-run aspects of the Malthusian scheme to western societies to-day, and perhaps to all societies at some future time, far more than to the societies of his own time and earlier. It follows that future population crises, as Malthus saw them, no longer appear to western peoples as direct dangers arising in their midst but as indirect dangers from the repercussions of possible future crises in the underdeveloped lands.

In addition to the exaggerated place given in the Malthusian theory to man's propensity to indolence there are two weaknesses arising out of the comparative importance given to the different elements in it. Malthus recognised but underestimated the role and importance of technical progress, which at the end of the eighteenth century had not shown anything like its

later achievements and promise. He recognised but underestimated the role of migration and international trade in population theory, giving them a subordinate—almost a negative—place in his scheme. But these weaknesses were aggravated by, if not largely due to, his overemphasis on the relation between child-bearing and economic effort. As we shall see, the three weaknesses of the Malthusian scheme as an instrument for the analysis of population problems are interrelated.

Since the successors of Malthus have laid great stress on his underestimate of the extent of technical progress,¹ we may pass on to the role of international trade and migration in his scheme. Malthus, like most students of population since his time, gave too little attention to the distinction between the study of the relations between the total population and total resources of the world, and the study of the relations between the population and the resources of a single country.

A strong logical defence can be made of his position. If identical forces were at work in every society, it seemed to matter little what area was under consideration; the outcome would be much the same. For a time the means of subsistence might be abundant in a newly settled land of sparse population. But the same inexorable laws applied to the new as to the old world, and the temporary abundance in the new world would tend to encourage the new settlers to be fruitful, to multiply and to overrun the land until their condition was similar to that of their kin across the sea. The older countries were nearer the limits of further expansion than the newer, and the returns to additional labour were declining. But population would increase rapidly in the food-exporting countries, and the supply of food for export would decline as domestic consumption rose. What has happened to the exports of fats and oils from India in less than two decades would in the Malthusian view be ultimately the fate of all food exports. In the meantime the populations of the food-importing countries, having grown with the growth, would be forced to decline with the decline, of food imports. Thus the last state would be worse than the first.

If the Malthusian premises are accepted without modification, if an extremely long-run view is taken, and if regional differences in immovable natural resources are set aside,² this analysis is logically valid. But even if all societies were virtuous it hardly follows that they would expand everywhere to the point where they consumed all the food which they produced. The population of an area where agricultural land was the main natural resource, where no mineral deposits on a commercial scale existed and where conditions were wholly unfavourable for industrial exports would be unable to earn income abroad and would be forced to go without manufactured goods,

¹ This is virtually the only point of substance in the vituperative attacks by Engels and Marx on Malthus (see especially Ronald Meek, *Marx and Engels on Malthus*, 1954). Unfortunately, with characteristic overstatement, they set it up as a dogma that technical progress inevitably keeps pace with the needs of growing populations.

² The third condition may have been overlooked by Malthus.

if it had no agricultural produce to spare for export. In a virtuous society with sound social and political institutions population growth would presumably be checked before all the food for export had disappeared. Even in a society which fell short of the Malthusian virtues, and where therefore productivity was low, mortality high, and the land not fully cultivated, it might be more profitable and require less effort to produce food for export and to import manufactured goods than to aim at self-sufficiency. In short, Malthus, in his treatment of international trade, seems at times to have abstracted implicitly from regional differences in fixed natural resources and to have concentrated too much on the very long run—a weakness to which in other fields he was less prone than his leading contemporaries were.

The slender role given by Malthus to trade and migration reflects partly the state of technology in his time. It was not until some time after his death that the application of mechanical power to transport became widespread and opened the way for the economic development of the future inland food-exporting areas. It changed the character of population problems, not least of those of the areas described to-day as underdeveloped.

Unfortunately the opportunity was not taken to revise and extend population theories to take account of the combined effect of changes in transport and in fertility rates which spread over the western world, particularly in the later part of the nineteenth century and in the twentieth century. Marshall was conscious of these changes, but stopped short of a reconstruction of population theory. The optimum theorists took even less account of international trade than Malthus had done. Their conceptual schemes in the main were drawn on the assumption of self-sufficient communities and embodied a higher degree of abstraction than the Malthusian theory had, the most drastic abstraction lying in the very direction in which advance was most needed in the light of changing world conditions.

The underdeveloped areas, as they are now defined, present a great diversity of conditions. The popular impression that they are crowded areas is derived only from parts of the Asiatic and Caribbean tropics. Nor is the degree of poverty among them by any means uniform. There are, too, wide differences in the ratio of population to mineral as well as agricultural resources. These differences do not in themselves render the Malthusian theory irrelevant to the underdeveloped areas. As we have seen, Malthus used his theory to explain, not merely poverty in crowded areas, but also poverty in sparsely populated areas. Indeed, it may well be argued that the elements in the Malthusian theory which can be most usefully applied to the position of the underdeveloped areas are those related to the role of social and political institutions, and of security of property and of the fruits of labour. This aspect of the Malthusian scheme, which has been little noticed in the recent past, may well outlast the more fashionable parts of the theory. Students of the underdeveloped areas are now forced to consider the role of social and political institutions in retarding development in

sparsely as well as densely populated parts of the tropics, and for some areas strong arguments might be advanced for attributing scanty population to mismanagement.

When we turn to the other side of the Malthusian theory, however, and ask whether the more densely populated tropical areas are approaching a critical point at which all available land has been brought into full use and the population is left to choose between restraint and a higher death-rate, we encounter theoretical difficulties which cannot be surmounted without passing beyond the confines of the Malthusian scheme. It is here that the inadequacy of Malthus's treatment of international trade stands out sharply. No conclusion can be reached merely by pointing to the saturation of agriculture from the points of view of production and employment. In a world at peace, modern power-driven transport and quick communication open the way to specialisation and international trade on a large scale, and to migration not only of common labour but also of technicians and workers possessing a wide variety of skills who spread new technical advances over the earth. When agriculture can employ no more workers to advantage there is still a possibility that other occupations, requiring little land for each unit of product, may be developed to absorb the surplus workers. The study of the conditions in which this may be expected to occur is one of the most important parts of the study of underdeveloped areas.

Fortunately there are elements in the approach of the Swedish and Danish economists to international trade and capital movements which, with modifications and additions, may contribute more than specific population theories have yet done to the construction of a wider and more adequate conceptual framework for the study of the population problems of the underdeveloped areas.

III

For the population student the starting point lies in the uneven distribution of population, natural resources and natural obstacles over the earth and in relation to one another in different parts of the earth. Each is subject to continuous change, the first through non-economic as well as economic influences and the others partly through the depletion of resources but far more through technological changes, which change the economic significance of the various types of resources and obstacles. As a corollary, if the numerous types of land and other natural resources, of workers and technicians, and of loans over different periods of time, are regarded as separate agents or factors of production, which cannot be substituted completely for one another, at least over relevant periods of time, it follows that the agents or factors of production are unevenly distributed over the earth and with respect to one another in different parts of the earth.

This corollary should be considered in conjunction with two other pro-

positions. The first is that there are differences in the conditions of supply of, and in the proportions of the factors used to produce, different goods and services, resulting partly from differences in the prices of the productive agents and partly from the limitations imposed by nature in a given state of technology, and thus changing with changes in their comparative abundance or scarcity. The second proposition is that there are differences in the tastes and incomes of consumers; hence the types of goods consumed to meet the same needs are not identical in all areas. Differences in the conditions of supply sometimes react directly on the tastes of consumers, but habits thus formed may spread to and persist in other regions where the conditions of supply are different.

Thus, if the conditions of supply and the composition of demand differ in these ways in different areas, the prices and the productivity of the agents of production will differ also. When these international differences in prices exceed the costs of moving people or goods from one country to another, there is an incentive for those influenced by economic motives to migrate or to engage in commerce.

The student of international trade generally uses a more simplified framework in which the existing distribution of population and natural resources are regarded as "given," as doubtless they must be in "static" or "equilibrium" analysis. But for the student of population they are among the chief objects of inquiry. Superficially the theories just outlined may appear to offer straightforward escape from population troubles through increased trade and reshuffling of productive agents among regions. But when account is taken of the unevenness and the extraordinary variety of natural resources, the decline in their amount and quality from exhaustion, and the increase through discovery and technical advances, this appearance is seen to be deceptive.

No two areas on the earth's surface are identical. Each country has a unique combination and composition of natural resources to aid and natural obstacles to hinder its development. The characteristics of each population differ from those of all the others. None of them is self-sufficient or could be in any significant economic sense. Each has a unique combination of productive agents, whether human or physical. Each inherits from the past a different set of productive equipment and appliances which contribute to present output. The interrelations among these economic units is amazingly complex, and becomes more so as the numbers of people and commodities grow. Each of them must struggle to find a place in the intricate network of international economic relations.

The analogy of the jig-saw puzzle, which has been applied by Cambridge economists to certain aspects of economic life, might seem appropriate to international economic relations. For some time, I was in the habit of using it in oral discussions. If it conveys vividly an idea of the intricacy of the channels of world trade, it is nevertheless an excessive simplification. The

conditions just outlined are in a continuous state of flux. There are no "constants" except the area of the earth's surface into which the world's population must fit itself. It is the fluctuations, the "secular" changes and the necessity of continuous readjustments to them which present the most difficult and at times seemingly intractable international economic problems. Perhaps a more appropriate though still a loose and imperfect analogy would be that of an interconnected system of ponds and rivulets where the water flows along innumerable channels, slowly eroding the land in some places, silting up the streams in others, and an alteration of level in one place is communicated, sooner or later, strongly or weakly according to its magnitude, to the whole system. This analogy at least conveys a sense of continuous movement and of the role of time, neither of which is conveyed by the analogy of the jig-saw puzzle, and both of which are of first importance in the formulation of international economic policy. Space and time are not more separable in economics than in physics. Some of the greatest mistakes in economic judgment since the war have resulted from failure to realise the length of time required to effect readjustments in the pattern of world trade.

The geographical aspects of economics include distance, the diversities of spatial characteristics and the position of a given country in relation to other countries. Energy must be expended and costs incurred in moving people or goods from one area to another, however favourable may be the conditions of transport. Even when in a first approach a space of uniform quality is postulated, complicated questions arise over transport costs. Next, the qualities of the earth's crust are immensely varied: atmospheric conditions, the texture and chemical constituents of the soil, deposits below the soil, the contour of land surface and ocean bed, the direction and temperatures of ocean currents, present such heterogeneity along with some regularity that an assessment of their economic significance is an unending task. Finally, every country is influenced in its development by its position with reference to other countries—not only distance but direction is also important.

However much the effects of unevenly distributed physical resources and obstacles may be modified and at times apparently overshadowed by social and political influences, they continue to play a unique part among the agents of production, arising out of the fixed character of many of them and the permanent immovability of others. As the movable must be brought to the immovable agents, the latter occupy a central position which conditions the uses made of the former. The diversities of spatial characteristics are thus of primary importance in economics. Once population is distributed around the fixed resources other economic activities are established in the vicinity to supply its needs. The fixed resources and obstacles range from those which are wholly immovable—for example, the variety of climatic conditions suitable to the production of different plant and animal products and the combination of climate and contour suited to the production of hydro-electricity—to those, such as minerals, fish and timber, which, though

they must be obtained in fixed locations, can subsequently be moved at a cost which varies with the nature of the transport routes and with the ratio between the weight or volume and the price of the product.

IV

As a hypothetical starting point, let us indulge in the phantasy that by a magic wand the world's population has been reshuffled without cost into an ideal distribution about the variety of fixed natural resources which are scattered over this planet, leading to higher economic returns to humanity than could be obtained under any other distribution. Under these conditions there would be no incentive for further transfers of productive agents. Migration for settlement would cease and the international economic order would be sustained by a large volume and intricate network of international trade and multilateral settlements, enabling each country to share in the natural resources of the rest of the world.

This position, once reached, could be maintained only as long as population and natural resources remained stationary everywhere, or population changed at varying rates in each region in harmony with changes in the nature and content of natural resources through discovery, depletion or changing technology. Each of these conditions is fanciful, but the second serves as a point of departure for analysis. The frequent adjustments required to maintain the ideal distribution would have to be made through changes in the rate of natural increase in each area: migration would be checked by the costs of movement before the ideal distribution were reached.

The demographic conditions for the maintenance of the ideal distribution could be fulfilled only by a series of miraculous coincidences. Actually the rate of natural increase is determined by a variety of influences, some economic, others not, which differ from area to area, and which as a whole do not necessarily make for, much less ensure, appropriate adjustments between changes in the distribution of population and changes in the distribution of natural resources. There are indeed important and insufficiently explored relationships—some of them reciprocal—between population change and economic change, between mortality and fertility, on the one hand, and a variety of economic conditions, on the other. But they are far more complicated and less predictable than might appear from the Malthusian theory, and their effects are often intermingled with, and difficult to disentangle from, those of non-economic influences. Moreover, the extent of the relationship varies greatly: in some cases a slight economic change may induce a large population change, in other cases the converse may occur, in still others, the changes are more nearly proportionate to one another. Behind these changes lie three influences: those of nature, those associated with human knowledge and those associated with the human will. As human knowledge advances the limitations imposed by nature on the human will diminish but never cease to be important.

The non-economic influences on mortality consist in those variations in the force and incidence of epidemic diseases which are independent of attempts at human control, and of the economic conditions of the people. Closely related to them are the influences resulting from the growth of those kinds of knowledge which can be applied at slight economic cost. Such influences, coming from outside the economic order, produce far-reaching changes inside it. The strictly non-economic influences have been highly important in human history, particularly before the twentieth century. The application of new knowledge at small economic cost has been greatly extended in the underdeveloped areas in recent decades. It may be admitted that some of the preventive and curative measures which cost little to apply originated in rich countries and are dependent on products of the chemical industry; they are forms of chemical warfare. Yet the results are out of proportion to the costs, and from the point of view of the underdeveloped areas the induced changes in population require little or no preliminary rise in productivity.

At the opposite pole are reductions in the death-rate resulting from gradual and irregular improvement in economic conditions, which were probably the most important until far on in the nineteenth century.

Broadly speaking, when non-economic influences on the death-rate are predominant, population growth induces economic growth, and when economic influences predominate, economic growth induces population growth. The economic aim is to obtain the greatest possible increase of economic growth over population growth. In the former conditions, which now exist in many of the underdeveloped areas, the aim may be harder to achieve than in the latter. Changes in mortality have not yet been matched by changes in fertility. But a time lag is inevitable. In the past high mortality hindered the rise of a desire for birth control; in the future lower mortality, by increasing the size of the living family, will arouse increasing interest in the possibilities of controlling it.

In some of the underdeveloped eastern countries population density was much greater on the threshold of their modernisation than it had been in the western countries when their industrialisation began. These different starting points appear to be related to differences in the types of fixed natural resources which were particularly important under the technologies of the times and which affected the food supply, and through it mortality rates. As population grew, the advantages of large markets and of economies in transport were added to those of proximity to natural resources, and a wide range of household manufacture, construction activities and personal services grew around and in the midst of the area of intensive agriculture.

Then, in the modern period, changing technology reduced these advantages. Machine industry is more narrowly localised than household manufactures were. Simultaneously non-economic influences on the death-rate were growing, and with them a redundancy of labour in agriculture and

in urban services. In such circumstances, the urge towards industrialisation hardly needs explanation. The question arises, whether or not the areas of these older concentrations of population, which were the seat of extensive domestic industries, retain any advantages of location in an industrial order in which power-driven machinery has replaced handicraft skills and a greater quantity and variety of raw materials, many of them not produced locally, are needed. Generally some advantages remain in the abundance of labour, in the convenience of water transport and in a large local market for necessities. But both markets and sources of raw materials have widened, and local producers, instead of merely competing with one another in an area with similar external economies, are faced with competition from distant producers in regions where the types and comparative supplies of productive agents are different. The outcome depends partly upon the unique endowment of each area with fixed natural resources, partly on transport costs and partly upon the quality of enterprise.

In areas where the outcome is unfavourable, it seems incongruous to speak of "underdevelopment"; it may appear rather that under the changed conditions the fixed resources in the area have become inadequate for the population and that migration should take place to areas where new resources await development. Yet it is now customary to describe as underdeveloped most of the countries in Asia where income per head is low, and it must be admitted that in such areas there is still scope for further application of modern technology to existing resources. But as these opportunities can be realised only by attracting from distant sources productive agents whose supply is limited, it is not enough to demonstrate the existence of opportunities for development in the densely populated area. Enterprise, skills and private investment will not be attracted unless expectations are aroused that these opportunities will bring higher returns than can be obtained in other areas. This illustrates again the impossibility of appraising the population position of any area in other than a world setting.

The conditions just discussed apply only to part of the "underdeveloped" world, and the inhabitants of many parts of Asia, Africa and Latin America entered into the modern period with large tracts of land unused or lightly used and with a variety of other natural resources as yet unexploited. The explanation lies in both demographic and economic influences. Non-economic influences on the mortality, both of human beings and of draught animals, undoubtedly played a large part, particularly in areas where insect vectors of disease were abundant. But the natural resources themselves often interposed great obstacles to the earlier and more primitive techniques of development, and required special skills, first to bring them into use and then to use them without depleting them. In areas of shifting cultivation, many of which were uplands, high yields per hectare were unobtainable and populations had to spread themselves widely. Where population is sparse the costs of transport per head are much higher than where it is dense.

Before the middle of the nineteenth century sparse populations with little access to water transport were forced to live on a narrow range of commodities, and were particularly vulnerable in years of poor harvests, since they had little to export and the high costs of transport excluded imports from distant sources. Hence their death-rates were probably higher in many years, and their rates of natural increase generally lower, than those of the denser populations in more fertile areas with readier access to water transport.

Thus differences in fixed natural resources go far to account for the sparsity of population in some areas and its density in others on the threshold of the modern period. This does not exclude the possibility that differences in social and political institutions played a part: whether they played the leading part, in the manner Malthus seemed to suggest, is more questionable. Doubtless political mismanagement was to be found in most areas of sparse population, and if it was also present in some degree in densely populated areas, the very means of livelihood there, based as they were in some areas on the control of water, depended on more effective central authority than was necessary in the former areas. Malthus does not seem to have laid sufficient stress on differences in fixed natural resources. Even without ineptitude in government and licentiousness in society there would have been immense regional differences in population density.

Changes in technology in the modern period have altered the outlook in many sparsely populated areas. Natural resources have grown in quantity and variety through discovery and through the development of new wants, new products and new uses for old materials in the industrial countries of the temperate zone. Tree and bush crops—better suited than annual field crops are to the wet tropics—and in some areas metallic and non-metallic minerals or both, have created new economic opportunities for underdeveloped areas where population density is low in relation to natural resources.

Thus if modern technological changes in the industrial countries of the temperate zone have reduced the opportunities for economic growth in some of the densely populated areas of Asia which were formerly the seat of extensive domestic industries, they have increased opportunities in other areas, especially, though not exclusively, in the less densely populated areas of low income, which on any reasonable conception of natural resources can be considered as underdeveloped. Up to now these opportunities have been in foods, beverages and raw materials and not in manufacture.

V

For the lightly populated no less than the densely populated areas, for the areas richly endowed with natural resources no less than for the areas poorly endowed, increased trade and movements of productive factors are

indispensable conditions of economic advance. Aggregate savings are much less, even when they are greater per head, than they are in the densely populated areas. Economic development may be hindered by shortages of savings, skills and labour in sparsely populated areas as much as it is by shortages of fixed natural resources in densely populated areas. The productive equipment inherited from the past is scanty. The scarcity of common labour may hinder the growth of agricultural exports, notwithstanding an abundance of suitable fixed natural resources.

If international trade is of first importance to the growth of the underdeveloped countries, the distribution of natural resources is of first importance to their international trade. Since at present they are not—with the exception of India—exporters of manufactured goods, they can obtain the equipment and skills needed for their development only by exporting raw materials. Technical advances and rapid growth of the western industrialised countries, notably the change from solid to liquid fuels and the growing demand for metals, have greatly enlarged the prospects and reduced the difficulties of underdeveloped areas endowed with mineral deposits.

To-day differences in the supply of mineral deposits, even more than differences in the supply of agricultural land, distinguish the positions and prospects of the different underdeveloped areas. In the near future an increase in population is far less likely to encroach on mineral exports than on agricultural exports; many of the mineral deposits in the underdeveloped countries are in areas at present unsuitable for the conversion of raw materials into finished products. Investors in the industrial countries are readily attracted by mineral deposits, for which there is a high and rising world demand. The royalties and earnings from exports of minerals go far, in a number of underdeveloped countries, to pay for the equipment and skilled services needed for further development and to finance that public sector of economic activities where—particularly since the development of the internal-combustion engine—external loans are most difficult to attract because the benefits are widely diffused and only accrue slowly and indirectly to the investor. The underdeveloped country with minerals is better able to meet these needs than the country which has to rely on domestic savings for internal development and agricultural exports for external revenue.

Thus, the unequal distribution of fixed natural resources goes far, though it does not go all the way, towards explaining the differences between the degree and type of economic development within the underdeveloped areas. Demographic changes and economic changes do not so adjust themselves to one another as to attain the best distribution of population around natural resources. Left to themselves, they are as likely to increase as to reduce existing disparities.

Trade and the movements of productive agents are the chief means of

reducing these disparities. Exports tend to increase the demand for the abundant, and imports to reduce the demand for the scarce, agents of production. Emigration reduces the supply of the abundant, and immigration increases the supply of the scarce, agents of production.

The similarities between these effects have been pointed out by Longfield and Ohlin. But the differences, to which less attention has been given, are not less important. There are differences between the collections of goods and services produced and between the characteristics of the productive agents directly affected in the two cases. Large emigrations increase the proportion of consumers to producers, resembling in their immediate, though not necessarily in their long run, effects a high death-rate among adolescent males. Increased reliance on exports of raw materials tends to increase balance-of-payments difficulties through the greater instability of export than of import prices.

There are many other aspects of the comparison between trade and movements of productive agents which there is no space to discuss here. Any analysis is beset with dangers unless time is fully taken into account and the reciprocal effects of trade and migration are examined. The long-run effects of trade and migration have often more than offset their short-run effects. An exodus of skilled workers, long prohibited in many countries under penalty of death, may bring short-run losses but long-run gains to the country of emigration, hastening the development of other areas, which subsequently become important markets or sources of raw materials. Trade and movements of productive agents are interrelated in the long run, and both of them in different ways tend to improve the distribution of population about fixed natural resources. To hang a skilled worker who tried to emigrate was to get the worst of both worlds! Economic, like political, history is in need of periodical revision; the final history of any period can never be written.

In an expanding world economy a reduction, through increased trade and movements of productive agents, of the disparities between the distribution of population and that of fixed natural resources is not necessarily accompanied, in the short run at least, by a reduction in the international inequality of incomes. The early development of the underdeveloped countries depends upon the growth of demand for food and raw materials in the industrial countries. But as industry continues to grow in established centres of manufacture, raw materials are fabricated into more refined products and a greater value of manufactures than before is produced from a given quantity of raw materials. Hence the value of output tends to rise more rapidly than the value of imported raw materials. This disparity is unlikely for some time to be offset in the underdeveloped areas by improvements in agriculture and by the growth of industry for the domestic market. Consequently, in the short run at least, average incomes will rise faster in the industrial than in the underdeveloped countries.

VI

It follows that the concepts of under-population and over-population can be applied only to the conditions in an area at a particular time; the one may pass quickly into the other without change in the size of the population and, before under-population or over-population could be corrected through induced changes in the rate of natural increase, the most productive size of population would itself have changed. When technology changes rapidly, when new materials are introduced and new uses found for old materials, and when the demand for exhaustible resources is high and rising, the distribution of useful natural resources changes continually, both in quantity and in variety, providing incentives for widespread movements of productive agents and goods, forcing a start on new adjustments before old ones are completed, now tending to reduce regional inequalities, now to make the rich regions richer and the poor poorer, at least comparatively. Thus the international economic order is never stable, which is equivalent to saying that there is always an incentive not only to trade, which would be as indispensable in stable as it is in changing conditions, but also to migration, which would be unnecessary if population were ideally distributed with reference to natural resources. Changes in the rate of natural increase of population play an important part in attempts at adjustment, but in the short run the scope for them is limited by the length of the period which elapses before human offspring reach maturity, and by the private relationships and non-economic habits, customs and ideals which surround wedlock. In the short run, and to a considerable extent in the long run also, adjustments between the distribution of population and that of natural resources must be made through economic more than through demographic means, and mainly through trade and the movement of productive agents.

Thus we reach the crux of the population problem in the modern era. In the underdeveloped countries, where average incomes are low, the growth of international trade and of movements of productive agents is essential to an improvement in the conditions of life. The former often cannot be increased without the latter. Some of the countries possess fixed natural resources not yet fully exploited, which yield products greatly sought after by the rich industrial countries of the temperate zone, but they lack technicians, skilled labour and loan funds. Here, the complementary productive agents are comparatively easy to attract. But at the other end of the scale there are countries of low income with dense populations but deficient in the fixed natural resources now in international demand. Here a remedy through trade and the movement of productive agents is extraordinarily difficult: there is not sufficient demand for unskilled emigrants, nor are there economic prospects of attracting substantial loan funds, technicians and highly skilled workers. Venezuela may be taken as an example of the first of these categories and Haiti of the second. The abundant agents of

production can be brought into play only through combination with a number of scarce agents, and it by no means follows that the latter can necessarily be drawn into any or every location where they are needed. The mere fact that they are scarce gives them wide choice of the place to which they will move, and in general they select only those which are most profitable. Many areas are calling them, but few are chosen.

When complementary but scarce productive agents cannot be attracted to an area poorly endowed with fixed natural resources, there is an obvious case for emigration. In the nineteenth and early twentieth centuries this form of relief from population pressure was widely adopted. If opportunities have now diminished through changing technology as much as through the growth and spread of population, they are still important, and but for political restrictions would be more so. But there are limits, though they are not precise nor definable in advance, to the volume and rate of migration, depending on transport costs and on the presence or simultaneous inflow of complementary productive agents. The recent sharp changes in mortality—largely through non-economic influences—tend to increase the supply of would-be emigrants at a faster rate than that at which they could be absorbed. Finally, just as some underdeveloped countries have greater attractions than others for scarce productive agents abroad, so also migrants from some of them are more sought after by, or have easier access to, the countries of immigration than migrants from others, whether through differences in transport costs, or kinship, or types of labour.

Short-run over-population may be said to exist in a country poorly endowed with fixed natural resources per head of population, where the growth of population is running parallel with or ahead of the growth of production; where natural resources yielding products in demand abroad are shrinking or failing to expand; where the economic prospects of future development are not attracting skill and loan funds from abroad, the advantages of low wages being offset by unfavourable geographical conditions; and where would-be emigrants are not in demand or cannot meet the costs of transport in sufficient numbers to affect the growth of population significantly.

To some this analysis may appear to lean too far towards physical determinism; the optimist will argue that both domestic industry and exports can be expanded by initiative, inventiveness and ingenuity in finding new or expanding uses for existing resources, poor though they may be. Switzerland is often cited as a country possessing few natural resources, except scenery, and facing many natural obstacles, which, solely through human ingenuity and application, has attained one of the highest standards of living in the world. Without belittling Swiss achievements, it may be said that Switzerland enjoys remarkable economic advantages of geographical position with reference to other countries of diverse natural resources and large populations. The particular times of

ingenuity for which the Swiss are noted would not have been acquired, and the manufactures for which they are famed would not have developed, in a position far from the European countries which surround Switzerland.

It may be admitted, however, that no precise limits can be set on the possibilities of compensating by human skill and diligence for a poor endowment of natural resources. The uniqueness of each human being and of each human society always leaves an opening for variable responses to similar external conditions. Some scope for ingenuity and ground for hope always remain even in the circumstances under consideration. Rarely, however, can new types of enterprise be established in such circumstances without preliminary movements of productive agents, bringing new skills into a poorly endowed country. Hypothetically it might appear that, if the costs of these preliminary steps can be met, there is no clearly definable barrier to the expansion of the trade of even the poorest areas. By importing small quantities of raw materials and fabricating them into finished products they might, on this view, escape from the limitations imposed by poverty in natural resources. The Swiss watchmaking industry may be cited as an example, but it points to the limitations as well as to the importance of this type of development. To produce high value in small bulk and weight, apart from the extractive industries, requires a high degree of human skill. In metal manufactures this mode of escape from poverty of natural resources is more likely to be practicable in industrial countries or in countries near them, where growing population, depletion of exhaustible natural resources and the rise of competitive industries abroad lead to a decline in the older staples of trade, than in the underdeveloped countries. In the latter the prospects are better in other than metallic manufactures. The simplest cases are those of craft skills used to produce products for export. Here the value per worker tends to be low and the market limited to higher-income groups abroad. If the industrial countries lowered their trade barriers, exports of cheaper articles in wider demand might be expanded. But so far, the rich industrial countries seem willing to give any form of help rather than that of opening their markets to articles fabricated by cheap labour.

Thus the way of escape through these means is hard, and though the door is never closed on it, few areas can be relied on to find it, and fewer still to find it with their own resources alone. The prospects may be improved by organised efforts from outside to provide equipment and skills that would not be forthcoming through private commercial channels. Not only are such measures justifiable on grounds of humanity, even if they draw productive agents from areas where their contribution leads to greater returns—at least in the short run—but the uncertainty over the exact limits of human ingenuity in making the best of poor natural resources always leaves the possibility that returns in the longer run will exceed expectations and

The larger part of the external assistance to underdeveloped countries need not be justified on such grounds. From an economic point of view much of it can be justified on the ground that it makes possible that basic investment in the public economic sector which must precede development of the private sector but which does not attract private investors abroad. Technological and political changes have made this more important to-day than it was a few decades ago. Railways attracted investors abroad; roads do not. The spread of extreme nationalism has ruled out large-scale private developments, providing basic investment on the lines of the brilliant schemes of Lord Lovat in the Gezira and the northern Parana.

To some of the underdeveloped areas relief may come from technical changes which will make new uses of old natural resources, as the development of aluminium and other light metals and the rising demand for them, especially in transport equipment, has done. In other areas, well endowed under present conditions with natural resources, technical changes are more feared than hoped for. The position of oil seems assured in the near future, but not necessarily in the long run. A shift from one source of power to another would in itself greatly change the comparative fortunes of the underdeveloped areas.

Thus the conception of over-population which underlies the preceding analysis is no more than a short-run conception; whether or not, and how long, the apparent over-population of some areas to-day will continue we cannot tell. Prediction over more than a brief period is speculation without roots, useful in the incidental side issues which it raises, useless as a guide to future action. The main task is that of improving or preventing a deterioration in the channels of world trade and the distribution of productive agents, with a view to adjusting the distribution of population more closely to that of natural resources. Not all the inventive capacity and the ingenuity of Man can make him independent of place or render it a matter of indifference where he carries on his varied economic activities. In the study of population changes geography and economics are indissolubly bound together, and the usefulness of the Malthusian theory in the study of the underdeveloped areas is greatly diminished by Malthus's failure to perceive fully the role of migration and trade in his own time, and to foresee its much greater role in the future, in determining the economic destiny of the peoples of any particular country. It was not a failure in logical analysis but a one-sided and oversimplified view of the mainsprings of human action with respect to production and reproduction, and an insufficient appreciation of the full economic significance of the immense variations of the earth's surface, which led Malthus to overemphasise the domestic and neglect the international aspects of the problem of population. Much of what he said on the former has considerable relevance to some at least of the underdeveloped areas, particularly that which concerns political institutions and individual freedom. But to-day the first condition for the successful economic develop-

ment of an underdeveloped area is that it shall find a place in the immensely complicated channels of world trade which will enable it to obtain the productive agents and equipment in which it is lacking and which are indispensable to its economic advance, and it is to this end that assistance from outside should be directed. On this the Malthusian theory has little to offer. Yet unless this condition is satisfied, not even the utmost demographic prudence can bring an underdeveloped country out of the economic doldrums.

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A GEOMETRICAL ANALYSIS OF THE FOREIGN TRADE MULTIPLIER¹

1. THIS note aims at presenting in a compact form a geometrical treatment of the Foreign Trade Multiplier, *i.e.*, of the analysis of the inter-relation between incomes and the balance of payments. It is assumed that there are only two countries, that all prices and interest rates are constant, and that all fluctuations in income in each country lie within the limits set by full employment. Thus only the effects on income of changes in investment and foreign trade are shown. In the figures below, all items of exports, imports, savings and investment in either country are shown on the y axis and measured vertically from O ; while the incomes of country 1 and country 2 are represented on the x axis, and are measured right and left from O respectively. O may represent either zero levels of savings, investment, etc., or some initial, consistent, set of non-zero levels. The latter method is adopted here as it makes the diagrams more compact.²

2. In the right-hand quadrant in each figure are constructed lines showing the relations between country 1's income and its imports, (m_1) , and between its income and its imports *plus* net savings, $(m_1 + s_1)$. In the left-hand quadrant similar lines are constructed for country 2. Now let OA represent an increase in autonomous investment in country 1. If the effects of 1's imports from 2 upon 2's incomes, and hence on 2's imports, were neutralised, 1's income Y_1 would expand until the whole of OA was "absorbed" by imports or net savings (an excess of savings over induced investment); then net savings in country 1 would equal BC , and 1's imports would equal its exports to 1, assuming for the moment that country 1 in turn neutralises

¹ The author is indebted for comments and suggestions to Dr. W. M. Corden, who is not, however, responsible for the views expressed.

For more general discussions of the concepts, the policy implications and the algebraic working of the Foreign Trade Multiplier the reader is referred to the many previous writers on the subject, especially F. Machlup, *International Trade and the National Income Multiplier*, Blakiston, Philadelphia, 1943; J. E. Meade, "National Income, National Expenditure and the Balance of Payments," *ECONOMIC JOURNAL*, December 1948 and March 1949; and R. Robinson, "A Graphical Analysis of the Foreign Trade Multiplier," *ECONOMIC JOURNAL*, September 1953. Graphical treatments have been given by H. G. Johnson, "A Diagrammatic Analysis of Income Variations and the Balance of Payments," *Quarterly Journal of Economics*, November 1953, and R. Robinson, *op. cit.* Both make use of the equilibrium method in multiplier theory, whereas the present note works via the iterative method, which appears to be superior in cases where it can be applied, as it enables the stability conditions to be included in the main body of the analysis, instead of being incorporated as an afterthought. Robinson's diagrams differ from those of this note in showing Y_1 and Y_2 on the two axes (see text *infra*); in Johnson's diagrams, though the axes are the same as those used below, the two halves of the figure are placed "face to face" instead of "back to back," with resulting increase in complexity.

² It also makes the (m_1) , etc., curves (see below) pass through O . It would not be suitable, however, in cases where there was any doubt as to the sign of resulting changes in incomes, etc.

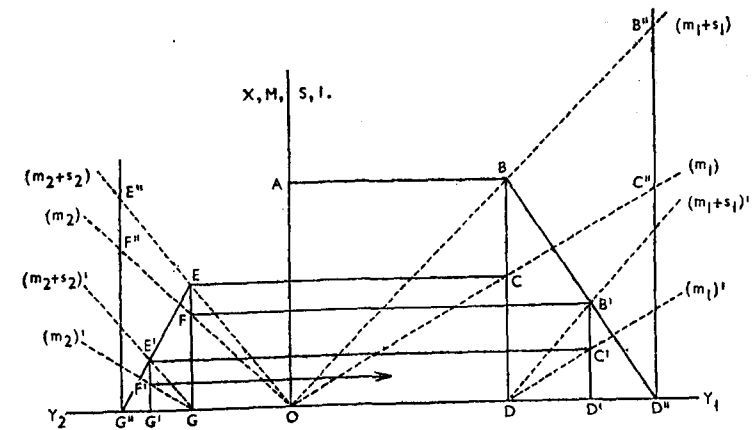


FIG. 1
Both Countries Stable in isolation

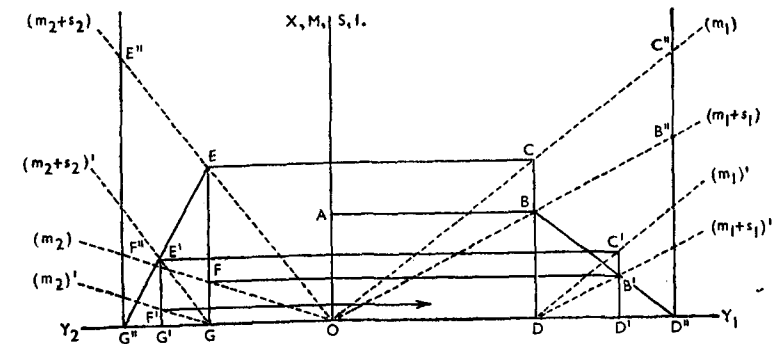


FIG. 2
Country 1 Unstable in Isolation, Country 2 Stable

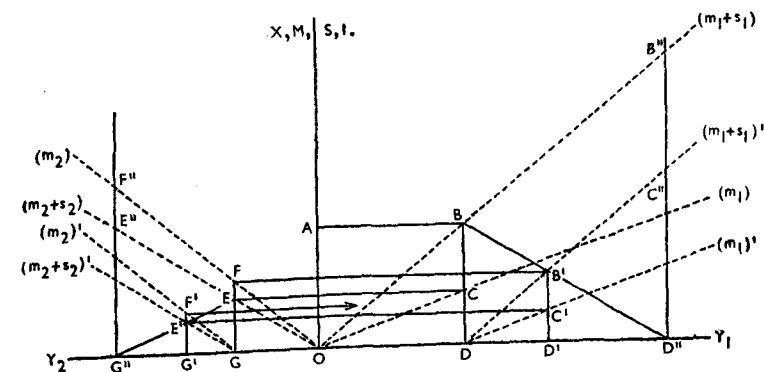


FIG. 3
Country 1 Stable, Country 2 Unstable in Isolation

3. In all 3 figures the scale of the vertical axis is, for convenience, made much larger than that of the horizontal axis.

the effects of any increase in exports on its income, and hence on its imports from 2. Country 2's exports of CD will cause Y_2 to rise until the whole of CD is absorbed by net savings EF plus imports FG . The effects of these extra exports on country 1's incomes can in turn be found by drawing through D the lines $(m_1 + s_1)'$ parallel to the part of $(m_1 + s_1)$ to the right of B , and $(m_1)'$ parallel to the part of (m_1) to the right of C ; the resulting increase of net savings in country 1 will be $B'C'$, and the increase in imports $C'D'$. The same process can be repeated for country 2, by drawing through G the lines $(m_2 + s_2)'$ parallel to the part of $(m_2 + s_2)$ left of E , and $(m_2)'$ parallel to the part of (m_2) left of F .

3. In order to find the total income changes in both countries resulting from the original increase in autonomous investment OA , it is necessary to repeat the process described above indefinitely; in geometry as in algebra, however, it is not necessary to draw an infinite (convergent) series in order to sum it. It is intuitively obvious that, in the cases when the marginal propensities to import and to add to net savings are constant in both countries, *i.e.*, where $(m_1 + s_1)$, etc., are straight lines, the relation of the $(n + 1)^{th}$ stage of the multiplier to the n^{th} must be the same as that of the 2nd to the 1st. Thus in country 1 the addition to Y_1 at the next stage of the multiplier after D' can be found by constructing on $B'D'$ a triangle similar to BDB' , and the end-result of an infinite repetition of this process can be found by joining B and B' and producing to cut the x axis at D'' . The result for the total additions to Y_2 can similarly be found by joining E and E' and producing to cut the x axis at G'' . The total net savings generated in country 1 as the result of the autonomous investment OA is then shown by $B''C''$, and the total imports by $C''D''$, where $B''D''$ is the vertical through D'' . In country 2 there is no autonomous investment, all the stimulus to expansion coming from exports to country 1; accordingly, $E''G'' = C''D''$, and the increase in 2's exports is balanced by imports, $G''F''$, plus net savings $E''F''$.

4. It is obvious from inspection of Fig. 1 that the results found in this way satisfy the necessary identity that the total net savings generated in the two countries combined equals the autonomous investment, for $OA = BC + EF + B'C' + E'F'$, etc. $= B''C'' + E''F''$. Also country 1's balance of trade will be equal to $F''G'' - C''D''$, and this must be negative if, as in Fig. 1, country 2's net savings tend to increase with an increase in Y_2 . The analysis can also be applied, however, in the cases where the existence of a "propensity to invest" larger than the "propensity to save" makes one country's net savings propensity negative. Fig. 2 shows the case in which country 1 is "unstable in isolation," and $(m_1 + s_1)$ therefore lies below (m_1) . In this case country 1's net saving is negative, and 1's balance of payments worsens by $E''F''$, *i.e.*, by more than the autonomous investment OA . Fig. 3 shows the case in which country 2 is "unstable in isolation" and $(m_2 + s_2)$ therefore lies below (m_2) . In this case country 2's net savings are

negative and country 1's balance of payments improves in spite of the autonomous investment OA . In either case the multiplier process is stable for both countries taken together, *i.e.*, Y_1 and Y_2 tend to finite limits when autonomous investment in country 1 increases by OA , if and only if, $GF < OA$; this corresponds to the algebraic condition that

$$\frac{m_1}{m_1 + s_1} \cdot \frac{m_2}{m_2 + s_2} < 1.$$

If both countries are unstable in isolation this condition cannot be satisfied, since $GF > DC > OA$.

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NEW MEASURES OF THE GROWTH OF FIRMS

For a note meant to be brief it will be useful to begin by stating what this note does not claim to be about. I am *not* dealing with the measurement of business concentration and competition nor with that of the growth of establishments or plants. Growth of establishments and of concentration obviously have some connection with the growth of firms, but they have different associated conditions and involve different problems and should, at the outset at least, be kept separate. This disclaimer might be thought unnecessary except for the fact that some writers have not only failed, as illustrated by the footnote below, to distinguish between different notions of what constitutes a firm but have even missed the elementary distinction between firm and plant. Recently a reviewer of my *Logic of British and American Industry* considered the organisation of my material "confused" because "three pieces of empirical evidence relating to the same subject" were given on three separate pages. But the subjects were not the same. As section headings printed in capitals should have made clear, one page related to the various possible measures of efficiency, another to the measurable efficiency of various sizes of plants and the third to the measurable efficiency of various sizes of firms.

To economists, more directly interested in degrees of competition and monopoly than in industrial location, the firm, the unit of control, is more important than the plant, the physical unit; and the concentration, *i.e.*, the relative sizes, of firms than their absolute sizes. The absolute size of a firm must, however, be established before its size relative to its whole industry can be computed. Moreover, the absolute size of a firm has a certain importance in its own right; notably to problems of management such as degree of delegation and co-ordination, and to the shape of the cost curve of management, U, L or what not. Methods of measuring a firm's (absolute) size should therefore be of some interest to economists, and this note proposes to report upon recent progress.

The Census of Production classifies size of establishment by persons employed or value of output, but does not classify the sizes of firms. Based on 1935 Census data, however, Leak and Maizels, in their now famous article on "Structure of British Industry" in the 1945 *Statistical Journal*, gave the proportion of total output and persons in every industry accounted for by its largest three business units. "Business unit" admits a parent company together with any subsidiary companies in which it has more than a 50% interest, and this may be accepted as standard practice, at least for Great Britain. Confusion can arise, however, since a firm might also be taken, less broadly, to be a single company in the legal sense; or, more

broadly, to include subsidiaries in which the interest of the parent company was in practice sufficient for control, but was not as much as 50%.¹

Neither persons employed nor value of output form an ideal index of size even for physical plants or "establishments," as I have pointed out elsewhere, and these indices are just as far from the ideal for measuring the sizes of firms, however firm is defined. It is not surprising when the older types of measure are neither ideal nor available that new measures have been attempted. Till these measures are further considered, however, conclusions drawn from them about current trends in the growth of firm sizes can be only tentative.

The most interesting of these attempts is the use of the stock-exchange value of the shares and debentures of public companies at various dates to measure their size at any one time or their growth or decline from time to time. An article on "The Analysis of Business Concentration," by Hart and Prais in Part 2 of the *Statistical Journal* for 1956, is an admirable example. This article bristles with interesting points, particularly the log-normal shape of the distribution of sizes in the years since 1885 and in separate industries, but in this brief note we must stick to the point whether the market valuations of its stocks and shares is a reliable index to a firm's size and growth. One of the conclusions of Hart and Prais is that "for the period covering the Second World War the smaller companies seem to have had an exceptionally profitable record; their greater rate of growth has had the effect of lowering concentration between the years 1939 and 1950 that have been examined here."

It happens that as part of a report on Risk Capital,² G. M. Lawrence and I had occasion to examine the varying success of the larger English public companies in the industrial and commercial and the brewery sections of the *Stock Exchange Year Book* (the sections Hart and Prais examined) between September 1936 and 1951. These two years were fairly comparable, since each showed peaks in stock-exchange prices rising about 13% over the average of the four neighbouring years. In addition to the dividends received on the original and on any bonus shares, we measured that success by two indices. One index was the book gain in net tangible assets, duly allowing for the consolidation of accounts that some companies had to carry out during this period, to conform with the provisions of the 1948

¹ American economists (*e.g.*, Rosenbluth, in *Business Concentration and Price Policy*, introduced by Stigler, Princeton University Press, 1955) are apt to write *tout court* of "firms" when comparing degrees of concentration in British and American industries without troubling about exactly what it is that is concentrating. There may be differences in the two countries' treatment of parent and subsidiary companies or, in modern jargon, of "groups and their constituents" in the various industries, the possibilities of which should at least be discussed. Neither country actually uses the word "firm" in their official statistics on which these economists base their calculations. America uses "producers," Britain "business unit."

² Made possible by a grant under the Conditional Aid Scheme for the use of Counterpart Funds derived from the United States Economic Aid.

Companies Act.¹ The other index was the gain on the Stock Exchange to an investor if, in 1951, he sold stocks and shares bought there in 1936, or given as a bonus subsequently.

This second index is of similar type to the measure of growth used by Hart and Prais, and our application of the two measures to the same series of data provides an opportunity of testing how far they produce results that conform, and that confirm one another. The English industrial and commercial, and brewery companies we surveyed were all the very large and medium-large companies with over £3 million and £1-3 million issued capital in 1951, and a stratified sample of the smaller large companies with capital of £½-1 million. Market values were in 1951 (and 1936) considerably higher, of course, than the nominal issued capital. But these size grades based on issued capital, or at least the very large and the smaller grades, correspond roughly to the size grades based on market values which Hart and Prais were comparing when they wrote of the smaller companies having "an exceptionally profitable record" and a "greater rate of growth."

We were able to collate rates of growth for our sample of smaller, and for the very large companies, according to the two measures of growth: market values and assets. Curiously enough, the two measures pointed in different directions. In the market value of their Ordinary and Preference Shares and Debentures in 1936 and 1951 we found the smaller companies grew at about the same rate on average as the larger companies. Considering that their classification by size was only roughly similar to ours, this finding does not definitely contradict Hart and Prais' conclusions. But measured by gain in assets, we found our larger companies grew very definitely more than our smaller companies: increasing 183% on average, as against 111%. The medium-sized companies occupied a middle position, with an increase in tangible assets of 132%. This difference in the results of the two measures was true of each of the various branches of industry except foods, where the smaller companies showed on average much the same, not a lower, accounting gain than the very large companies. Moreover, if the eight branches of industry which we were able to distinguish were ranked according to the two measures of growth of their constituent firms, little correlation is shown between rank in asset growth and rank in market-value growth. If breweries are excluded there was, in fact, a slight negative correlation.

This disconcerting contradiction during the period 1936-51 in the two measures of the growth of firms is probably not just a chance accident but a logical consequence of the basis of the stock-exchange valuations. The price of an Ordinary Share appears to depend more on the rate of dividends paid out on it, less on the assets accumulated. This statement can be

¹ By the device of calculating the change in assets in the years before, and the years after, the years of consolidation, totalling the two changes and averaging for the single intermediate year of consolidation. Since the total period was fifteen years, this average is one-fourteenth of the sum of the changes in the years before and after the year of consolidation.

supported from our own data on the large English public companies, and in American text-books is taken for granted. "It is a truism," write Graham and Dodd, in their *Security Analysis* (1951, p. 431), "that the average dividend paid by a common stock has a major influence on its average market price. . . . Pay-out policy . . . affects a common stock's market price more than any other single item." When the Board of Directors of a company decide to pay dividend of say 15% instead of 12% on a share and to plough back less, they will be thereby setting aside less to assets in the form of reserves but pushing up the price of the share on the Stock Exchange.

For 1948-51, when all company accounts had been consolidated, it is possible to show that, judged by the proportion of net earnings distributed to dividends, the very large companies were, on average, considerably less liberal than the medium and the medium than the smaller companies. The following table gives the size averages for the total of companies we analysed and also for the three branches of industry represented by the largest number of companies.

*Average Percentage of Net Earnings Distributed in Dividend 1948-51, by size of Companies*¹

	All very large companies.	All medium-large companies.	Sample of smaller large companies.
Engineering	30.0	31.8	41.9
Distributive trades	37.9	47.7	54.0
Textiles	27.0	27.4	38.5
All branches "industrial and commercial" and brewery companies	35.3	38.7	45.1

¹ In the three sizes, very large, medium and smaller large, engineering contains 21, 29 and 22, distributive trades 12, 19 and 26, textiles 12, 17 and 15 companies. When all eight branches are added the three sizes contained 100, 116 and 99 companies.

The upward trend in dividend distribution in the smaller companies could also be traced in the motor and the food industries, but the trend was reversed in brewing. In paper and chemicals there were insufficient small companies to judge from, but the same upward trend in dividend distribution as in the Table could be traced as between very large and medium-large companies.

To sum up. The increase in the market value of its stocks and shares can be a very unsatisfactory measure of growth of a firm. To some extent, indeed, it measures the opposite of growth, namely the degree to which a company divests itself of assets by paying *out* dividends, rather than building up its resources. On the other hand, assets as a measure are unsatisfactory because they depend not on the outside, independent, valuation of a number of people in a market, but on the internal accounting practices of particular firms. A possible third measure of the size of firm, its profits, suffers from

being a flow which may fluctuate violently from year to year. The profits of several years would have to be added before a well-founded measure emerges. The best solution to the difficulty in measuring the size of firms probably lies in presenting the results of both the methods discussed in this note, market values and net tangible assets,—with yearly profits thrown in, if enough years can be secured.

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THE FINANCIAL EXPERIENCE OF GIANT COMPANIES¹

THE activities and financial experience of a relatively small number of large companies properly receive much comment and attention. Their share in the economy, their rate of capital expenditure, issues of securities, trends in profitability and the like are frequently discussed in the financial Press—where their influence on the capital market is of special importance—and in the writings of those economists who are especially concerned with “big business” and long-term trends in the structure of industry. There is, perhaps, no shortage of scattered pieces of information on these giant companies, but hitherto it has not been brought together in a systematic form; discussion of these matters has consequently tended to be somewhat impressionistic.

The National Institute of Economic and Social Research has recently published a series of tables of summarised company accounts,² including a table relating to the largest hundred companies operating in the United Kingdom, which permits a more satisfactory assessment of the position and experience of these large companies. The present Note considers the implications of the latter table, taken in conjunction with other information, including that on national aggregates.³

I. THE SELECTION OF THE LARGEST HUNDRED COMPANIES

The combined accounts of the hundred largest companies are compared in Table I with those of other quoted companies, numbering approximately 2,800, engaged in manufacturing and distribution in the United Kingdom. For convenience, these two sets of companies will be referred to as the Giants and the Rest respectively. The table relates to the five-year period 1948–53 taken as a whole; for each set of companies it gives (in summary form) the appropriation account, the sources and uses of funds for capital purposes,⁴ and the balance sheet at the end of the period.

Precisely which companies are to be included in a list of Giants is not always an easy matter to decide; slightly differing lists may be compiled,

¹ This article could not have been prepared without the help of the team of people engaged on the inquiry into the finance of public companies at the National Institute: I am grateful to them all. Miss Susan Clarke has been especially helpful in connection with results reported in Section IV. Thanks are also due for assistance received under the Conditional Aid scheme for the use of United States counterpart funds.

² *Company Income and Finance, 1949–53*. National Institute of Economic and Social Research: London (1956).

³ Numerical data in the present paper are condensed from the tables in *Company Income and Finance, 1949–53*. The methods of condensation are described in the Appendix below, but for detailed definitions reference should be made to the original publication.

⁴ This account deals only with cash and credit transactions, and excludes revaluations, etc., which normally form part of the year-to-year changes in balance-sheet items. See below, p. 254.

TABLE I
*Summary Accounts of Hundred Largest and of All Other
 Quoted Industrial Companies, 1948-53*

Five-year totals: £ million

APPROPRIATION ACCOUNT

	Hundred largest.	Remaining 2,800 companies
Gross trading income	2,719	3,375
Less depreciation	— 419	— 485
Less other provisions	— 54	— 33
Net trading income	2,246	2,857
Other income	129	98
Less debenture interest (gross of tax)	— 61	— 43
Less tax payable	— 1,259	— 1,633
	<u>1,055</u>	<u>1,279</u>
Dividends (net of tax)	338	458
Minority interests	47	23
Balance retained in reserves . .	670	798
	<u>1,055</u>	<u>1,279</u>

CAPITAL ACCOUNT

	Hundred largest.		Remaining 2,800 companies	
	Sources and uses of funds in period.	Balance sheet at end.	Sources and uses of funds in period.	Balance sheet at end.
Tangible fixed assets, gross . . .	927	—	906	—
Less depreciation	— 419	—	— 485	—
Tangible fixed assets, net	508	1,655	421	1,668
Trade investments and intangibles .	40	278	30	234
Acquisition of subsidiaries . . .	31	—	89	—
Stocks and work-in-progress . . .	514	1,341	521	1,512
Net trade credit extended	91	175	119	200
Less provisions (including tax and dividends due)	— 120	— 422	— 93	— 458
Liquid assets	152	588	193	803
Less bank overdrafts	— 33	— 127	— 47	— 156
Adjustments for consolidation, etc. .	— 50	—	— 70	—
NET ASSETS	<u>1,133</u>	<u>3,488</u>	<u>1,163</u>	<u>3,803</u>
Represented by:				
Debentures, etc.	188	407	87	249
Preference shares	11	333	50	442
Ordinary shares	129	789	129	1,080
Reserves (capital and revenue) . .	771	1,777	887	1,950
Minority interests	34	182	10	82
	<u>1,133</u>	<u>3,488</u>	<u>1,163</u>	<u>3,803</u>

depending on the measure of size chosen and on the date at which the measure is taken. The criterion adopted here was the size of the company's net assets at the beginning of the period (the *beginning* rather than the *end*, to avoid the error of jobbing backwards in looking at changes during the period; *net assets* rather than, say, *profits* because of the year-to-year variability in the latter). The book values of the assets have been accepted here despite their well-known limitations; but for the present purposes they may well be adequate. There is no reason to think that their general understatement tends to favour unduly the inclusion of any particular group of companies.

The first impression given by Table I is that of great similarity in the experience of the Giants and the Rest; this is the more striking, since the average Giant company had earnings (net of depreciation) of £4.7 million a year, whereas the average Rest company was less than a twentieth of that size, with earnings of £0.21 million a year. The net assets for the average companies, as shown in the balance sheets at the end of the period, were in a very similar ratio, at £34.9 million and £1.4 million respectively. It should be remembered that the range of variation in size within each of these groups is at least as great as that between them; hence, though the differences between the average ratios, etc., for the two groups may seem small, they may be taken as indicating that much larger variations would probably appear on a more refined grouping of the companies (that is, if the accounts of the Rest were divided into a number of sub-groups).

How large are these companies in relation to the whole economy? The answer depends, of course, on how size is measured. The most accessible measure—and the one used here—is in terms of profits, since this is given in the published accounts of each company. But net output (as defined for the Census of Production), or even employment, probably corresponds more closely to most economists' interests. It should, however, be noted¹ that the proportion of national profits earned by quoted companies exceeds their proportion of national output, and the figures given below are thus probably on the high side. The reason for the excess lies partly in a technical difference in the treatment of overseas profits (which, in so far as they occur,² are included in the accounts examined here, but excluded from national figures), and partly in the greater capital intensity of the larger firms.

From the data given in Table II (discussed in greater detail below) it appears that the Giants accounted for 28% of total (*i.e.*, national) gross trading profits earned in manufacturing, building and distribution in the years 1949-53. The Rest earned a further 35%. The proportion for the Giants is surprisingly similar to the estimate given by Kaplan³ for the

¹ See *Company Income and Finance, 1949-53*, pp. 7-8.

² Companies operating mainly overseas are entirely excluded from the Institute's inquiry, so limiting the influence of this factor.

³ Kaplan, A. D. H. (1954). *Big Enterprise in a Competitive System*. Brookings Institution: Washington, p. 126.

United States in 1948: there, some 30% of the profits of industrial companies is earned by the hundred largest.¹

II. PROFITS AND FINANCIAL EXPERIENCE

In comparing the appropriation accounts of the Giants and the Rest, three items deserve comment: (a) the proportion of income distributed in dividends and interest; (b) the proportion taken by taxation; and (c) the ratio of earnings to assets.

(a) The Giants have a proportionately, as well as an absolutely, larger amount of Debentures outstanding; consequently, the proportion of income required to meet Debenture charges is greater, 2.6% for the Giants as against 1.5% for the Rest. Both of these proportions, of course, may well seem low when compared with the pre-war average, which was in the region of 7% (as may be seen from the estimates in the Blue Book). The rate of interest paid on Debentures, however, appears to have been very similar, at rates of 3.9% a year for the Giants and 4.1% for the Rest.²

Dividends, after grossing-up for tax at an average rate of 9s. 3d., amounted to £630 million for the Giants and £850 million for the Rest, forming 26.5 and 28.8% of income³ respectively. So that while the Giants pay a slightly *higher* proportion of their income in Debenture charges, they pay a slightly *lower* proportion as dividends. If dividends and Debenture interest are taken together the difference virtually disappears (especially if the uncertainty attaching to the division of minority interests into dividends and retentions is considered), the Giants distributing a total of 29.1% compared with 30.3% for the Rest. Thus, the present statistics barely support the view that large companies are able to neglect the immediate demands of their shareholders in order to increase the funds available for expansion. But a division of the companies in the Rest into a number of sub-groups may well provide more support.

(b) During this five-year period, profits earned by companies were subject to Income Tax, Profits Tax (with differing rates on the distributed and undistributed portions) and an Excess Profits Levy. The first two of these taxes amounted to a rate which may be put at 54.7%; this is based on an average dividend distribution of 28% of income (after Debenture interest), and results from taking a straight (unweighted) average of the rates in force during the various parts of the period.⁴ The third tax—E.P.L.—was

¹ As a proportion of national income (net of depreciation), the earnings of the hundred largest account for 4.0% in this country, whereas Kaplan quotes 3.3% for the United States. Depreciation allowances in the two countries are not so dissimilar as to invalidate this comparison. Studies by J. Rosenbluth, "Measures of Concentration" in *Business Concentration and Price Policy* (Princeton: National Bureau of Economic Research), also suggest that concentration is higher in this country than in the United States.

² Calculated as Debenture interest divided by the average amount of Debentures outstanding.

³ Before Debenture charges.

⁴ These rates, with the appropriate timing adjustments, are summarised in an earlier article on "The Measure of Income for Shareholders and for Taxation," *Act. Res.*, 1955, Vol. 6, p. 200.

charged at a rate of 30% on "excess" profits, that is in excess of a certain standard; if distributed over all profits, it may be deduced¹ that this tax would have taken approximately an additional 2% of companies' profits during these five years. The total average rate was therefore in the region of 56½%.

In fact, the accounts show that the Giants set aside 54.5% of their income (taken net of depreciation and Debenture interest) to meet taxation charges, and the Rest set aside 56.2%. The latter proportion barely differs from that calculated in the preceding paragraph, but the former requires a word of comment. As appears below, the Giant companies were expanding at a greater rate than the Rest; it would consequently be expected that E.P.L. would bear more heavily on them and so raise their effective rate of taxation. There is, however, an offsetting factor in the Initial Allowances for capital expenditure²; these reduce the tax payable by the faster-growing companies, provided that the rise in profits is accompanied by increased capital expenditure.³ It appears therefore that for the Giants as a whole Initial Allowances have offset the higher E.P.L. charge, and the *average* rate of tax paid has been equivalent to that due to Income Tax and Profits Tax alone. All this, of course, does not contradict the fact that for particular companies the *marginal* rate of tax must have been very much higher when E.P.L. was effective (in the region⁴ of 83%) and may well have acted as a strong disincentive to an increase in profits.

(c) In the absence of better valuations of fixed assets than those available in the accounts, any comparison of earnings and net assets is—unfortunately—bound to cast more light on valuation practices than on the relative earning capacities of the two sets of companies. In fact, it appears that the Giants earned less on the book value of their net assets than did the Rest: 16.2% a year compared with 18.3% (calculated as the ratio of total income, net of depreciation, to average net assets; the latter is taken as the closing value less half the expansion during the period).

It may therefore be suspected that the assets of the Rest were undervalued in relation to the Giants'. Whether this is so cannot be discovered from the accounts, but these provide some information on a related topic,

¹ From the estimates in the Inland Revenue reports of total assessments, and from the calculation in "The Measure of Income for Shareholders and for Taxation," *loc. cit.*, p. 195, relating to *The Economist's* sample of companies.

² In calculating the E.P.L. charge, the allowances for increases in capital work in the same direction.

³ It may be noted that where an amount is carried to a "tax equalisation reserve" corresponding to the amount of the Initial Allowances, this has been treated in the Institute's standardisation procedure as part of retentions and not as a tax charge.

⁴ At the rates effective in 1952-53, a (gross) dividend distribution at the rate of 30% would completely exhaust an extra £1 earned by a company if E.P.L. were effective; some 16s. 8d. would be paid as tax by the company, and 3s. 4d. would be paid as a dividend net of Income Tax. The latter part may, of course, still be subject to Surtax in the shareholders' hands, and so reduce the return even further.

namely the extent of revaluations during this five-year period. This may be determined from the available aggregated accounts by comparing the changes in net assets as shown in the opening and closing balance sheets with the changes in assets as given in the statement of Sources and Uses of capital funds.¹ The analysis is as follows ²:

	Giants.	Rest.	£ million
Net assets in 1953 balance sheet	3,488	3,803	
Less net assets in 1948 balance sheet	2,164	2,535	
Change in net assets including revaluations	1,324	1,268	
Less expenditure on net assets	1,133	1,163	
Revaluation of net assets	191	105	

The Giants have revalued to a greater extent than the Rest, both in relation to their "genuine" expansion during the period and in relation to their absolute size. Despite the general impression that revaluations have been substantial in recent years, it appears that, taking all companies together, revaluations in 1948-53 formed only 11% of the change in balance-sheet values, and only 4% of total net assets at the closing date (the general rise in prices has been of the order of 26% in the same period). It is, however, not possible to derive any firm general conclusion on the difference between the Giants and the Rest, since the above table is very much influenced by the behaviour of a few companies; the omission of I.C.I.'s revaluation of £100 million, for example, would reduce the importance of revaluations for the Giants to that of the Rest.

Turning now to an examination of investment and its financing, it will be seen from the lower half of Table I that the Giants are throughout responsible for a proportionately greater part of capital expenditure; whereas, for example, in the Appropriation Account the total income of the Giants is equal to 79% of that of the Rest, the expansion of net assets shown in the Sources and Uses statement is no less than 97%. Indeed, if the estimates of depreciation given in the accounts are to be trusted,³ it appears that *net* expansion in tangible fixed assets is rather greater for the Giants, at £508 million, than for the Rest, at £421 million.

The composition of the increase in net assets for the two sets of companies

¹ The Sources and Uses statement, as explained in *Company Income and Finance, 1949-53*, is based in the first instance on such differences between opening and closing balance sheets, and then any changes due to revaluations, transfers between reserve funds, etc., are eliminated.

² It should be noted that this analysis includes revaluations both of existing and retained assets, and of assets that are sold, the latter being represented by the excess of receipts on sale over the book value of the asset. The excess of receipts over book values are of the order of £75 million for each set of companies. Note also that "net assets" in this table include intangible, current and liquid assets in addition to tangible fixed assets. It appears on further analysis, however, that the revaluations of tangible fixed assets are almost equal in amount to the total shown here for net assets, since the adjustments to the values of other assets offset one another.

³ In fact, they must be treated with caution, since they are normally based on historical cost, and the age-structure of the assets may well be different for the two sets of companies.

is very similar. The main features may be noted briefly: expenditures on tangible fixed assets are the major item, while expenditures on intangible assets and trade investments were of minor importance; the increases in the value of stocks are the second largest item and equal to slightly more than half the gross expenditure on fixed assets. There was a considerable increase in the amount of trade credit extended (as measured by the excess of debtors over creditors), for both groups the amount more than doubled during the five-year period.

The liquid assets (taken here as cash, tax-reserve certificates and marketable securities *less* bank overdrafts) show some interesting variations in consequence of the excessive liquidity of many companies after the War. It appears, first, that the Giants hold a smaller proportion of their net assets in liquid form; and, secondly, while holdings of liquid assets have increased absolutely, the proportion they bear to net assets has fallen during the period for both groups of companies. The precise figures are as follows:

Proportion of Net Assets Held in Liquid Form

	1948.	1953.	%
Giants	15.5	13.2	
Rest	19.8	17.0	

Even at the levels of the end of the period, liquid assets may well seem unreasonably large to many readers. For the greater part they are no doubt held to meet immediate liabilities for taxes, dividends and interest, since for many companies these charges are payable on the morrow of the date of the accounts, or shortly thereafter. If these provisions are deducted, the following proportions of—so to speak—"surplus" liquid assets appear:

Ratio of Surplus Liquid Assets to Net Assets

	1948.	1953.	%
Giants	4.0	3.3	
Rest	7.1	6.1	

The proportions are now much reduced but show essentially the same variations as the gross amounts in the preceding paragraph. It is interesting to note that the surplus liquid assets take almost entirely the form of marketable securities.

How were the expenditures on capital equipment and other increases in assets financed? As far as internal finance is concerned, it has already been noted ¹ that the present figures for *quoted* companies differ substantially from the estimates in the Blue Book for *all* companies. Gross savings are here less than the increase in tangible assets and stocks, whereas the reverse appears in the Blue Book; the company sector is there shown as a net lender to the rest of the economy. Table I now shows that the deficiency ²

¹ *Company Income and Finance, 1949-53*, p. 13.

² The word is used without wishing to suggest that companies, in any sense, ought to finance expansion out of retentions.

in internal finance was especially marked for the Giants, where gross retentions¹ were 84% of the increase in tangible fixed assets and stocks, as compared with 96% for the Rest (for the Blue Book companies the corresponding ratio is 124%). All this, of course, is apart from the financial requirements for other forms of working capital, which were by no means negligible.

The finance supplied by the capital market amounted to a total² of £328 million for the Giants and a rather smaller amount of £266 million for the Rest. This includes all receipts from the issue of Shares, Debentures and Notes, less any expenses of issue; most of these issues receive a quotation on a Stock Exchange, the principal exception being that a portion (about a sixth) of the Debentures, etc., are privately placed without subsequent quotation. Since the total expansion in the assets of the two sets of companies is of the same order of magnitude, it may be said that the Giants raise both an absolutely and proportionately greater amount of capital on the new-issue market.

Debentures and other long-term loans were clearly favoured by the Giants, though for both groups the rise in this item is remarkable. A small number of companies still issued Preference Shares, despite the tax disincentive, but these were almost entirely among the Rest; it is suspected that they were the rapidly growing companies which accepted finance in other forms as well.

III. GROWTH IN THE SHARE OF THE GIANTS

As has already been seen, the rate of expansion in the net assets of the hundred Giant companies appears to be greater than that of the smaller quoted companies. In this section these relative rates of growth are examined in greater detail.

We may begin by comparing the rise in profits, during the years 1949-53, of the Giants with that of the Rest, and also with that of all (including unquoted) companies as shown in the National Income Blue Book. Table II shows the series of gross trading profits for these three sets of companies (depreciation has not been deducted here because of the differences between the concepts in the Blue Book and in published accounts). The strong variations in the prices of raw materials in this period have clearly affected accounting profits, which include stock appreciation; all the series show a peak in 1951, and this is exceeded by the 1953 figure only in the case of the

¹ Taken as the additions to reserves shown in the Sources and Uses statement (that is, including tax reserves) together with the amount shown as depreciation.

² The amounts stated here are not quite precise. Part of the increase in minority interests may be due to share issues, and should therefore be added to the totals given in the text; on the other hand, the receipts from new issues include amounts which in fact represent the consideration for the acquisition of subsidiary companies, and such amounts are perhaps better netted off. It is difficult to adjust for these items satisfactorily, but they are relatively small and unlikely to affect the conclusions drawn here.

Giants. As the Blue Book shows, the effects of stock appreciation have obscured what would otherwise be a smooth trend in the series; not too much significance should be attached to the figures for 1950 and 1951, which are much more strongly affected than the other years.

The main conclusion to be drawn from this table is, however, clear enough. Taking an average over the five years, the (compound) rate of growth of the profits of the Giants is 12.1% a year; for the Rest it is 8.0%, while for the Blue Book series it is lower still at 6.8%. The larger companies have thus been growing more rapidly, and this appears to be true in comparisons both within the quoted sector and between the quoted sector and the total of all companies.

TABLE II
Gross Trading Profits of Quoted and Other Companies, 1949-53

	£ million					
	1949.	1950.	1951.	1952.	1953.	Average.
1. Quoted:						
100 largest	401	507	608	551	636	541
Index	100	126	152	137	158	—
2. Quoted:						
Rest	544	645	774	678	739	676
Index	100	119	142	125	136	—
3. All industrial companies	1,592	1,874	2,226	1,911	2,079	1,936
Index	100	118	140	120	131	—
4. Percentage of all profits earned by 100 largest	25.2	27.1	27.2	28.8	30.7	27.9

It is tempting to subtract the profits of the quoted sector from that shown for all companies in order to determine the rate of increase in the profits of non-quoted companies. It is worth noting that this procedure would not, however, be valid; for part of the expansion of the quoted sector is due to the acquisition of non-quoted companies, and the profits of the non-quoted companies when calculated by this "subtraction method" would show a decline merely because these companies have left that category. If a correct impression is to be obtained of the rate of expansion of non-quoted companies in a given period (that is, corrected for any changes in the number of companies), then any leaving this category should be excluded throughout. This cannot be done with the present information,¹ and the comparison in the preceding paragraph has therefore had to be made with the Blue Book total.

The difference between the trends of profits in the Giants and the Rest may be attributed to differences in three factors: (i) the effects of inflation;

¹ The argument of this paragraph has, however, been applied throughout to the statistics given in this paper relating to the Giants and the Rest (see Appendix). Each of these categories is adjusted to consist of a theoretically constant set of companies; accordingly, any quoted company that is not a Giant at the beginning of the period, but has been acquired by a Giant at some date within the period, is omitted from the Rest throughout the period.

(ii) the extent and success of employment of new assets; and (iii) the degree to which old assets (that is, those already owned at the beginning of the period) are employed more efficiently. Now, if it can be assumed that inflation affected both groups of companies fairly equally, which seems reasonable, since their industrial distributions show no very marked differences,¹ then it may be deduced—subject to the usual string of qualifications—that the Giants have been employing their resources more successfully.

The argument is most easily conducted in absolute terms rather than in percentage changes as hitherto. First, the Giants show a greater rise in profits during the period (a rise of £235 million compared with £195 million), though the level of their profits are lower throughout; hence the rise would still be greater after removing a fraction of the profits to allow for the effects of inflation. Secondly, the greater rise has been achieved even though the expansion in net assets during the period has been approximately the same for both sets of companies (£1,133 for the Giants, £1,163 for the Rest). Thirdly, the greater rise in profits has been achieved even though the base-year balance-sheet level of assets was lower for the Giants. It follows, therefore, that the greater rise in profits of the Giants must be attributed to the more successful employment of assets, whether old or new.²

The argument cannot be taken much further with confidence because of the uncertainties attaching to certain of the figures. Thus, the balance-sheet values of the Rest's assets, as suggested above (p. 253), are probably more heavily undervalued than those of the Giants. Again, the estimates of the amounts spent on the acquisition of subsidiary companies, as shown in the summarised accounts, are not entirely satisfactory. Companies are not obliged to reveal the extent of their acquisitions, and from the information available it is only possible to obtain a lower limit (that is, acquisitions are *at least* as great as stated in the summarised accounts). It is a lower limit, first, because the expenditure included under this head is only that incurred in the year in which the acquired company became a subsidiary (to take an artificial case, the amount shown may be as little as the 2% which turns a 49% interest into a 51% holding, though in practice it generally includes the greater part of the capital); and, secondly, because it is not possible to identify all acquisitions from the available information.

¹ See *A Classified List of Large Companies Engaged in British Industry* (London: National Institute of Economic and Social Research, 1956), p. 33, for industrial size distributions; the Giants have a rather greater weight in chemicals and tobacco, and a smaller weight in the food trades and distribution. To invalidate the assumption that inflation affected both groups equally, it is necessary to suppose further that there is a significant correlation between the industrial distributions and the trends of prices.

² Or to greater monopoly power, etc., which may, or may not, have been important. Strictly speaking, the only conclusion that can be drawn from the available figures is the negative one that the greater rise in profits is *not* due to the use of more assets, but is due to "success" in some other sense. Even this is subject to a further qualification: if developmental and scientific research is carried out mainly by the Giants to safeguard their long-run profitability, this should be added to their investment, though in fact it is generally written off immediately.

Since the profits of the Giants are expanding more rapidly, it follows that their share in the economy is growing. A simple comparison of the series given in Table II suggests a steady rise from 25% in 1949 to 31% in 1953. There is room for argument about the most appropriate series to use for national profits in this connection (because of the difficulties consequent upon nationalisation, the treatment of overseas profits, financial companies, etc.), but all the series that have been examined show essentially the same trend.¹

In measuring the share of the Giants, it is important to draw a distinction between two concepts. It is possible to choose either a *constant* set of companies once-for-all and to examine their profits, assets, etc.; or a *changing* set of companies which in each year consists of those companies which were largest in that year. Since we have been concerned hitherto with the characteristics of large companies, it has been necessary to base the statistics on a constant set of companies; but in measuring the trend in the share of the Giants it is more appropriate to use the second concept. A measure based on a constant list of Giants necessarily underestimates their importance, since as time proceeds the list becomes progressively out of date.

The profits of another set of Giants have accordingly been compiled for 1953, the last year of the present stage of the inquiry. This list consists of the hundred largest companies by net assets in that year²; their profits came to £656 million, as compared with the £636 million for the Giants given in Table II. The difference between the two totals is obviously not great, since we are considering such a short period of time; even so, the proportion of national profits in the hands of the largest hundred companies is raised by a further point. In these five years this "concentration ratio" has thus risen from 25 to 32%.

IV. CHANGES IN THE COMPOSITION OF THE GIANTS

The average rate of growth of the Giants, as has already been said, may be put at 12% a year, growth being measured in terms of profit. An examination of the individual companies shows that there are substantial variations in the rate of growth, despite the relative shortness of the time period considered; the most rapidly expanding company grew (in terms of net assets) at a compound rate of nearly 30% a year, and the slowest actually declined in size at 1% a year.³ These variations are considered in this

¹ Information has now come to hand, through the kindness of the Board of Trade, on the profits of our Giant companies in 1954 and 1955. These totalled £735 million and £815 million respectively. Using the provisional estimates of national profits in the 1956 Blue Book, it appears that the Giants have gained a further 1% of the total in these two years, accounting for 31.6% of total profits in 1955.

² The changes in the original list of Giants are noted in the Appendix.

³ Note that a decline in net assets will take place even if a company is ploughing back profits if these retentions are used to repay long-term debt.

section; it may be noted that growth rates for individual companies have been measured in terms of the expansion in net assets rather than profits, because of the greater volatility of the latter measure.

The distribution of growth rates among the largest hundred companies is given in the following table, the standard deviation¹ of the distribution being 6.1 percentage points:

Rate of growth, % p.a.	<2	-5	-10	-15	>15
Number of companies	13	21	33	22	11

Because of the dispersion of the rates of growth, some change in the ranking of the Giants is to be expected over the period; in fact, between 1948 and 1953 there was a "turnover" of a dozen companies among the largest hundred. That is, a dozen companies which were in 1948 below the hundredth in rank had risen above it by 1953, so displacing an equal number of Giants; this, of course, is just another way of looking at the difference between the constant and changing samples of companies discussed above. Most of the "turnover" occurred among the smaller companies, both because they are already closer to the dividing line and because the difference in size between adjacent ranks is smaller at the lower end of the scale.

TABLE III
Changes in Ranks of Giant Companies, 1948-53

Rank in 1948. Rank in 1953.	1-25.	26-50.	51-75.	76-100.	>100.
1-25	21	3	1	—	—
26-50	4	12	7	1	1
51-75	—	8	7	8	2
76-100	—	2	9	5	9
>100	—	—	1	11	—

These changes in rank are set out in summary form in Table III. It will be seen that—to take the extreme ranges—of the 25 largest companies in 1948, 21 are still in top 25 ranks in 1953; but of those ranked 76-100 in 1948, only 5 are in the same range of ranks, 9 having risen above the seventy-fifth rank, and 11 having fallen below the hundredth.

Table III suggests, therefore, that the smaller companies have a more variable experience than the larger. It can be no more than a suggestion,

¹ All calculations reported in this section of the paper have been carried out on the rate of growth observed for the five-year period, though the results are quoted for convenience of understanding as rates per annum. Because of the non-linear effect of compound interest, this does not amount to a mere change in the scale of measurement; the differences, should however, be fairly small.

since that table is based on ranks and not on quantitative changes in size. The suggestion is, however, confirmed by a further analysis carried out as follows. The Giants were divided into two groups: those above rank 50, and those below it. The standard deviations of the rates of growth were calculated for each group and found to be 5.4 points for the larger companies, and 6.7 for the smaller companies. The former may be judged to be significantly smaller on the usual statistical test.¹

It appears therefore that the greater size of the top companies carries with it a smaller variability²; this is probably a consequence of the wider range of their activities, a failure in one branch being offset by success in another. This, again, could account for their greater reliance on Debenture finance; for the higher gearing of the Ordinaries would be offset by a lower variability in financial experience, and the degree of risk attached to the Giants' Ordinaries may consequently be no greater than that for the Rest's Ordinaries.

A final issue requiring examination is the relation between the rate of growth of a company and the industry in which it is engaged. The simplest way of examining this relation is to look at the very familiar names of the fastest- and slowest-growing Giants. Table IV sets out ten³ of each,

TABLE IV
Fast and Slow Growers among the Giant Companies, 1948-53
(Percentage change in net assets per annum)

Fast.	Rate.	Slow.	Rate.
1. Albright & Wilson (Chemicals)	29	Associated British Picture	-1
2. A. E. Reed (Paper)	26	Odeon Theatres	-1
3. Monsanto (Chemicals)	24	Kemsley Newspapers	0
4. De Havilland (Aircraft)	24	Charrington (Brewery)	0
5. Hawker Siddeley	24	Bovril (Food)	1
6. English Electric	24	M. Burton (Clothing)	1
7. Babcock & Wilcox (Boilermakers)	24	Walker Cain (Brewery)	1
8. Rolls Royce	21	Barclay Perkins (Brewery)	1
9. British Oxygen	20	Bass Radcliff (Brewery)	1
10. Steel Co. of Wales	20	Debenhams (Stores)	2

together with their rates of growth. It will be seen that there is virtually no overlap in the industries covered by the two groups; the closest in activities are the paper companies, Albert Reed and Kemsley—but the former is engaged in paper-making and the latter in publishing, which are really

¹ In terms of the five-year rate of expansion, the standard deviations were 33.7 and 48.9 points. Hence $z = 0.37$ and, on large-sample theory, its standard deviation is 0.14; significance is therefore established close to the 1% level.

² This seems to be in contrast with the findings in "The Analysis of Business Concentration: A Statistical Approach," by P. E. Hart and S. J. Prais, *J. R. Statist. Soc.*, 1956, A, Vol. 119, p. 150, where it appears that all companies are subject to much the same degree of variability in growth. It may be, however, that the present finding is limited to the very large companies, and that the variability does not increase much further for smaller companies.

³ Chosen from a list which includes the dozen in the "turnover."

different. The breweries account for four of the ten slow growers. The others are a group of middle-class department stores; Burton's, who suffered from the Korean price fluctuations; the two cinema organisations, feeling the effects of competition from other forms of entertainment (private motor-ing is probably as important here as television); and, oddly enough, Bovril (affected by a variety of adverse factors, particularly in Australia and the Argentine).

The fast-growing companies are in the well-known expanding industries: plastics, various branches of heavy engineering, especially electrical engineering, aircraft and vehicles. Perhaps the main point to be noted here is the very magnitude of the rates of growth of the net assets of these firms (generally more than paralleled by the rise in their profits): a rate of growth of 25% a year leads to a trebling of size in five years, and would lead to an almost tenfold increase in a decade.

But success or failure is, of course, not merely a matter of being in the right industry at the right time though—as has often been said—it is unquestionably of great help. I.C.I. and Unilever, both operating mainly in the expanding chemicals trades, and the largest industrial companies on our list, were expanding their assets at a rate in the region of 12% a year; this is above the average, but quite a way from the top of the class. Of course, the absolute amount of their expansion—about £100 million in the five years by each company—far exceeds that of any other concern. Again, B.S.A. (growth rate of only 3%), which one might have thought to be operating in a favourable environment, was on the list of the largest hundred in 1948 (rank 86) but had been squeezed off by more progressive concerns in the course of the following five years. And, to take a contrary example, while breweries were generally dull, Whitbread was able to expand at some 8% a year.

V. SUMMARY AND CONCLUSIONS

The relation between the size of a company and its financial experience has been examined in this paper by contrasting the largest hundred companies with all other quoted companies. This is a relatively crude size-grouping and, undoubtedly, in certain of the analyses a finer grouping would have been an advantage; nevertheless, a number of conclusions may be drawn.

(a) The accounts of the two sets of companies examined are remarkably similar; it is, perhaps, not going too far to say that the similarities are more impressive than the differences.

(b) The large companies have been expanding more rapidly than the small; the profits of the former grew at a compound rate of 12% a year in the period 1949–53, and the latter at 8%.

(c) In consequence of their more rapid rate of growth, the largest

hundred companies increased their share of national profits in this five-year period from about 25 to about 32%.

(d) The proportion of income ploughed-back is slightly greater for the larger companies; and they have financed a rather greater proportion of capital expenditure by new issues.

(e) The composition of new issues differs between the two sets of companies: while Ordinaries are of about equal importance for both, the larger companies raise more in Debentures and Notes; Preference Shares, though generally unpopular, were issued almost entirely by the smaller companies.

(f) The larger companies hold a smaller proportion of their net assets in liquid form. Liquidity, as measured by this proportion, has fallen during this period for both sets of companies.

(g) The smaller companies appear to have a more variable experience than the larger companies; while this tendency can be detected by statistical tests, the difference in variability is perhaps not of great economic importance.

(h) The rate of expansion of a company is closely but not inflexibly related to the industry in which it operates; that is to say, while the fastest-growing companies are entirely in the expanding trades, and the slowest in the unprosperous trades, yet there are many other companies which—for management or other reasons—expand at an average rate and are only mildly influenced by the particular experience of their trade.

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APPENDIX

Notes on the Data

Table I. This is based on the tables in *Company Income and Finance, 1949–53*, pp. 22 and 66, relating to the largest hundred companies and to all quoted industrial companies. In order to derive the column relating to the Rest, the following series were subtracted from the “linked series” for all companies: (a) the largest hundred companies; (b) any quoted companies acquired by the largest hundred at some point within the period (see p. 257 above; these are automatically excluded after acquisition, and have therefore to be subtracted for the years before acquisition: the profits of these companies are only $\frac{1}{4}$ % of the Rest's); (c) the twenty non-quoted companies that were included in the original tabulations (see *ibid.*, p. 5).

For convenience of presentation a number of the smaller items have been grouped into a single total in this table. The following deserve explicit comment. (a) “Net trade credit extended” is the excess of debtors over creditors. (b) “Provisions” in the capital account consist of provisions for tax and dividends due, together with any other provisions less any expenditures out of those provisions. (c) “Reserves” include revenue, capital and tax reserves. The difference between the amount shown as retained in reserves in the Appropriation Account, and the amount shown as additions to reserves in the Sources and Uses statement is therefore due (principally) to the additions to tax reserves, and to the (generally small) adjustments to capital reserves resulting from items such as war-damage claims, or the setting up of pension funds.

A word may be in order here on two further items in the Capital Account: (i) "acquisition of subsidiaries," and (ii) "adjustments for consolidations, etc." These items occur only in the Sources and Uses statement, and there are no corresponding items in the balance sheet. They arise as follows. If a company purchases the shares of another company, so that it becomes a subsidiary, the expenditure on the shares is shown under (i); at the end of the year, however, the several assets and liabilities of the subsidiary are consolidated with the parent, and are therefore shown under the appropriate *other* headings in the balance sheet.

In the process of preparing the figures, a certain amount of double-counting is unavoidable in such acquisitions, and a part of the expenditure in acquiring the subsidiary also appears in the expenditures on the several asset items. These portions are offset by an adjustment for consolidation which appears as the greater part of (ii). Further details are given in *Company Income and Finance, 1949-53* p. 5.

Table II. The sum of the trading profits for the five years differs slightly from that given in Table I because of "prior-year adjustments." These cannot be allocated to the single years, but, since they relate largely to the five-year period, have been added to the trading profit in Table I.

Row no. 3, relating to all industrial companies, is based on the Blue Book, 1956, Tables 31 and 35. The figures given relate to gross profits in all manufacturing, building and contracting, the distributive trades, and nationalised iron and steel. The last is included since iron and steel companies, whether nationalised or not, are included in the tabulations in *Company Income and Finance, 1949-53*.

Table III. The names and ranks of the largest hundred companies in 1948 are given in *Company Income and Finance, 1949-53*, p. 71, and for 1953 may be taken from *A Classified List of Large Companies Engaged in British Industry* (London: National Institute of Economic and Social Research, 1955), p. 9, provided any shipping and oil companies included there are neglected. The dozen companies that leave the 1948 list in the course of the period, referred to on p. 259 above are: Associated Newspapers, B.S.A., Barclay Perkins, Bleachers' Association, Bovril, Bradford Dyers Association, Courage, Harrods, International Tea Company's Stores, Phillips (Godfrey), Ralli Brothers and Sears & Co.

They are replaced in 1953 by: Albright & Wilson, Broadcast Relay Service, De Havilland Holdings, Dickinson (John) & Co., Lewis's Investment Trust, Leyland Motors, Monsanto, Reed (Albert E.), Robinson (E. S. & A.), Rolls Royce, Ruston & Hornsby and Staveley Coal & Iron Co.

STABILISATION POLICY AND THE TIME-FORMS OF LAGGED RESPONSES¹

In an earlier article² I used a number of dynamic process models to illustrate the operation of certain types of stabilisation policy. In setting up the models I assumed that each lagged response was of the particular time-form known as an exponential lag. I pointed out³ that other time-forms would probably give better representations of the real responses in an economic system, but did not introduce these more realistic lag forms into the models owing to the difficulty of solving the high-order differential equations to which they would have led.

Since then the National Physical Laboratory and Short Brothers and Harland, Ltd., have allowed me to use their electronic simulators, by means of which the time responses of quite complex systems with a variety of lag forms can be found very rapidly.⁴ In addition, I have become more familiar with the frequency-response method of analysis based on the Nyquist stability criterion. This is a graphical method which not only enables considerable information to be obtained about the dynamic properties of a system without solving the differential equation of the system, but also gives valuable insight into the ways in which the dynamic properties would be altered if the relationships and lag forms in the system were modified or additional relationships included.⁵

A study, using frequency-response analysis and electronic simulators, of the properties of models in which the lags are given more realistic time-forms has shown that the problem of stabilisation is more complex than appeared to be the case when attention was confined to the simpler lag forms used in

¹ I wish to thank Professor R. G. D. Allen, Professor J. E. Meade, Professor Lionel Robbins and Mr. R. H. Tizard for helpful comments on an earlier draft of this paper.

² "Stabilisation Policy in a Closed Economy," *Economic Journal*, June 1954, pp. 290-323.

³ *Ibid.*, p. 292.

⁴ I am indebted to the Director of the National Physical Laboratory and to Short Brothers and Harland, Ltd., for permission to use the simulators. At the National Physical Laboratory, where most of the work was carried out, Mr. D. V. Blake operated the simulator and gave invaluable help and advice. I benefited greatly from discussions with him and am most grateful to him for his willing co-operation. I also wish to thank Mr. E. Lloyd Thomas, Mr. R. J. A. Paul and Mr. P. A. R. Wright of Short Brothers and Harland, Ltd., for their assistance. The possibility of using electronic simulators for studying problems of economic regulation was suggested to me by Mr. R. H. Tizard.

⁵ There is an extensive literature on the use of frequency-response methods in the analysis and synthesis of engineering systems. See, for example, H. M. James, N. B. Nichols and R. S. Phillips, *Theory of Servomechanisms* (New York: McGraw-Hill Book Co., 1947) and G. S. Brown and D. P. Campbell, *Principles of Servomechanisms* (New York: John Wiley and Sons, 1948). For a brief description of the methods with some applications to economic problems see A. Tustin, *The Mechanism of Economic Systems* (London: William Heinemann, Ltd., 1954), especially Chapter III. See also R. G. D. Allen, "The Engineers' Approach to Economic Models," *Economica*, May 1955, and R. G. D. Allen, *Mathematical Economics* (London: Macmillan and Co. Ltd., 1956), Chapters 8 and 9.

my earlier article. In this study a number of alternative models were first analysed by the frequency-response method, and the effects of variations in the lag forms and the values of the parameters on the stability of the models were investigated. Some of the models were then set up on the electronic simulators, disturbances were applied and the resulting time paths of the variables were found. In the present article two of the models which were studied are described and their dynamic properties illustrated by recordings from the electronic simulators.

I. A MULTIPLIER MODEL WITH ERROR CORRECTION

The first model is shown diagrammatically in Fig. 1, which is similar to Fig. 10 of my earlier article¹ except that the accelerator relationship has

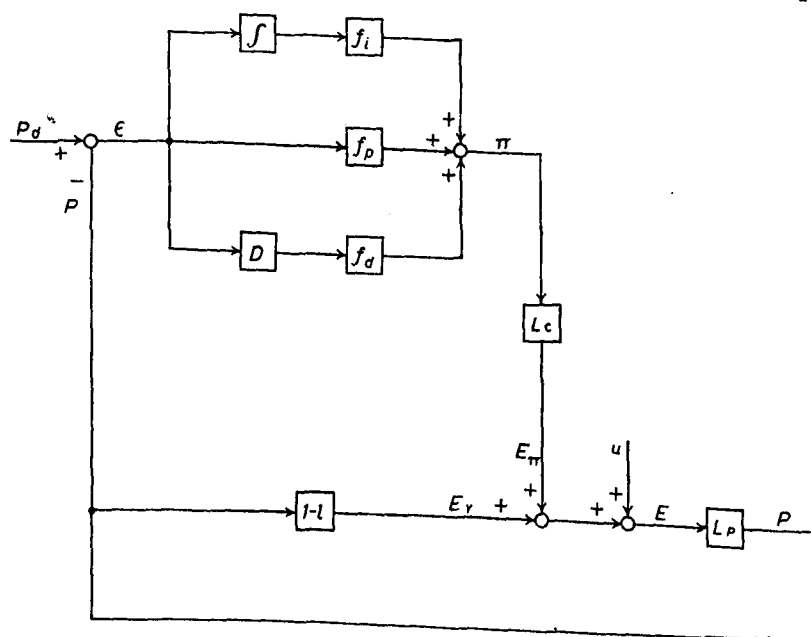


FIG. 1

been omitted. The lines in the diagram represent the variables of the system, measured as deviations from initial equilibrium values. Relationships between variables are indicated by the symbols in the squares, the arrows showing the causal direction of the relationships. The lower closed loop in the diagram represents a simple multiplier model. It is assumed that aggregate real income or production, P , responds to changes in aggregate real demand, E , through the lag relationship L_P . Changes in aggregate demand are analysed into three components, E_Y , E_π and u . E_Y denotes those changes in demand which are related to changes in income through the

¹ *Op. cit.*, p. 306.

marginal propensity to spend $1-l$. We shall give l , the "marginal leakage" from the circular flow of income, the value 0.25, so that the multiplier is 4.0. E_π is the policy demand, i.e., it is the amount by which aggregate demand is increased or decreased as a direct result of action taken by the regulating authorities for the purpose of stabilising the system. All changes in aggregate demand caused by changes in factors other than income and stabilisation policy are included in the variable u .

The relationships shown at the top of the diagram represent an error-correction type of stabilisation policy. The actual level of production is subtracted from the desired level of production, P_d , giving the error in production,¹ ϵ . It is assumed that the regulating authorities are able to make continuous adjustments in the strength of the correcting action they take but that there is a distributed time lag, L_c , between changes in the strength of the correcting action and the resulting changes in policy demand. The amount by which policy demand would be changed as a direct result of the policy measures if they operated without time lag will be called the potential policy demand, π , the amount by which it is in fact changed as a direct result of policy measures is the actual policy demand E_π .

The basic problem in stabilising production is to relate the actual policy demand to the error in production in such a way that errors caused by unpredictable disturbances are corrected as quickly and smoothly as possible.² For a given correction lag the problem reduces to that of finding the most suitable way of relating the potential policy demand to the error in production. In my earlier article³ I argued that to obtain satisfactory regulation of a system it is usually necessary for the potential policy demand to be made the sum of three components, one component depending on the error itself, one depending on the time integral of the error and the third depending on the time derivative (or rate of change) of the error. That is, the relationship should be of the form $\pi = f_p \epsilon + f_i \int \epsilon dt + f_d \frac{d\epsilon}{dt}$, where f_p , f_i and f_d are

parameters which I called respectively the proportional, integral and derivative correction factors. This relationship is represented by the three loops at the top of Fig. 1, the symbol $\int$ indicating integration with respect to time and D indicating differentiation with respect to time.

We shall consider three different forms of the production lag L_P . These are illustrated by curves (a), (b) and (c) of Fig. 2, which show hypothetical time paths of the response of production to a unit step fall in demand occurring at time $t = 0$. With lag form (a) the rate of change of production at any

¹ The error is here defined to be $P_d - P$ rather than $P - P_d$ as in my earlier article. In the literature on regulating systems the error in a variable is usually defined as the desired value minus the actual value.

² If reliable and frequent measurements of aggregate demand were available the potential policy demand could also be related to the error in demand. This would permit a more rapid correction of errors in production caused by shifts in aggregate demand.

³ *Op. cit.*, pp. 293-303.

time is proportional to the difference between demand and production at that time. We call this an exponential lag and define the time constant of the lag as the reciprocal of the factor of proportionality; for the response shown in curve (a) the time constant is 0.25 year. The exponential lag form is very convenient for mathematical treatment, but it implies a more rapid response in the early stages of an adjustment than is likely to be typical of economic behaviour. The time path of adjustment shown in curve (b) of Fig. 2 is probably more realistic. This time path is obtained if the lag is

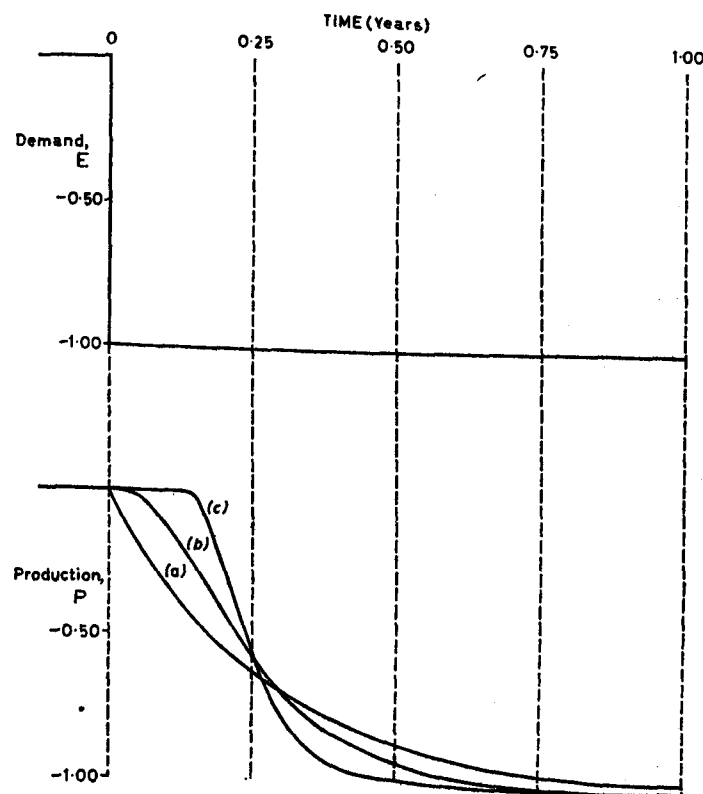


FIG. 2

equivalent to three shorter exponential lags operating in sequence, the time constants of the individual lags being 0.0833 year, so that the total time constant of the composite lag is again 0.25 year. This triple exponential form of lag is probably a fairly good representation of many economic relationships. In some cases, however, we should expect that there would be no response at all until some considerable time after a change had occurred, the time path of the adjustment being somewhat like that shown in curve (c) of Fig. 2. We shall call an interval during which there is no response at all a time delay, to distinguish it from the exponential type of lag

in which a continuous gradual adjustment takes place. The adjustment path in curve (c) results from a lag which is equivalent to a sequence consisting of a time delay of 0.125 year and three exponential lags each with a time constant of 0.0417 year, the total time constant of the composite lag again being 0.25 year.

The time forms which we shall use for the correction lag will be similar to those shown in Fig. 2, except that the time scale will be doubled. Thus lag form (a) for the correction lag will be a single exponential lag with a time

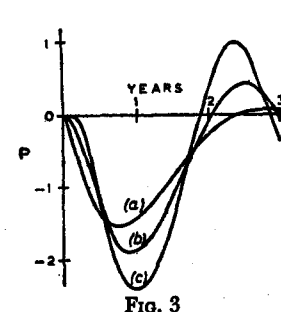


FIG. 3

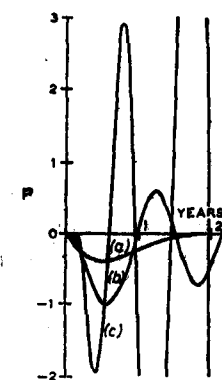


FIG. 4

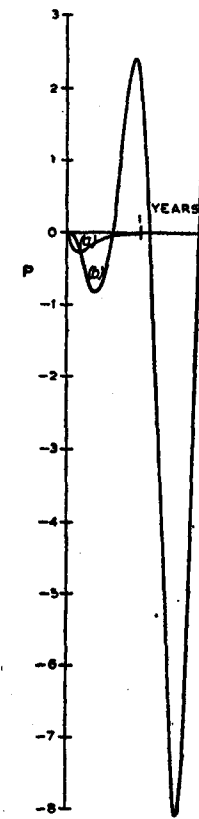


FIG. 5

constant of 0.50 year, lag form (b) will be a sequence of three exponential lags, each with a time constant of 0.167 year, and lag form (c) will be a sequence consisting of a time delay of 0.25 year and three exponential lags, each with a time constant of 0.0833 year.

Figs. 3, 4 and 5 reproduce recordings from the electronic simulators showing the response of production to a unit step change in the variable u applied negatively at time $t = 0$, for different combinations of correction factors and lag forms. The responses shown in Fig. 3 are obtained when the proportional correction factor f_p is 0.5, the integral correction factor f_i is

0.5 and the derivative correction factor f_d is zero. When both the production and the correction lags are of form (a) the response is that shown in curve (a).¹ When the lags are changed to form (b), the rest of the system remaining the same, the response is that shown in curve (b). When the lags are of form (c) the response shown in curve (c) is obtained. In the case now being considered, with proportional and integral correction factors of 0.5, the "overshoot" which occurs in the response when the lags are of form (b) or (c) can be eliminated by introducing a small amount of derivative correction. When the lags are of form (b) the overshoot is eliminated if the derivative correction factor is raised from zero to about 0.06; when they are of form (c) a derivative correction factor of about 0.09 is required to prevent overshoot in the response.

Curves (a), (b) and (c) of Fig. 4 show the responses obtained with lag forms (a), (b) and (c) respectively when both the proportional and the integral correction factors are 2.0 and the derivative correction factor is 0.5. With the higher values of the proportional and integral correction factors the system has become less stable, and even when the lags are of form (a) some derivative correction is needed to prevent an oscillatory response. When the lags are of form (b) the system is on the verge of instability. Nor can the response be improved by adjustment of the derivative correction factor. Any appreciable increase or decrease in its value makes the system completely unstable. When the corrective action has some effect fairly quickly, as is the case when the lags are of form (a), the use of derivative correction is a powerful method of reducing or eliminating fluctuations. But when the corrective action does not have much effect until some considerable time after it is applied, as is the case when the lags are of form (b) and still more when they are of form (c), derivative correction is less effective in reducing oscillations, and indeed if used excessively it will introduce an additional cycle of high frequency. When the proportional and integral correction factors are 2.0 and the lags are of form (c) the system is unstable for all values of the derivative correction factor.

Curve (a) of Fig. 5 shows the response when both the proportional and integral correction factors are raised to 8.0 and the derivative correction factor is 1.0, the lags being of form (a).² With lags of form (b) the response becomes that shown in curve (b). With lags of form (c) the system is so violently unstable that it proved impossible to obtain a satisfactory recording of the response given by the electronic simulator. Adjustment of the derivative correction factor again fails to stabilise the system in this case when the lags are of form (b) or (c).

Figs. 3, 4 and 5 show that a comparatively small change in the time-

¹ This response was obtained mathematically in my earlier article and was shown as curve (b) of Fig. 7, p. 300.

² This response was also obtained mathematically in my earlier article and was shown as curve (c) of Fig. 7.

forms of the lags may have a great effect on the stability of a closed-loop control system, especially if the values of the correction factors are high. It is in fact only in the simplest systems in which there are not more than two lags, each of single exponential form, that it is possible to give any value, no matter how large, to one correction factor and then to find values for the other correction factors such that the system is stable and non-oscillatory. Any system in which there is time delay or a sequence of more than two lags of single exponential form, or in which any lag is equivalent to a sequence which includes a time delay or more than two single exponential lags, as is the case with lags of form (b) or (c), will be stable and non-oscillatory only if the values of the correction factors are kept sufficiently low. This limitation of permissible values of the correction factors implies a corresponding limit to the speed with which it is possible to correct an error caused by a disturbance.

It is not possible to make any completely general statement about the effect on the response of a closed-loop system of an alteration to one part of the system unless the remainder of the system is fully specified. It will, however, be found that except in very special cases which are most unlikely to occur in practice a reduction in the length of the correction lag brought about by a reduction in the time scale, the form of the lag remaining unchanged, increases the maximum values of the correction factors that can be used without causing instability, and so permits a more rapid correction of errors. A similar effect is produced, again except in very special cases, if the form of the correction lag is altered from form (c) through form (b) to form (a). As can be seen from Fig. 2, this implies that the maximum values of the correction factors that can be used without causing instability are increased if the interval between the time when an error occurs and the time when the corrective action *begins* to take effect is reduced, even if the time required for the full effect of the corrective action to be obtained is simultaneously increased. Thus it is important, both for obtaining rapid correction and for avoiding instability, that the corrective action should be adjusted continuously and quickly to changes in the error and that it should have some initial effect quickly; whether its full effect is obtained quickly or slowly is comparatively unimportant.¹

We have seen from Fig. 3 that a cycle with a period of about three years occurs if the lags in our system are of form (b) or (c) and if the proportional and integral correction factors are 0.5 (which may perhaps be about the order of magnitude of these correction factors that can be attained in actual economic regulation) unless a small amount of derivative correction is also applied. Since the basic multiplier model which has been used so far is

¹ Justification of the above statements would require an extensive use of the frequency-response method of analysis and cannot be given here. The reader who wishes to acquire sufficient familiarity with the method to convince himself of their truth will find the necessary material in the works cited in footnote 5, p. 265.

to be of form (a) with a time constant of 0.125 year. We shall, however, give the marginal leakage, l , the value 0.4 instead of its previous value 0.25. This reduces the multiplier from 4.0 to 2.5, which is probably a more realistic value, and makes the system more stable. We assume a correction lag of form (c) with a total time constant of 0.5 year and a production lag of form (b) with a total time constant of 0.25 year.

When all three correction factors are zero the response of production to a unit step change in the variable u , applied negatively at time $t = 0$, is the damped inventory cycle shown in curve (a) of Fig. 7. If derivative correction only is applied the equilibrium position of the system is unchanged, so the error in production persists. With low values of the derivative correction factor the fluctuations in the response are reduced, but with

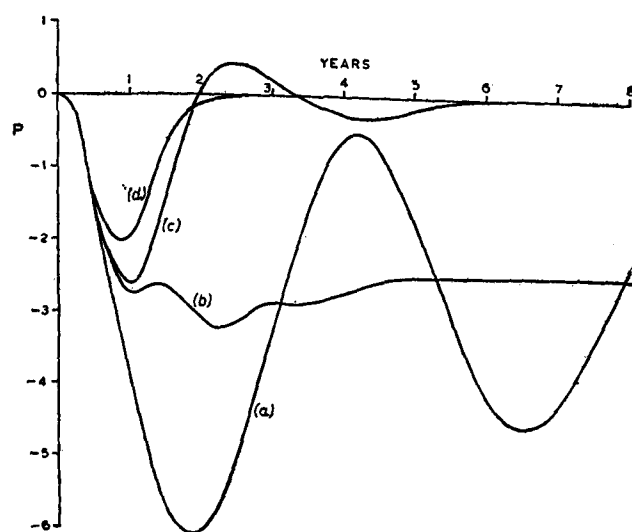


FIG. 7

higher values another cycle appears with a period of just over one year, and if the derivative correction factor is raised above 0.38 this cycle becomes explosive. Curve (b) of Fig. 7 shows the response when the derivative correction factor is 0.25.

If proportional correction only is applied, the fluctuations in the response are slightly reduced when the value of the proportional correction factor is very low, but if it is raised above 0.1 the fluctuations become worse again and the system becomes unstable when the proportional correction factor is raised above about 0.28. If any integral correction at all is applied alone the amplitudes of the fluctuations increase and the system becomes unstable if the integral correction factor is raised above about 0.08. Similarly, any combination of proportional and integral correction without the addition of derivative correction reduces the stability of the system and increases the

magnitudes of the fluctuations unless the two correction factors have extremely low values, while if the values are extremely low the improvement in the response is negligible.

Even if derivative correction is included in the stabilisation policy, the speed with which an error can be corrected is rather limited. About the best response that can be obtained is that shown in curve (c) of Fig. 7. This response results when $f_p = 0.3$, $f_i = 0.4$ and $f_d = 0.2$. Higher values of the correction factors worsen the response by reducing the stability of the system. If the correction lag is changed from form (c) to form (b), the time constant remaining at 0.5 years, the correction factors can be increased a

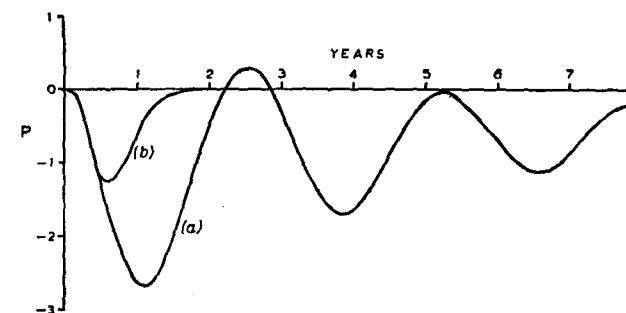


FIG. 8

little. The best response is then that shown in curve (d) of Fig. 7, the correction factors being $f_p = 0.4$, $f_i = 0.5$ and $f_d = 0.3$.

If the correction lag is of form (b) with a total time constant of 0.25 year the best response is obtained when $f_p = 0.9$, $f_i = 0.9$ and $f_d = 0.25$. It is shown as curve (b) of Fig. 8. It is of interest to note that even with this correction lag the stabilisation policy is not satisfactory unless it includes an element of derivative correction. If $f_d = 0$ about the best response that can be obtained is that shown in curve (a) of Fig. 8, the proportional and integral correction factors being 0.4 and 0.1 respectively. With either higher or lower values of f_p and f_i the fluctuations are of greater amplitude.

III. CONCLUSIONS

Because of the simplified nature of the models considered in this paper the results that have been obtained cannot be applied directly to the interpretation of actual economic situations. Indeed, one of the first lessons one learns from studying a variety of hypothetical models is that the problem of economic stabilisation is, even in principle, an extremely intricate one, and that a much more thorough investigation of both theoretical principles and empirical relationships would be needed before detailed policy recommendations could be justified. A few very elementary conclusions can, however, be drawn with some confidence.

The first is that the regulation of a system can be improved if the lengths of the time delays operating around the main control loop are reduced. The distinction between delays and lags should here be noticed. What is of primary importance is that the correcting action should be adjusted continuously and with the minimum possible delay to changes in the error and that the adjustments should quickly produce some initial effect. It does not matter very much if it takes a long time for the policy changes to have their full effect. In fact, it can be shown that if there is a long delay before corrective action is taken or before it begins to have an appreciable effect it is better that the effect, when it does come, should be gradual rather than sudden. The worst possible condition for regulating purposes is one in which the adjustment of policy demand to a change in the error is delayed for a considerable time and then effected quickly and abruptly.

A second conclusion is that it is usually necessary to include an element of derivative correction in a stabilisation policy if regulation is to be satisfactory. In other words, the potential policy demand should be made to depend not only on the magnitude of the current error and on the sum of the past errors,¹ but also on the rate of change of the error, or when observations are at discrete intervals on the difference between the last two observed values of the error. The longer the time delays in the responses around the main control loop, the less effective is derivative correction in reducing fluctuations. Nevertheless, the longer the delays, the more desirable it is that some derivative correction be used, since the delays reduce the stability of the system and so make it more important that whatever stabilising effect can still be obtained by derivative correction should not be foregone.

A third conclusion is that if the lags in the real economic system are at all similar to those we have used in the models it is unlikely that the period needed to restore any desired equilibrium conditions after an economy has experienced a severe disturbance could be much less than two years, even assuming that the regulating authorities use the policy which is most appropriate to the real system of relationships existing in the economy. As these relationships are not known quantitatively, it is unlikely that the policy applied will be the most appropriate one, it may well cause cyclical fluctuations rather than eliminate them.

It is true that many relationships inherent in the real economic system have been omitted from our models and that some of the omitted relationships seem intuitively to be of a stabilising type. But intuitions about dynamic processes may be dangerously misleading and need to be carefully tested. Most of the inherent relationships which at first sight would seem

¹ The quantity to which integral correction is related is the integral, or sum, of all past errors. In practice a good approximation to integral correction would be obtained if the integral component of potential policy demand was made to depend on the sum of the errors over the past four or five years or on a weighted sum of these errors, the earlier errors being given less weight than the later one.

to have stabilising effects can be expressed in forms similar to the policy relationships in the models we have been using. If the lengths and forms of the time lags of these inherent relationships are also similar to those which we have assumed for the correction lag the effects of the inherent relationships will be similar to the effects of the policy relationships which we have already considered. The existence of inherent relationships which appear intuitively to be of a stabilising type may therefore reduce the amount of correction that needs to be applied deliberately by regulating authorities (particularly the proportional and integral elements of correction; it is difficult to think of any inherent relationship which is equivalent to the derivative element of a correction policy), but will not reduce the time required to restore equilibrium after a disturbance unless these relationships operate with shorter time lags and delays than we have been assuming. Nor do the additional inherent relationships make it more likely that cyclical fluctuations will be avoided. In fact, they make it less likely, since it becomes very difficult to judge what quantitative values should be given to the deliberate policy relationships when the system already contains numerous inherent relationships whose magnitudes and speeds of operation are unknown.

The main conclusion that must be drawn from this investigation is that much more research is needed in the general field of economic regulation. To throw light on the practical problems involved in regulating complex economic systems it is necessary to study the properties of more realistic models in which non-linear relationships, growth trends, multiple objectives and multiple disturbances are incorporated. The means for carrying out such studies are now becoming available and should be fully exploited. It is equally important that improved methods should be developed for estimating quantitatively the magnitudes and time-forms of economic relationships in order that the range of permissible hypothesis may be restricted more closely than is at present possible.

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A REHABILITATION OF "CLASSICAL" ECONOMICS?

It is a strange thing that twenty years after the publication of the *General Theory*, doubt should still persist, even among careful thinkers, about the exact nature of the innovations which led Keynes to different results from those which had generally been accepted by his predecessors. Some of the innovations of the *General Theory* are innovations of method, which opened the way to new results, or provide better ways of reaching old results; with these I am not here concerned. But there are important cases in which Keynes' predecessors said one thing, and Keynes said exactly the opposite; where Keynes maintains that something is true which earlier economists, who had spoken with authority in their own time, had stated quite definitely to be false. What is the basic reason (or reasons) for this turnabout?

It seems to me that it is the principal contribution of Professor Patinkin's recent book¹ that it does throw some light upon this question. Not quite intentionally, perhaps; for he is not writing to elucidate the "Keynesian Revolution," but to deny that it is a revolution at all. The theory which Patinkin sets out, though it owes much to Keynes, is not Keynesian; it is a modernised version of the theory which Keynes called "classical." It retains (and is shown to retain) complete continuity with the doctrines that were taught by leading economists in the two hundred years before 1936. But it is so carefully and elaborately set out, in such a variety of forms that are shown to be equivalent, that the inessentials fade away, and the crucial points on which the difference remains stand out sharply. When it comes to these crucial points, I should myself take the other line from his; but Patinkin has helped me to understand just why I differ from him; but agree that he has "integrated monetary and value theory"; but he has performed an extremely useful control experiment.

Since I take this view about the book, I find myself as reviewer in a somewhat awkward position; the main things I have learned from it are not what the author meant to teach me. I see in consequence no alternative but to write a rather unorthodox review. I shall be obliged to depart, to some considerable extent, from the text before me, in order to explain the point of view which I have been led to take up on the matters with which the book is concerned.

I

The crucial point, as I now feel quite clear, on which the individuality of the Keynes theory depends, is the implication that there are conditions in which the price-mechanism will not "work"—more specifically, that there

¹ D. Patinkin, *Money, Interest and Prices: an Integration of Monetary and Value Theory* (Evanston, Illinois: Row Peterson, 1956. Pp. 510. \$7.00).

are conditions in which the interest-mechanism will not work. The special form in which this appears in the *General Theory* is the doctrine of the *floor* to the rate of interest—the "liquidity trap" as Sir Dennis Robertson has called it. But there are other possible ways in which interest may not work, which we shall be considering later. It is very probable that Keynes did not see this clearly at the time when he was writing;¹ he was still in two minds whether he believed in curing unemployment by monetary expansion, or whether he had come to hold that mere monetary stimulus was liable to be ineffective if it was not backed up by more direct methods. On the practical level he was still trying to keep a foot in both camps. But on the theoretical level he was already committed by the logic of his system (it is this which I think is proved by Professor Patinkin's experiment) to the second of these alternatives.

In a world where the interest-mechanism can always operate—where the rate of interest is flexible, and sufficiently flexible, in either direction, for its movements to have a significant effect on (saving or) investment—the Keynes theory is true and the "classical" theory is true; they lead to the same results. Though the paths of analysis are different, the end-results, achieved when all the same things have been taken into account, are the same. And either analysis can be put into a general-equilibrium form in which it is directly apparent that they come to the same thing.

Thus, for instance, Keynes would argue that an increase in the propensity to save (money wages being fixed) would diminish employment directly; but he would then qualify this statement by an admission that the diminished demand for transactions balances would lower the rate of interest (if interest is flexible), and that this would have a secondary effect increasing investment and hence employment—but to something less than its former level. A properly equipped "classic" would get to the same result by a different route. He would argue that the increase in saving would *directly* reduce the rate of interest, so that employment would increase in the investment-goods trades as it diminished in the consumption-goods trades; but he could (or should) go on to admit that the increase in saving would carry with it a diminution in the velocity of circulation (some of the saving would be hoarded), so that, with an inelastic monetary system, and the fixed money wages that are being assumed, there would still be a net decline in employment. A general-equilibrium theorist would show the saving operating on interest and employment simultaneously. One can put the systems through their paces in many such ways, and—so long as the interest mechanism functions—one must come in the end to the same result by each method.

Instead of checking over, in the above manner, all the manifold cases which require consideration, it will be more revealing to proceed diagrammatically. And here, instead of making a selection among Patinkin's cornucopia of diagrams, I may be allowed to use the apparatus to which I

¹ *General Theory*, pp. 201-4; Patinkin, p. 245.

am accustomed myself. So long as money wage-rates are given, it is possible, as I showed many years ago,¹ to express the essence of the Keynes theory on a single diagram. One measures Income (Keynes' Y) along one axis, and interest (r) along the other; one then draws an SI curve (based on the Marginal Efficiency of Capital schedule and the Consumption Function) connecting those levels of Income at which Saving equals Investment, at various rates of interest. Granted that Investment rises as r falls, and Y rises as Investment rises, this must be a downward-sloping curve. We then confront this curve with a LL curve showing the rate of interest at which the demand for money will equal a given supply of money, at each given Income (Y). Granted that the demand for money increases with Y , and diminishes with r (as Keynes maintains, and Patinkin does not object), this LL curve will be upward sloping. Equilibrium (which can easily be shown to be a

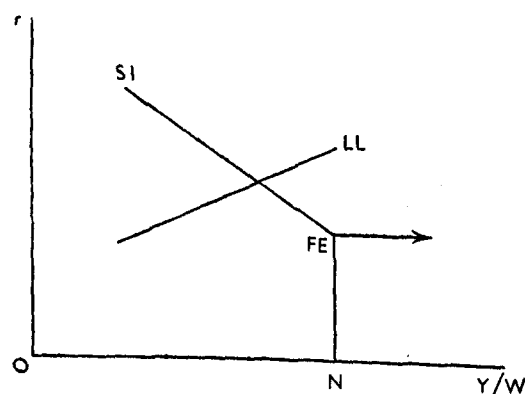


FIG. 1

stable equilibrium) is established at the point where these two curves intersect.

As this diagram was originally drawn, it laid excessive weight on the assumption of fixed money wages; even for the elucidation of Keynes, it paid insufficient attention to the possibility of Full Employment. For present purposes, it is essential that that gap should be filled. Suppose that (still assuming our given level of money wages) Full Employment is reached at an income ON . (Refinements about heterogeneity of labour supply, and such like, need not concern us here.) Further expansion beyond ON must be purely monetary in character, so that in money terms the SI curve must be horizontal beyond the point FE . But it is more satisfactory (Keynes would no doubt agree) to work from this stage onwards in real terms, so that Y is reckoned in wage-units. On this convention (adopted in Fig. 1) the SI curve will be unaffected until the Full Employment level is reached, but it will then be cut short at the point FE . Any attempt to move beyond FE

¹ "Mr. Keynes and the Classics," *Econometrica*, 1937. See also my *Contribution to the Theory of the Trade Cycle*, Ch. XI.

will induce a merely inflationary expansion that is *not* represented on the diagram, but of which the arrow that is shown serves as a reminder.

The decision to work in wage-units has no more than this limited effect on the SI curve; but its effect on the LL curve is more serious. When the price- and wage-level changes the LL curve will stay put only if the quantity of money remains unaltered in terms of wage-units; but there is in general no reason why it should do so. If the supply of money is fixed in money terms, then (when wages rise) the supply in terms of wage-units contracts, so that the LL curve moves to the left.¹ Thus, so long as the supply of money is restrained from expanding (in money terms), wage-inflation must bring its own cure. If, initially, the LL curve lies to the right of the FE point, the inflation itself will bring it back. (There does, of course, remain the danger that the inflation will have acquired such momentum that the FE point is overshoot before the leftward movement ceases—but that is not a matter which concerns us here.) Equilibrium will always be reached, if the supply of money is kept under control, at FE or on the downward-sloping part of the SI curve.

What I want now to emphasise is that the construction so far reached, though it has been expressed in a manner which has a Keynesian tendency, still contains nothing whatever that is inconsistent with "classical" theory. The only way in which it differs from what was taught by "classical" economists, from Hume to Marshall and Pigou, is in the assumption that it makes about the behaviour of wages—that they can flex upwards but not downwards; but this is a special assumption that can be incorporated into any theory. Certainly the economists of the past cannot be criticised for not making it, for in their time it would, quite clearly, not have been true. This is not a matter on which there can be any theoretical contradiction; it is the kind of change in the exposition of theory which we ought to be making, all the time, in response to changing facts.

If it was desired to apply the above construction to a world in which wages could flex in *both* directions, no major change would have to be made. It would only be necessary to introduce a "Full Unemployment" point FU , beyond which wages would fall, just as they rise beyond the Full Employment point FE . Beyond FU the curve would be cut off, just as it is cut off at FE . If, initially, the LL curve lay to the left of FU , there would be a fall in prices and wages; but this would *increase* the quantity of money in terms of wage-units, so that the LL curve would move to the *right*. Provided that the shape of the LL curve is as I have drawn it (Fig. 2), equilibrium must be restored on the sloping part of the SI curve—at FU or at FE or somewhere between them.

¹ This (substantially) is the "real-balance effect" of which Patinkin makes so much. I see no reason at all for supposing that it is not (implicitly) included in the Keynes theory. There may, it is true, be a certain "real balance effect" before wages rise, if prices rise ahead of wages; but that is incorporated in the LL curve itself.

The theory which is illustrated in Fig. 2 is, I believe, one form of "classical" theory; one can recognise it in Hume¹ and Thornton,² and it is a part of the theory which is being put forward by Professor Patinkin himself. But it is not the whole of the classical theory on this matter, for there is an important respect in which it is unsatisfactory. It pays insufficient attention to the element of time.

It assumes (justly, for the circumstances with which it had to deal) that wages can flex in both directions; but it does at the same time permit a certain rigidity. Over a certain range, wages are rigid. But though it is true that in a free market for labour, wages do possess a certain rigidity, that rigidity is not merely a matter of the intensity of the demand; it is also a matter of the time for which it lasts. If *FE* is taken to be the point at which wages will rise *at once*, when that intensity of demand is reached (and similarly for *FU*), it would be nonsense not to suppose that the two points would be quite far apart; but if they are understood as the points at which

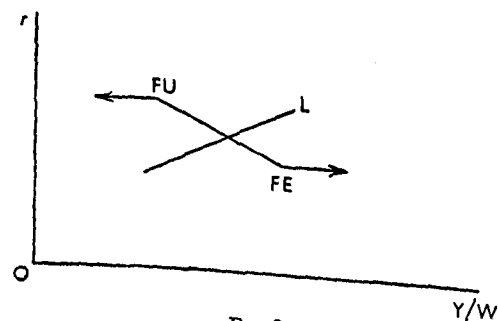


FIG. 2

wages will move if demand is maintained at such a position for some considerable time, then (it would be reasonable to suppose) they might be quite close together. Thus while the classical theory has a short-period form, in which it is representable by Fig. 2, it also has a long-period form (which, admittedly, tended in practice to engross far too much attention) in which all prices, including wages, are taken to be *completely* flexible, so that *FE* and *FU* collapsed to a single point. The *SI* curve with which we began has then

Once this collapse has occurred, we get no further advantage from working in wage-units, and it is easier to revert to the measurement in terms of money with which we began. The classical *long-period* theory (or *full-equilibrium* theory, it might be better to call it) is then representable by Fig. 3, in which *r* is again expressed in money terms, while the *SI* curve has become a horizontal line, movement along which represents nothing else

¹ "Essay on Money" (*Philosophical Works*, ed. Green and Grose, Vol. III, p. 313).
² *Paper Credit* (ed. Hayek), pp. 118-19, 236.

but a merely monetary expansion (or contraction). The *LL* curve is now fixed in position, as soon as the money supply (in money-units) is given. Here at last we have the rate of interest solely determined in real terms (by productivity and thrift); for the height of the horizontal line is solely dependent upon the real factors in the system; it cannot be affected by the position of the *LL* curve. All that the *LL* curve here determines is the level of money incomes. The "dichotomy" between real and monetary economics, on which Professor Patinkin has so much to say, has appeared.

It must be freely admitted (and the point is emphasised by Patinkin) that "classical" economists, from Turgot and Smith onwards, did work far too much in terms of this full-equilibrium model; the qualifications due to the relative rigidity of wages (and some other prices), which should have been evident even from their experience, did not receive enough attention. But, after all, they did receive some attention, and not only from Hume and

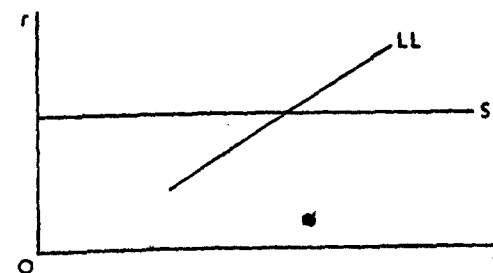


FIG. 3

Thornton. Even within the framework of classical analysis, it was possible to get a little farther on.

If one compares the two "classical" diagrams which we have drawn (Figs. 2 and 3), the interesting phenomenon which comes out is the tendency for an increase in the supply of money to produce a temporary equilibrium in which employment is higher, and the rate of interest lower, than in the corresponding full equilibrium. But this tendency could be analysed on classical lines, and was in fact analysed by some classical economists, from Bentham onwards, in their theory of "forced saving."¹ An increased supply of money would temporarily increase saving (even in real terms) through its distributional effects; this would force down the rate of interest, and (as was obvious to a believer in the Wage Fund) it would temporarily increase employment. Here again there is no fundamental opposition between the classical model and the Keynes model. What is, of course, true is that many classical economists disliked these consequences of their theory (it is amusing to watch Mill squirming to avoid them²), so that the full-equilibrium theory

¹ Cf. Hayek, "Note on the Development of the Doctrine of Forced Saving," *Quarterly Journal of Economics*, 1932; also Schumpeter, *History of Economic Analysis*, pp. 723-5.
² J. S. Mill, *Principles*, Book III, Ch. 23; see Schumpeter's comments in the passage just quoted.

always received more attention than the short-period theory. After 1850, with the decline in the Wage Fund (a decline which was itself a symptom of lack of interest in short-period phenomena), the concentration of interest on our Fig. 3, rather than our Fig. 2, is very complete.

II

All the same, it is at this point in the story that more must be said about the *LL* curve. I have drawn the *LL* curve with a gentle rightward slope; this, I think, is the correct form which it would take for an economist who recognised Keynes' *transactions motive*, and also his *precautionary motive*, but not his *speculative motive* (to which we shall come later). And that, I think, is how it would appear to the "properly equipped classical economist" whom I am using in this paper as an instrument of analysis. In fact, one can find the precautionary motive already in Thornton;¹ there are traces of it in Marshall;² after long travail, admirably explored by Patinkin, it emerges in Walras.³ Any of these writers should have recognised that the demand for money has some elasticity against the rate of interest; and that, in our terminology, should have given his *LL* curve a rightward tilt.

A less perspicacious economist, who recognised the transactions motive only (or some equivalent to it) would draw his *LL* curve simply vertical; if, as is only too probable, he also looked only at full equilibrium, so that his *SI* curve was horizontal (as in our Fig. 3), his whole "diagram" would have reduced to two perpendicular straight lines. The "dichotomy" is then complete; real and monetary theories have completely fallen apart. This is the case of the crude quantity theorist. But to suggest that such crude quantity theorising was characteristic of the more subtle minds among the older economists is a caricature of the history of economic thought.

Yet it is interesting to notice that one could be a crude quantity theorist, so far as the *LL* curve is concerned, and at the same time one could admit a distinction between temporary and full equilibrium (Figs. 2 and 3), with its consequence that an increase in the money supply can, in the short period, have a stimulating effect. So far as the real effects of monetary causes are concerned, the slope of the *LL* curve does not greatly signify.⁴ Where it comes from the *real side*.

¹ *Paper Credit*, pp. 96-7.

² *Official Papers*, p. 268; see Patinkin, p. 418.

³ Patinkin, pp. 377-412. His detailed examination of Walras is one of the most impressive parts of Patinkin's book.

⁴ This has often been misunderstood, as in the passage from Schumpeter previously noted. It is the assumption of instantaneous flexibility in wage-ratio, the lack of distinction between temporary and full equilibrium in the labour market, not adherence to a quantity theory, which prevents one from having a monetary theory of employment.

If one's *LL* curve is crudely vertical, a rise in the *SI* curve (due to an increase in the propensity to invest or a fall in the propensity to save) will simply raise the rate of interest; and this is true, whether one looks only at full equilibrium (Fig. 3) or whether one admits the possibility of a temporary divergence from that equilibrium (Fig. 2). But if one admits a precautionary motive (giving one's *LL* curve a rightward slant), then one should conclude that these real shifts will have monetary effects; the money value of income will be affected in the full equilibrium, while in the temporary equilibrium there may be effects on employment. I have not been able to find that there was any early economist who can be claimed as having thought the thing through right to this point; it looks as if it had to wait for Pigou and Robertson. Nevertheless, it is clear that one can go so far as this without straying outside the bounds of "classical" theory. One can still argue, in the old way, that the savings-investment change raises the rate of interest; and then qualify by observing that the rise in interest releases money balances, thus increasing effective demand.¹ Though we have got so near to Keynes, it is not yet necessary to argue the matter in a Keynesian manner.

There is, however, a further point. Though a full recognition of the role of the precautionary motive may have had to wait for the modern Cambridge school, the monetary effect of real causes could be recognised, and was recognised, within the classical theory, in another way. It was understood by Thornton (and even by Ricardo²) that a rise in the *SI* curve would ordinarily lead to an expansion of credit; whether one reckons that expansion as an increase in the supply of money, or as an increase in the velocity of circulation of money, is a question of the definition of money which one is using. If one adopts the former interpretation, recognition of the monetary effects of real causes can be reconciled with a formal adherence to the quantity theory in the strict sense; this is the interpretation of Wicksell (for instance) to which Patinkin naturally leans. Nevertheless, it is clear that the other interpretation was always open, and with the rather unformalised banking system of the early nineteenth century it was a natural interpretation. In Wicksell's case, in view of what he says about "virtual velocity of circulation,"³ I cannot believe it was wholly absent. Whether one draws up one's *LL* curve on the assumption that the quantity of money is constant in one sense, or in another sense, or whether one merely assumes some constancy in the pattern of behaviour of the monetary system, is in a certain sense a matter of detail. The step from Wicksell to Keynes, vital step though it is, remains from some perspectives a very short step indeed.

¹ This, of course, is Pigou's proposed way of arguing. See, for instance, his *Lapses from Full Employment*.

² "The applications to the bank for money depend on the comparison between the rate of profits that may be made by the employment of it and the rate at which they are willing to lend it." (*Principles*, Ch. xxvii: ed. Sraffa, vol. 1, p. 364.)

³ *Lectures*, Vol. II, pp. 67 ff.

III

In Wicksell, the *LL* curve is horizontal, because the banking system is operating in such a way as to maintain a constant rate of interest. If we put this constant market rate against an *SI* curve which has already defamed construction. "If the market rate is below the natural rate . . ." it all follows. Keynes is using the same kind of construction for the study of temporary equilibrium. But he is maintaining that the *LL* curve becomes horizontal (over certain ranges) not because the banking system is choosing to make it horizontal, but because it is unable to act in any other way. It is not merely that the interest-mechanism may be prevented from operating; there are also circumstances in which it cannot be made to work. We then become *obliged* to analyse what happens in a Keynesian manner.

So long as this possibility is ruled out, we are at liberty to say that saving and investment determine the rate of interest, and that the effects on employment (or on inflation and deflation) depend on the way in which the monetary system reacts to an interest change. Or we are at liberty to regard interest and "income" as being simultaneously determined, on general-equilibrium lines. But once the Keynes case has to be allowed for, both of these techniques fail us. If the rate of interest is liable to be "pegged" (not by any action of the monetary authority, but in the nature of the case), then we must treat the effect on income (and employment) as the primary effect, which may or may not be modified by indirect repercussions through the interest rate. It is no longer possible to use the general-equilibrium bridge to show that classical and Keynesian theories come to the same thing.

Since it is the essence of Patinkin's argument that they are the same thing, it is necessary for him to dispose of this critical case. In substance what he argues is the following.

Every economic unit (person or business) requires, on the average, to hold a certain proportion of its turnover (or we may say Income) in *liquid* form; but these liquid reserves do not need to be held in the form of money—they may be held in the form of securities (or bonds) which act as a money substitute. It is the proportion of its total liquid resources which the unit holds in money form which depends on the rate of interest. The lower the rate of interest, the larger the proportion that is held as money. But how low the rate of interest, this proportion cannot rise above 100%. Thus, once the supply of money has increased so far that bonds are no longer held as a money substitute, any further increase in the money supply must be spent upon goods; it must increase investment (or consumption) directly. It must accordingly raise the level of money incomes, on quantity theory lines, by the "real balance effect."

Let us look at this in terms of our diagram (Fig. 4). It is ordinarily

admitted that (with a given supply of money) the *LL* curve must be expected to become vertical at its rightward extremity. There is a minimum quantity of money which is needed to satisfy the transaction demand corresponding to a given money income; or (what comes to the same thing) there are units which are unable to use money substitutes as a means of satisfying their demand for liquid resources, however high the rate of interest rises. Thus, if the rate of interest rises very high, bonds will have displaced money in all those uses where they can displace money. It is Patinkin's contention that there is a corresponding vertical stretch at the other end, where money will have displaced bonds in all those uses where it can displace bonds. Thus the *LL* curve is *basically* vertical (the quantity theory is *basically* true); only it has a swerve in the middle, during which the system is switching over from one pattern of demand for money to another.¹

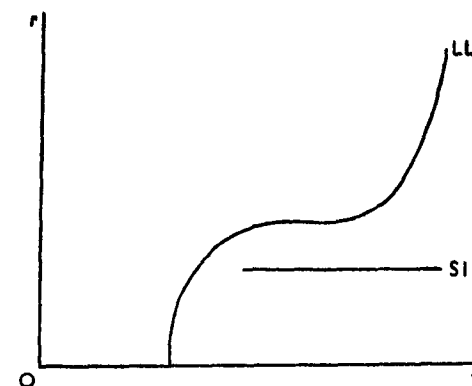


FIG. 4

With a curve of this character, there can be no danger of the *SI* curve falling so low that equilibrium cannot be restored in the end, if wages are flexible; if a (horizontal) *SI* curve lay below the horizontal (or nearly horizontal) part of the *LL* curve, the deflation would still be brought to a stop by an intersection with the vertical stretch to the left. (Or, if we insist that this equilibrium will be indefinitely deferred by the effect of the deflation on past debts, what is theoretically the same point can be made by asserting that equilibrium can always be restored by an increase in the supply of money; a rightward movement of the *LL* curve will always be effective in restoring equilibrium, provided the general shape of the curve is unaffected, as it is reasonable to suppose would be the case.) This, though he sometimes *seems* to rest his argument on different foundations, is the true basis for Patinkin's "classicism." If we grant him his vertical stretch on the left, his argument is conclusive; but if we do not grant it, his argument is

¹ The diagram which Patinkin himself uses to embody the above construction is on p. 148 of his book.

inconclusive, and we have to go back to Keynes (or something like Keynes) after all.

When it comes to this crucial point, it is a pity that Patinkin does not argue his case more fully; in particular, it is a pity that he does not test it by seeing how it looks when applied to less schematic models, which get a little closer to reality. If he had done so, I believe he would have seen that his "equilibrium" required not only that the monetary authority should buy up all the "bonds" which were being used as money substitutes, but that it should go to the point of superseding all the financial intermediaries—banks and other financial institutions—transactions between which regulate the whole *system* of interest rates which exist in reality. What Keynes seems to me to be saying, at bottom, is that a financial system, of the kind that exists in developed "capitalist" countries, cannot exist if the resultant rate of interest—the rate at which funds pass out of the financial system into real investment—is too low. The most that Patinkin can claim to have established is that the rate of interest might be forced still lower if that financial system were abolished, and the supply of funds to business were made directly by government. Whether or not that is the case—how far such a system is itself reconcilable with Patinkin's other assumptions—does not, in my view, affect the main issue. The effective answer to Patinkin is that in the applications we want to make we do not normally desire to proceed to such extremes. The horizontal stretch of the *LL* curve (at the level below which the financial system is unable to allow the rate of interest to go) is relevant to our discussions. The vertical stretch which may, conceivably, lie beyond it is not relevant.

For the justification of the Keynesian approach to these matters, it is not necessary to consider the limit at which the financial system breaks down. In order to show that we get a better understanding of these problems by considering effects on employment and income first, and then correcting by possible repercussions through interest, all that is necessary is to maintain that there are ranges over which the repercussions through interest will be rather insignificant. To do that no more is necessary than to emphasise the ability of speculative funds to stabilise the rate of interest against considerable disturbances. Which is effectively what Keynes did.

It should, however, be added in conclusion that the Keynes theory would be less important than it is if this were the only limiting case on which it threw light. The interest-mechanism may fail to operate, not only because the rate of interest may itself be insensitive to real changes, but also because (again over certain ranges and in certain circumstances) saving and investment may themselves be insensitive to changes in the interest rate. A Keynesian (non-classical) situation may arise, not only because the *LL* curve may be horizontal over certain stretches, but because the (short-period) *SI* curve may, over certain stretches, be vertical. A vertical *SI* curve, impinging upon a sloping *LL* curve, would show the rate of interest rising when

investment increased; but the rise in interest would be a matter of mere financial interest, without real effects. It is because of their desire to cover this case, quite as much as the other, that modern Keynesians are convinced that Keynes, unlike the "classics," did make the right approach. It is true that when the two theories are properly understood, and fully worked out, they largely overlap; but they do not overlap all the way, and when they fail to do so, the Keynes theory has the wider coverage.

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REVIEWS

The Theory of International Economic Policy, Volume II. *Trade and Welfare*.
By J. E. MEADE. (London: Oxford University Press for the Royal
Institute of International Affairs, 1955. Pp. xiv + 618. 45s.)
(*Mathematical Supplement*. Pp. vii + 128. 25s.)

PROFESSOR MEADE's second volume on international economic policy is a monumental work; it is likely to remain for long a standard of reference in this subject.

He prefaces his treatment of international trade and the international movement of factors by a section of sizeable length on the general theory of welfare, setting out the marginal equalities in trade, production and utilisation of factors required for the most efficient use of resources. He deals in this section with the question of equitable distribution and with optimum rates of population increase and saving. He introduces, with acknowledgment to Mr. Fleming, the concept of the "second best" for considering the expediency of marginal adjustments when other inequalities remain outstanding in other parts of the economy. Finally, he proceeds to the problems of structural change: marginal equalities are necessary conditions for optimum arrangements, but not sufficient conditions, where there are economies of large-scale production or external economies or diseconomies.

The system of concepts thus defined provides a framework for the consideration of international trade and factor movements. Starting with the *prima facie* case for free trade, Professor Meade assesses the arguments for modification under the various headings. A good deal of attention is given to "second-best" types of argument, including the case for a revenue tariff, anti-dumping duties, the partial freeing of trade and interferences designed to offset the effect of domestic divergencies between marginal cost and marginal value. The discussion of the structural argument for interference covers the classic case of "infant industry." The "terms of trade" argument is related to the equitable international distribution of income. Professor Meade proceeds to an equally systematic treatment of factor movements. Finally, there is an important section on multilateral trade, which includes a discussion of the burning question of discriminatory and preferential tariff reductions.

Professor Meade's touch is sure, one might even dare to say impeccable. He often finds a simple way of dealing with an apparently complex problem, and he also uncovers by his powerful methods of analysis many unsuspected complexities. All is set forth with his beautiful, calm lucidity. The sentences and sequences of argument are intelligible and convincing. No knowledge of mathematics is pre-supposed. All is worked out in terms of

simple arithmetical examples and admirable compendious tables showing the effects of certain changes. But for the inquiring mind another volume is available, providing a mathematical formulation of those propositions that need it. Thus the learned and the unlearned may both be satisfied.

One might deem it an almost miraculous achievement to have set forth such an elaborate and complex body of theory in terms so pellucid, that anyone in the least competent to study economics should be able with patience to get a grasp of it. But in this wicked world nothing seems to go quite right. It has to be admitted that this notable work is in certain respects unsatisfactory. For the sophisticated reader it is undoubtedly laborious. Everything is set out very fully. Complicated arithmetical examples, however intelligible, require some considerable effort of attention. The mature economist will be inclined to say: "Yes, we can see at once where that argument leads; spare us your almost painfully explicit elaboration of it." To read the text without skipping is exceedingly exhausting, but, owing to its smooth, continuous nature, to skip is dangerous. On the other hand, for the student there are none of those quips and cranks and wanton wiles by which those versed in the arts of popular exposition strive to lure on their readers. The result is that not nearly so many as it deserves will read this book diligently from cover to cover.

Professor Meade's former volume was criticised in this JOURNAL for adopting a purely taxonomic, as distinct from an econometric, approach to his problems. I was out of sympathy with that criticism. In the present phase of our science it is perfectly justifiable and most useful to conduct analysis by means of considering the consequence of various alternative conditions or policies. Quantitative laws are just not to hand, and it is impossible for a professor to excogitate them. None the less, I have felt, in this volume more than in the other, that more guidance would have been helpful about which among various possible conditions are likely to be realised, which deviations from norms are likely to be quantitatively important, and, more significant, which among various policies—export taxes, import subsidies and the rest—are likely to come up for practical consideration. Professor Meade has had most important top-level experience of actual discussions and negotiations among the governments of the leading nations about many of the policy problems dealt with in this volume. Its content is designedly entirely abstract and makes no reference to the events of history. If Professor Meade could have illustrated his points by reference to these all-important negotiations—without betraying official secrets!—it would have contributed enormously to vitalising this book. Of course, in certain cases it is possible to read between its lines. But then there are so many lines. And some of them have no reference to any possible situation. It is to be hoped that Professor Meade may yet give us a volume containing historical illustrations of some of his problems.

On the whole he makes it plain that in his own mind he distinguishes

purely Utopian conditions—he explicitly refers to conditions as Utopian in a number of connections—from those which, though set out in abstract terms, are reasonably close approximations to what may actually happen. But on one occasion at least he nods. Proposals for anti-dumping duties are very prominent in practical discussions for modifying freedom of trade; consequently one would expect in a treatise of this kind a fair and careful appraisal. Professor Meade takes the case of dumping by a monopoly. One immediately reflects that dumping, in the sense of charging a lower price abroad than at home, is an almost normal practice in what in ordinary language is called competitive industry. But a very little sophistication in economics enables one to save Professor Meade by assuming that one could in place of his “monopoly producer” substitute, without loss of relevance, “producer in imperfect competition.” But this exit is entirely barred by his reference in his concluding paragraph (p. 253) to the alternative of “restoring competitive conditions in the domestic industry.” The word “restore” almost suggests that he is the victim of the fallacy of a golden age when all competition was perfect. In olden times *all* competition was imperfect. Perfect competition is a refined product of civilisation, requiring excellent communications, sufficient initiative to generate a class of brokers, as well as methods for standardising and grading products. Nor would it help to substitute for “restoring” the word “creating.” In many, probably most, cases of imperfect competition, it would be impossible to create conditions of perfect competition, as, for instance, where there are no means available, or capable of being made available, to the buyer for assessing the quality of a product except the reputation of the maker. This whiff of unreality in so important a chapter is disturbing.

Professor Meade gives his imprimatur to the alleged conflict in certain cases between the compensation principle and the “bribery” principle. I believe this to be an unsettled question and to require further elucidation. Professor Meade in his example given to illustrate it (p. 73) assumes that price need have no relation to cost, but implies that factor income is governed by marginal productivity—an arbitrary distinction. He might plead that the cost-price discrepancy could be covered by a tax or subsidy; but so might one between marginal product and factor reward, as in the case of the recent “investment allowance.” The production functions implied appear to be fantastically unrealistic; this does not affect the validity of the argument, but more realistic assumptions about production, if they could have been devised, would have helped us to reach the very important decision whether this conflict occurs only in freak cases of no practical importance or is worthy of the prominence given it in Professor Meade’s text. Furthermore, it is a pity that he confused this straight issue in his illustration by irrelevant considerations of distributional equity; it would have been better to take a distributionally neutral case, as, for example, of brewery operatives who are more interested in TV than in drinking beer.

while the electrical operatives are more interested in beer than in TV. If a conflict arises between the compensation and the “bribery” principles in such a case, what does one *do* about it? By mixing an irrelevant distributional complication into the problem, Professor Meade avoids this interesting issue.

In his arithmetical example the paradox could be resolved by a small adjustment of definition, namely, if one said that the gainers could be deemed better off, after paying compensation, only if they could enjoy as much of one of the two commodities as before the change and *more*—it matters not how little more—of the other. If this definition of “being better off” were accepted, then it would be impossible for the losers to bribe the gainers not to make the change, and no conflict could arise between the two principles.

Professor Meade’s illustration seems to raise a far deeper issue than that involved in the “bribery” paradox. In the new situation the gainers have enough income, after paying compensation, to buy as much of the two commodities (100 apples and 200 blankets) at the new prices as they bought before. Actually under the influence of the new prices they buy a different combination (140 apples and 160 blankets); it is argued that since they have enough income to buy the old combination, they must prefer the new one, and are therefore better off. But could they really buy the old combination? Here a violent paradox arises. It is true that any one individual could buy the old combination, since at the new prices his income suffices for that. But let us suppose that all the gainers are like minded. On that supposition it is improper to suppose that anyone adjusts his budget pattern without all the others doing the same *simultaneously*; we ought to imagine them all chained together, each unable to move without bringing the others with him. If they all prefer 100 apples and 200 blankets to 140 apples and 160 blankets, they just cannot have them; the price of blankets would then be too high to put the old combination within the reach of their incomes. But if that is so, they are not better off, but worse off in the new situation. The position would be quite plain if one substituted for the class of gainers a single individual gainer whom we should have to suppose a monopsonist. It would be obvious that he could not enjoy 100 apples and 200 blankets, however much he preferred that to 140 apples and 160 blankets.

The defender of Professor Meade’s illustration might be disposed to job back and claim that any one individual could buy 100 apples and 200 blankets at prevailing prices and, since he does not do so, must prefer the other combination. I suggest that this is an optical illusion. Let him try. We must suppose, of course, that the others try at the same time. It will at once appear that the 100 apples and 200 blankets are beyond the means of one and all. It is possible that a cobweb would develop in such a situation. It is possible that the illustration given contains some hidden assumptions that are impossible. Anyhow the judicious reader should not take Professor Meade’s illustration as vindicating the alleged conflict between the com-

pensation and "bribery" principles. I need hardly add that the problems raised by it have a bearing on the logic of national-income computation.

Professor Meade gives generous measure to distributional considerations throughout his treatment. But there is a recurring reference, which is unsatisfactory, to the imposition of "distributional weights" *ab extra* by some "policy makers." He has to face the old question of interpersonal comparisons. "Most people would agree," he writes (p. 68), "that a crust alderman." When they "agree," they presumably deem the superior satisfaction of the beggar, and we, too, would deem it, an objective fact. But later (p. 70) he writes that "it is not suggested that such marginal utility indices are objective facts *which* can be objectively measured." (*Italics mine*; he does not write "that.") There is all the difference between being objective facts and being objectively measurable. Objective facts may be assessable by such broad quantitative expressions as "much objectively measurable; it is possible that small interpersonal differences of satisfaction are 'facts' (like the larger differences) but by no means 'fact' at all, owing to satisfactions not being atomic events, but coloured by the whole background of the psyche; it is possible that individuals A and B have such different organic psychical constitutions that a satisfaction enjoyed by A from some item of consumption is utterly different in kind from that enjoyed by B, so that the words more or less are meaningless in their application to these satisfactions. I do not pronounce upon this.

But if it is not a fact at all that the satisfactions arising from moderate differences of income are capable of being predicated as more or less, then such differences are not only not the business of the economist, they are nobody's business. What is not a fact at all cannot be assessed, quantitatively or otherwise, by anyone, and it cannot lead to any rational policy decision. It would be a mere impertinence for any policy maker to assign "distributional weights" on the basis of no fact, and the economist should in no case accept such weights. What the economist should do in these circumstances is to ignore distributional differences unless they are large enough to give rise to differences in satisfaction that are matters of fact.

But if the difficulty is, not that these differences are not matters of fact, but only that the assessment of the facts in question is uncertain (not "objectively measurable"), then we must do our best to assess them, ignoring them only when an attempt at assessment would have no substantial probability of being correct. And who is better qualified to make the attempt than the economist, who devotes his life to studying these satisfactions? If he cannot make a true bill, how can the "policy maker" succeed? If

Professor Meade writes, "they are bound to be political and moral assessments." Of course a moral issue may be involved, but that is quite a

separate point. The moralist has no special qualification for making a difficult assessment of fact, if fact is involved, and if no fact is involved he cannot be concerned either. But he may have something to say, and indeed should only have something to say, after all the facts are presented to him. For instance, he might say that one ought to make distribution as equal as one can, subject to not incurring too great a loss thereby. I would only add in passing that traditional morality did not regard this as within its sphere, and that the foundations of untraditional or modern morality are so shaky that its findings cannot carry great authority.

As for politics, that is in one aspect a branch of morality. But it also has its own specific interest, the balance of power, and this brings it into close relations with economics. For instance, a political scientist might hold that since all men seek power and have unequal faculties for gaining it, and since money gives power, an economic system providing absolutely equal incomes would be politically unstable and liable to give rise to revolution.

The special interests of moral philosophers and political scientists do not qualify them for assigning "distributional weights," as suggested by Professor Meade. Economists should not try to pass the buck to them.

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The Mechanism of Cheap Money. A study of British monetary policy, 1931-1939.

By E. T. NEVIN. (Cardiff: University of Wales Press, 1955. Pp. xiii + 350. 25s.)

THIS book provides the best study of British monetary policy during the 1930s that has yet appeared. Although Dr. Nevin purports to handicap himself with an unduly narrow framework of economic theory, his actual analysis of the facts which he has ingeniously and laboriously assembled frequently transcends the theory which he claims to be applying and generally allows him to reach useful and sensible conclusions.

Dr. Nevin's theoretical framework, as set out in the chapter on "The Basis of Monetary Policy" and in other shorter passages throughout the book, suffers mainly from the defect that it is based on a number of assumptions, either unstated or insufficiently emphasised, which, while sometimes plausible for the period under discussion, are seriously misleading when the conclusions reached are generalised. A good example of an insufficiently emphasised assumption can be found in the discussion of the determinants of "the" rate of interest, where Dr. Nevin says (p. 43):

"Provided that the money supply is large enough to meet ordinary transaction requirements, why should the rate of interest ever rise above the very low rate required to offset the disadvantages of holding wealth in non-monetary form? The answer is that, if there were no chance

whatsoever of the interest rate changing, it would in fact remain at the minimum level."

If the innocent-looking initial proviso is paraphrased to read, "Provided that the supply of money is infinitely elastic, and that we are prepared to inflate the currency without limit . . ." the meaning is the same, but the impression left on the reader is rather different. Incidentally, the treatment of the effects on interest rates of expectations about future rates of interest suffers from being confined to two types of assets only, long-dated securities and cash. Such a discussion becomes much more useful if it is extended to at least three types of assets, including short-dated securities as well as long-dated securities and cash. We then find that the expectation of a future rise in long-term rates forces short-term rates down as well as long-term rates up, while the expectation of a future fall in long-term rates forces short-term rates up as well as long-term rates down, so that the convenient concept of "the" rate of interest most inconveniently evaporates.

Perhaps the most serious omission of all in the theoretical discussion is the almost complete absence of any reference to the effect of internal changes on the balance of international payments. While the effects of changes in the marginal propensity to consume upon the level of home investment may be disputable, at least the direction of their effects on the balance of international payments is surely clear enough. In an open system, a fall in the marginal propensity to consume, unaccompanied by an increase in the volume of home investment, must lead to some improvement in the balance of international payments and to some rise in the level of saving actually achieved. It may be, though it is arguable, that in a period like the 1930s this effect is small enough to be ignored; in a generalised discussion the omission is likely to be seriously misleading.

Fortunately, the ostensible limitations of Dr. Nevin's theoretical apparatus do very little to prevent the applied sections, which form by far the greater part of the book, from being very good indeed. This is partly because the limitations are less important in the context of the 1930s than they would be, for instance, in the post-war period, and partly because Dr. Nevin does not allow himself to be seriously hampered by them when they would get in the way of practical discussion. Even in the purely descriptive sections he makes a number of contributions, as for instance his ingenious argument that the clearing banks were influenced far more by falls in their liquidity ratios when it was a question of expanding only investments, than in times of active demand, when it was possible for them to increase advances. Another ingenious calculation is the estimation, by difference, of the split of the Issue Department's holdings of government securities between Treasury bills and other investments, and the confirmation of the general trend of these estimates by reference to the correlation between changes in the profits of the Issue Department and in the price of consols.

A particularly useful chapter is the one on "Cheap Money and the

Capital Market," where Dr. Nevin's figures, which must have involved a lot of work, on changes in the forms, yields, volumes and sizes of new capital issues, will provide a most useful source of reference. His discovery that easier money conditions are accompanied by a fall in the average size of new issues and tighter conditions by a rise seems to be a new one. The chapter on "Cheap Money and the Housing Boom," on the other hand, seems to suffer from a too exclusive emphasis on interest rates as a causative factor. Dr. Nevin dismisses rather too summarily the other two factors which are also believed to have played an important part—the rise in the real incomes of those in employment and the fall in building costs. The effects of the sharp rise in the real incomes of perhaps 70% of the population were surely not nullified by the fall in the real incomes of those who became unemployed, partly because unemployment was very unevenly distributed through the country and partly because, except perhaps in the most depressed areas, it is unlikely that those who became unemployed surrendered house-room either sufficient in quantity or suitable in quality to satisfy the increased demands of those who remained employed at higher real wages.

In his last chapter, on "The Quantitative Aspects of Monetary Policy," Dr. Nevin draws attention to the fact that changes in monetary conditions are reflected not only in changes in interest rates but also in the amounts of capital it is possible to raise at *any* rates, either from the banks or in the long-term market. That the banks in this country have never, at any date, relied mainly on changes in interest rates to control the volume of their advances is, of course, undeniable; it is for this reason that, at times when long-term rates are expected to fall, short-term rates are held far below their equilibrium level, and business-men can declare truthfully that their decisions are not affected by changes in rates. But Dr. Nevin believes that quantitative limitation exists also in the long-term market, as the result of the unwillingness of issuing houses to accept more than a limited amount of business whatever the terms offered. While there is no doubt some element of truth in this, it is surely also true that it is much less important in the long-term than in the short-term market, and that, in periods of tight money, long-term rates are much nearer their equilibrium level than short-term rates, if only because people are much less willing to borrow at high rates for long periods than for short.

F. W. PAISH

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Economic Commentaries. By SIR DENNIS ROBERTSON. (London: Staples, 1956. Pp. 174. 16s.)

THIS is a collection of papers, the first four of which, Sir Dennis Robertson warns his readers, are not for "anybody who is not fairly familiar with the jargons and techniques used by professional economists." That he himself

s not subservient to jargons and techniques he shows over and over again with that gentle irony, not so say chaff, which we expect from him.

"I now tell my students" [he writes (p. 8)] "that, if they want to be really up to date, they can say that it is not so much investment which governs savings as savings which govern investment. But I add that they had better be careful to give Mr. Kalecki as their authority; otherwise they may be in danger of being accused of falling into elementary schoolboy error."

One of the papers, that on "Some Recent Writings on the Theory of Pricing," which has not been previously published, is concerned with the puzzles arising from "increasing returns," especially in relation to imperfect competition. Sir Dennis Robertson refers to "the old conclusion, which Harrod with his pretty envelope did much to clarify, namely, that if there is imperfection of the market the representative firm will be working with a smaller plant, less fully utilised, than if there is not" (p. 31).

Sir Dennis represents Mr. Harrod as repudiating this doctrine, by flattening out his envelope "into a horizontal line of constant returns." The envelope presupposed that the projector of a productive enterprise would have the choice among a continuous series of possible productive units, each with its own short-period production function (shaped like a "parabola"), and would have exact foresight of the demand to be expected, under conditions of imperfect competition, at any specified price. The substitution of "a horizontal line of constant returns" represented the complete elimination of the parabolas and the envelope, for it was a departure from the assumption of increasing returns which was the essence of the whole controversy.

The envelope doctrine is unassailable on its assumptions. In practice, however, the intending producer has a choice not of an infinite series of continuously graduated outputs, but of perhaps two or three alternatives, and the curve representing the short period costs of any one of them has no resemblance to a parabola. If the sharp increase in costs at the point where output begins to exceed normal capacity is represented by an angle, there is no "envelope."

It is not quite accurate to say that Mr. Harrod repudiated the excess-capacity doctrine. He maintained that the intending producer must allow for fluctuations of demand, and that, if he has regard to the long-period goodwill of his business, he will refrain from raising his price, when a shrinkage of demand points to a spreading of overhead costs over a smaller output, and will see that he has a margin of reserve capacity to meet an increase of demand without a rise of price. If the producer behaves in this way, "the demand curve is tangential to the full cost curve." A phantom of the envelope survives.

Part II of Sir Dennis Robertson's book is composed of pieces which are not addressed to a narrow circle of experts, but which he hopes "may

appeal also to anyone who takes a general interest in economic affairs." Among these is his Stamp Lecture of 1954 on Wages, disguising under a hilarious nightmare commission of inquiry a concise and lucid exposition.

One comment may be offered. The increase in the ratio of wages to the total of personal incomes, so far as at the expense of the average recipient of rent and dividends (p. 137), has been caused by inflation, not automatically, but through specific measures of rent control and taxation of distributed profits.

Three of the papers republished in Part II deal successively with "The Trade Cycle in the Post-war World," "The Sterling Problem" and "Creeping Inflation."

"The Trade Cycle" once more raises the question of wages. Is the tendency of wage-rates to climb steadily upwards a potential cause of industrial depression, or of a complete breakdown of monetary stability, leading to a choice between totalitarianism and chaos (p. 93)? "Does anyone know of a 'wage policy' which will purge a 'full-employment regime,' not of its manifold inefficiencies and injustices—that is too much to hope—but of its propensity to ultimate suicide?"

"The Sterling Problem" raises the question of convertibility: "what persons, who at present are not allowed to do so, are you proposing to allow to turn what into what, by what method, on what terms and for what purposes?" (p. 96). These queries assist towards clear thinking. But in pursuing them, does not Sir Dennis allow insufficient weight to the confidence which sterling would acquire if the pound were made stable in purchasing power? If that were achieved, there need be no fear of a rush for dollars (pp. 102-3). But stability of purchasing power would necessitate a fluctuating rate of exchange, which he deprecates (p. 101), unless the dollar itself were stabilised.

RALPH HAWTREY

London.

How Money is Managed. By PAUL EINZIG. (Harmondsworth: Penguin Books, 1954. Pp. 368. 2s. 6d.)

THE buyer of Pelican books who wants to read about economics is much less well served than if his interests lie in most other directions. A book on monetary policy was obviously a need; unfortunately, it cannot be said that Dr. Einzig has filled it particularly satisfactorily. One is grateful that the book was entrusted to someone with an easy English style, who has produced important books on monetary subjects. Nevertheless, this is not a book which can safely be recommended to the sort of reader for whom it is presumably intended—the intelligent person who wants a reasonably clear explanation of budget deficits and banking controls, of the money market and the dollar problem, of inflation and of interest rates.

Dr. Einzig defines his subject broadly, as covering not only technical monetary matters but also questions of the general level of activity and of

prices and problems of a country's external financial relations. He deals with his subject in two parts: the aims of monetary policy and the means of monetary policy. This well-conceived distinction does not prove successful, because of the author's failure to provide any systematic theoretical foundation to his study. For example, the Keynesian theory of income determination is summed up in a few oddly cryptic sentences; without preparation or comprehensible explanation the reader is assured that "relations between the level of interest rates and the quantity of money are of course reciprocal"; the explanations of open-market operations and Bank Rate policy are, again, surprisingly casual—such examples could be multiplied.

The result is that one feels certain that the ordinary reader with no knowledge of economics would leave this book hardly any better equipped to understand economic events, and no better equipped to think about them for himself. All he would have would be a hotch-potch of facts (many of the historical ones interesting, but of almost no relevance to present-day policies) and a hopeless confusion of relationships between different elements in the economic system.

This failure is most unfortunate. It was by no means inevitable—the basic structure of the theory on which modern monetary policies are based is not difficult to explain or to understand, and an author of Dr. Einzig's skill could have made an admirable book by elaborating the structure in accordance with some of the complications of past and present-day monetary institutions. As it is, one is simply left hoping that some day, the two or three worthwhile books on economics in the Pelican series will be supplemented by many more. It seems likely that there would be at least as big a public demand for a Pelican economics series as for the existing series on psychology and on philosophy—and it seems very odd if it is impossible, granted a little planning and encouragement, to find the economists willing to write them.

London School of Economics.

A. C. L. DAY

The Dollar. By R. F. HARROD. (London: Macmillan, 1953. Pp. v + 156. 9s. 6d.).

MR. HARROD's readable and erudite little book consists of four lectures, dealing with the evolution of the dollar. Broadly, the subject matter covered includes the dollar in the nineteenth century, the Federal Reserve System, the movement towards international monetary co-operation between the United States and other countries, and the dollar gap.

The most interesting feature of the treatment of nineteenth-century American monetary history is the suggestion that the world bimetallic system might have survived the strains of the eighteen-sixties and seventies, if the decision had not been made finally to abandon the Hamilton silver dollar in 1873. The United States might then have been left "holding the

silver baby," and bimetalism might have continued as a real live force, in spite of the decision of the Latin Union later in that year to stop minting the silver five-franc piece. One might join Mr. Harrod at his pleasant game of making historical hypotheses, and suggest that if the United States had established an effective bimetallic system the world currency system would never have been so unquestionably oriented towards London as it was in the period of the unchallenged sovereignty of gold before the First World War; as a consequence, the problems of adjusting to a multi-centred system in the inter-war years would have been so much easier, and, in turn, the strains of adjusting since the last war to a dollar-dominated system might have been so much the less.

Mr. Harrod's second lecture is concerned with the Federal Reserve System. One of the most interesting discussions here is of the Strong policy, enunciated in 1924 in the Tenth Annual Report, of trying to maintain stability in the internal level of activity of the United States, regardless of the state of the foreign balance. Mr. Harrod says that we need not consider this criterion "wholly satisfactory," but he is, all the same, too tolerant of it. The excuse in the Report, that in 1924 other countries were not on the gold standard, is extremely thin. Mr. Harrod's justification, that it is in the interest of the world that disturbances shall not emanate from as large a country as America, is good ground for arguing against perverse internal policies in America (inflation with an external deficit or deflation with external surplus), but is not sufficient ground for saying that internal stability in America is enough. The gold standard could work only if internal price and/or activity levels altered somewhere in the world; if America refused to let hers alter, all the strain of adjustment was thrown on other partners. It is by no means obvious (*pace* Mr. Harrod, p. 51) that a new bout of inflation in America in 1923 would have been a bad thing for the rest of the world—for one thing, the subsequent restoration of the gold standard in Britain might have been so much the easier. The Cunliffe Committee may have described a world that never really was, but at least it described a system that could have worked (although not exactly in the way the Committee thought); the Strong doctrine did not attempt to indicate how international adjustment should be brought about, and left all the burdens to the other man.

In his last two lectures Mr. Harrod is primarily concerned with the dollar's international position since the Great Depression, and in particular with the establishment of the Bretton Woods organs and with the dollar gap. His history of the war-time negotiations adds little to the information already available.

Mr. Harrod's discussion of recent developments concentrates on three themes: the "excessive and ill-timed" devaluation of sterling in 1949, the need for raising the dollar price of gold and an argument for the establishment of free currency convertibility, even at the price of increasing dis-

criminatorial restrictions on trade. I find myself profoundly unconvinced by the author's arguments on all these points; in this review it is only possible to say why very briefly. On the devaluation, one feels that he greatly underestimates the basic structural adjustments that had to be made; the purchasing-power parity calculations he uses are of as little value as such calculations ever are when basic readjustments are needed, and the importance of devaluation in increasing the competitiveness of British goods in non-dollar markets is almost ignored.

The arguments used in favour of raising the dollar price of gold are familiar. One feels that the great weakness in all these arguments was the failure to realise that once countries have learnt to get along reasonably satisfactorily without internal use of gold, it comes to be realised that an international system dependent predominantly (if not wholly) on paper credit is also perfectly workable. Our present drift towards a dollar system shows that this is, in fact, being accepted; no one cares to drive gold out of the position it has, but there is no pressing reason officiously to keep it alive.

The book finishes with a suggestion that Europe might make her currencies convertible in the first instance, "not by the healthy and natural way of earning more dollars bilaterally or multilaterally, but by intensifying her discriminatory restrictions." Then, once European countries have convertible currencies, they would have a much better chance of earning dollars multilaterally. It seems very much open to question whether agreement could have been achieved between all European countries for following such a policy—after all, the benefits of convertibility to everyone except certain sections in the City of London have always been the benefits of engaging in non-discriminatory trade. It has been possible for Britain to follow the rather odd policy of giving the benefits of convertibility to foreigners while depriving residents of them, because of an exaggerated view of the advantages of extending the City's international banking operations; it is extremely doubtful whether Europe as a whole could ever have been so ill-advised. Equally, one is sceptical of Mr. Harrod's argument that, if the I.M.F. brought the scarce currency clause into operation, the burden of discrimination against dollar goods would be more equally shared round the world. However the scarce-currency provisions might be modified, it is inconceivable that they could compel countries to discriminate if they did not find such a policy in their interests—and all our experience has been that countries have been quite willing to discriminate, if they want to do so, whatever the Fund may or may not permit.

Despite these substantial differences of opinion about policies, it remains for me to re-emphasise that Mr. Harrod has written a very readable and a provocative book, which can no more be ignored than any of his other contributions to the study of economic policy.

London School of Economics.

A. C. L. DAY

Introduction to Keynesian Dynamics. By KENNETH K. KURIHARA. (London: Allen & Unwin, 1956. Pp. 222. 21s.)

THIS introductory text-book on income, employment and prices provides a wide selection of Keynesian tools. The basic relationships—the consumption, investment and liquidity functions—are introduced and discussed, the determination of income over time is explained in multiplier–accelerator terms, the techniques are applied to international trade and inflation, and the concluding Part, "Secular Economic Dynamics," contains an elegant version of Mr. Harrod's dynamics together with Professor Kurihara's own extensions of the analysis to the economics of growth in underdeveloped economies. Both static and dynamic methods are explained, and the text is liberally assisted with arithmetical examples and clear diagrams. Useful features are the explanation of the discount-rate aspect of the marginal efficiency of capital, and the "Pigou effect."

It is because of both the simplicity of the ideas and Professor Kurihara's exceptionally clear and tidy writing that the subject appears very easy. This is both the virtue and weakness of all useful texts. In particular, in the section on the savings–investment adjusting mechanism, no reference is made to the problem of the price changes which could bring costs into line with revenues, except for a sentence on p. 82: "It is assumed that the propensities to save and invest remain unaffected by price changes, that is, by abstracting from redistribution effects of price changes on the real-income positions of savers and investors." No one who appreciates this need read the book! There is, however, a full discussion of the wage-cut problem in another chapter. Again, the accelerator is introduced as the *change* in investment arising from a change in income, which is surely odd and liable to confuse, and the subsequent discussion of stability conditions, while lucid, becomes a piece of dangerous technical expertise. Also, in the discussion of the full-employment price multiplier, pp. 139–41, it is assumed there are constant propensities to save and invest during a hyperinflation. The general criticism stemming from these points is that, despite a brief but well-put argument for aggregation in the first chapter, the problems of aggregation are hidden by silence and the persistent drawing of straight lines. The magnificence of the dynamics extends no farther back than the shop front.

These are quibbles over a simplified treatment which, provided it is considered introductory, is adequate. Only when Professor Kurihara comes to the boundaries of his model, to capital–output ratios, innovation and changing consumption habits, is there some doubt as to the worth of the simplicity.

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Zinstheorie. By F. A. LUTZ. (Zürich: Polygraphischer (Tübingen: Mohr), 1956. Pp. 195. S.Frs. 19.15.)

THE theory of interest is difficult for two reasons. First, there is the real complexity of the subject matter, in which, as many theorists hold, the long-term and short-term factors are of such a different nature: productivity and thrift on the one hand, liquidity preference and money supply, on the other. The second difficulty is, regrettably, one of exposition: many of the learned contributors in this field have taken little trouble to say precisely how their theories differed from one another, and what they conceive to be their peculiar contribution to learning. Important earlier writings are often completely ignored (a noted example is Lange's illuminating model with production functions for both consumer and capital goods in the *Review of Economic Studies*, 1935; ignored in the treatises of Hayek, Hicks and Mrs. Robinson), and there has been a tendency to treat the slate as blanker than it really is. There has consequently been much confusion in the literature and, as Professor Lutz frequently remarks here, it is difficult to be sure of one's understanding of some of the principal contributors. Mr. Kaldor's comments on Knight (*Econometrica*, 1937) are unfortunately of wider application:

"He makes so many points that one is apt to get lost among them, not knowing how to distinguish between the primary and the secondary, the important and the unimportant; while the conclusions are frequently clothed in paradoxical sentences which are intended to challenge the mind but without a sufficient indication of where to turn in order to uncover those mental processes which must have led up to them."

In this volume Professor Lutz presents an account of the major contributions to interest theory since Böhm-Bawerk. His object, as he remarks in the preface, is neither to give a complete history of thought nor a systematic account of the present state of the theory (there is a hint of a further volume on this). Yet by taking up in turn the major trends in thought, as illustrated by the writings of the main contributors, he has produced a very satisfactory book which will be valued by all serious students of the subject. His exposition is remarkably clear, and his critical appraisals of the various writers are acute and stimulating.

His account is divided into three parts. The first deals with theories of interest in stationary states (not saturated with capital), the second with theories for progressive economies and the third with monetary theories. In a fourth part, which is probably too brief to be of value to most readers, he puts down some first remarks towards a synthesis of the various approaches.

The first part surveys the work of Böhm-Bawerk, Wicksell, Akerman and Hayek. The account of Wicksell's work includes a comparison of the earlier version in *Value, Capital and Rent* with the later one in his *Lectures*. This part

is, in effect, an almost complete exposition of the Austrian theories of capital, and is worth reading on that account alone (to make it complete the reviewer would, perhaps, have included a criticism of Wicksell's distinction between the marginal private and social products of capital in the light of Metzler's and Lerner's discussion in the *Journal of Political Economy* (1950-53); and a fuller reference to Lange's work).

The second part expounds the views of Walras, Fisher and Knight, who explicitly allow accumulation to proceed, but take it for granted—in a way that the Austrians do not—that investment is productive.

An account of the Keynesian case is given in the third part, together with the now generally accepted qualifications (the relation to the loanable funds approach, the "grin without the cat," etc.). The writings of Hicks and Robertson are, of course, prominent here, as is the "Pigou-effect." The final view seems to be very similar to that to be found in Professor Robertson's writings, though the emphasis is more on the short-term factors.

Professor Lutz adds a mathematical appendix, valuable in its own right. It will be appreciated by all who have struggled with the compressed mathematics of Wicksell and Akerman.

S. J. PRAIS

Cambridge.

Price, Cost and Output. By P. J. D. WILES. (Oxford: Basil Blackwell, 1956. Pp. 302. 30s.)

THE aim of this book is to confront "actual price and output policies" with the marginal theory of the firm, as it is to be found in the text-books. It does so by presenting a "new" classification of types of firm, the main types being "price-takers," "full-cost chargers" and "marginal cost chargers." This leads to a critical discussion of supply curves and of the concept of profit maximisation. On the way, related topics, like joint costs and the shape of long-run cost curves, are considered in some detail. The book concludes with a study of the efficiency with which various types of market allocate the resources of the community between competing ends.

This is a substantial work, in which Mr. Wiles shows a wide acquaintance with writings in his chosen field, though it contains nothing of significant originality. The book is stimulating and highly provocative, but it is doubtful whether even the serious student of the theory of the firm should read it in its entirety; for the quality is extremely variable. Some of Mr. Wiles' comments are extremely shrewd and intelligent; others are the reverse, and the whole book lacks coherence. Perhaps the most successful sections are the later part of the chapter on profit maximisation (from p. 178 onwards), and the section on oligopoly (pp. 87-95).

A major criticism of the book is that the author has overstated his case

when he claims to have compared marginal theory with "actual" price policies. Most of his views of what happens in the real world are very much at second-hand, and for this reason one misses any ring of authority. In the one case where a considerable amount of empirical information is provided (statistics showing that the long-run cost curve is *not* U-shaped), there is little attempt to classify, or to present tidily, a mass of ill-assorted cost figures interspersed with such comments as: "All data are inaccurate, as the original diagram is ill-printed" (p. 239). Mr. Wiles, in other words, has added a new phenomenon to the "armchair theorist" whom he so rightly scorns; he is the prototype of the armchair empiricist. This is not to deny that once sufficient empirical data has been unearthed by field workers its study may make possible big advances in the theory of the firm. But, as yet, such information is extremely scarce, as is shown by the way in which Mr. Wiles has drawn on the reviewer's own woefully small-scale study of Midland firms.

One result of Mr. Wiles' lack of first-hand empirical data is a tendency to exaggerate the generality of his argument. For example, Professor Stigler is criticised for believing that the short-run marginal-cost curve rises sharply once a moderate output has been attained (p. 49). The impression is thus conveyed that sharply-rising marginal-cost curves are never met with in practice. Yet with at least one product, namely rayon, technical factors mean that the short-run marginal-cost curve does rise extremely sharply once capacity output is reached. No one would suggest that man-made fibre production is typical of British industry, but this illustration shows that the "facts" with which Mr. Wiles confronts marginal theory are of less general applicability than he seems to imply. Indeed, many of these facts turn out, on examination, to be alternative theories. (See, for example, the discussion on pp. 49-50, where Mr. Wiles explains why, in his view, marginal-cost curves slope upwards quite gently.)

It is perhaps significant that in his discussion of "the full cost sector," Mr. Wiles acknowledges that once "price competition breaks out, the full cost entrepreneur or firm is maximising his profits" (p. 62). This means that a whole set of substantial reasons, which have been advanced in the previous ten pages to explain why firms cannot maximise profits, are now swept away. "Marginalism becomes a legitimate, though hardly a useful, analysis of the empirical world" (p. 62). This seems to be a damaging admission for "full cost" theory to make. Indeed, it suggests that it may be the inflationary conditions of the post-war world which have made some economists so ready to support the doctrine of "full cost." The prophet of "The Age of Inflation" might well have given some space to this point!

While Mr. Wiles' argument holds the attention well, its presentation is at times more than a trifle unpalatable. Quite apart from a somewhat arrogant use of his own private terminology, Mr. Wiles displays a recurrent and irritating flippancy. For instance, the suggestion that few business-men

realise that short-run average costs are a function of output (p. 47) is bad enough. But it is grossly unfair to suggest that even a substantial minority of firms believe that if "the boiler burst" or if they "produced more," these two facts would be "on a par" so far as their influence on unit costs is concerned (pp. 47-8). Such unjustified poking of fun at business-men does nothing to help their education, or to improve their relations with economists. Similarly, the suggestion that Marshall "was very interested in the individual firm; he used to visit firms" (pp. 77-8) is surely out of place in a work of serious scholarship. Mr. Wiles cannot complain if many of his fellow economists are led to regard him as a more of a humorist than a scholar.

D. C. HAGUE

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The Evolution of Wage Structure. By L. G. REYNOLDS and C. H. TAFT. (New Haven: Yale University Press (London: Oxford University Press), 1956. Pp. xii + 398. 40s.)

A GREAT deal of material on wages has accumulated since the War; and though, as the present authors point out, "the gap between measurement and theory remains essentially unbridged," the appearance of a wide-ranging and scholarly book combining detailed wage data with some prolegomena to a viable theory of wage determination is very welcome. So long as little was known about wage levels except that they varied over time and place, it was assumed that these variations would be accounted for by the same sort of market forces which were held to determine the levels of other kinds of price. If the operation of these forces appeared obscure, then clearly frictions, rigidities and imperfections were at work. However, as evidence on wage settlements—and on actual earnings—began to pile up, the emerging detail appeared so chaotic that it began to be asked whether the frictions and rigidities were not the real determinants, and the exceptional was not the rule. The curious incident of the dog in the night-time, explained Holmes to Watson, was that the dog did nothing in the night-time; and the curious fact about the economic determination of wages was that wages were governed by a host of non-economic—possibly counter-economic—forces, ranging from the power-interests of great institutions to people's feelings about social prestige. The battle for the deposition, or restoration, of the sovereign power of supply and demand has been petering out into desultory skirmishes, each resolved by a more or less sophisticated compromise—at its crudest, by resorting to a concept of Economic Institution analogous to that of Economic Man. If the present book, with its emphasis on the complexity of wage phenomena and its efforts to avoid such facile

simplifications, did no more than point to some of the pitfalls, it would serve a useful purpose; but it does a good deal more.

The book consists of two main parts, sandwiched by three discursive sections whose purpose is to highlight the problems of selection and measurement, to bring some generality to the detailed findings and to subject the latter to acceptable criteria of economic desirability. The first part examines the wage structure of four industries in the United States (railways, iron and steel, cotton textiles, and pulp and paper), indicating the extent, direction and timing of changes in wage differences between occupations, regions and plants. The second part is concerned with the national wage patterns of four countries (France, Sweden, Great Britain and Canada) as well as of the United States—emphasis being laid not only on wage differences between industries and regions but also on skill-, sex- and other differentials. In each case some assessment is attempted of the relative importance of institutional and economic influences, and the conclusion emerges that institutional influences have so far been less important than the “natural” economic pressures, which in any case they have tended to reinforce: “in most cases bargained wage changes do not depart far from what was ‘in the cards’ on economic grounds.” It is no criticism of the book to say that this sort of judgment must be based largely on hunch, for the authors’ hunch is exceptionally well informed. One of the chief merits of their book is its demonstration of the relevance of wage structures to wage levels and changes, and in general of the microcosm to the macrocosm.

Except for one of the industry studies in Part I, which is by a third hand and might with advantage have been shortened, the balance of the book is well maintained. The reader may sometimes dispute the emphasis which is laid in the national studies, although the *leitmotiv* of these thickly orchestrated scores (the compression of almost all differentials by different institutional instruments but under similar economic and social pressures) is clearly brought out. The linking chapters—particularly the last—are thoughtful and stimulating, even though the conclusions on the central issue (“the extent to which wage structures are shaped by individual responses in the market as against the influence of collective bargaining and government regulation”) are necessarily tentative.

The authors are well aware of the severe limitations of the aggregated data which are still too often the only evidence available; but their suggestions are given weight by their knowledge of the kinds of distribution, and the extent of dispersion, which are apt to underlie such data. We may hope that official agencies will be progressively weaned from their devotion to overall averages; and if the techniques which economists are finding valuable in other fields, of assessing from quantified data the relative importance of different influences, can be applied to the growing body of wage material, the theory of wages may achieve greater respectability by being recast in a form which admits of better verification. The present authors’

insight may well be confirmed in the process; in any case credit is due to them for having made a remarkably coherent survey of the wide terrain they have explored.

K. G. J. C. KNOWLES

Oxford.

The Rise of the National Trade Union. By L. ULMAN. (Cambridge, Mass.: Harvard University Press, 1955 (London: Oxford University Press, 1956). Pp. xv + 639. 76s.)

Trade Union Government and Administration in Great Britain. By B. C. ROBERTS. (London: Bell, for the London School of Economics and Political Science, 1956. Pp. vii + 570. 31s. 6d.)

The Structure and Government of Labor Unions. By P. TAFT. (Cambridge, Mass.: Harvard University Press, 1954 (London: Oxford University Press, 1955). Pp. 312. 48s.)

EACH of these three studies is provoked by the rise of the mass trade union, national in its geographical extension, but sectional in its occupational inclusion, as the characteristic Anglo-Saxon form of labour organisation, and as the fulcrum of labour’s political and economic power. But they adopt different approaches to the exploration of its purposes and government.

Professor Ulman’s massive study, because it is historical, is also the most fundamental attempt. The national union was, he argues, solidly established in several American trades by 1900; and in those trades its constitutional forms had been by then perfected, its economic tactics firmly evolved and its relation with other types of labour organisation—the local unions that preceded it, the super-federation of sectional unions, the (attempted) political-economic movement of the wage-earning class—was already defined. It is therefore to the national trade union’s formative and experimental period, the latter half of the nineteenth century, that one must first look for the clues to its present character and policies. The foundation of his study is thus a meticulous and detailed examination of five such unions’ history, the result of which he has reapplied to the mass of existing material on the topic—and which he has incidentally illuminated by the use of contemporary economic analysis: there is, for instance, a suggestive demonstration that the insistence of his national union leaders on the correct seasonal timing of wage-demands was similar in its effect to the modern American union’s “guaranteed annual wage.”

The conclusion of this distinguished work is a re-examination of the origins of American trade unionism. The latter’s great historian, Commons, considered the collective organisation of labour to be a reaction from two things: the closing of the frontier, which formerly permitted the dissatisfied wage-earner to escape from his status, and the extension of product markets, which exposed him to the full force of competition. Moreover the American

governmental system defeated independent labour political movements (just as the "free gift of the ballot" deprived them of an early objective) and diverted their energy to collective bargaining. Perlman, attempting to formulate a general theory of the labour movement's development, added to Commons' analysis an emphasis on restricted opportunity as a main feature of the wage-earner's environment, and therefore on "job control" as the unions' principal function; while he traced to the class-conscious immigrant artisan from Europe the cohesive inspiration of the early American unions.

Both these hypotheses Professor Ulman considers unsatisfactory. The extent to which the open West provided an "escape hatch" for the Eastern working-man was already doubtful. But trade unions in any case existed before its closure. Moreover several national unions established themselves in the absence of that extension of product markets which Commons had supposed central to their growth. And the American trade unionist displayed little evidence of the economic pessimism which Perlman had attributed to him, just as his willingness to trade restrictive "work-rules" for bargaining security and wage advantages hardly demonstrated a European adherence to labour "Vested Interests." By contrast, he explains the unions' development in terms of the dynamic character of the American economy. It was in some cases the extension of product, in others, of labour markets that drove such scattered local unions as existed to combine into expansive national organisations. But it was just this context of rapid economic growth which both permitted the latter's consolidation and gave them their overwhelmingly economic orientation—by at least appearing to make collective bargaining pay.

The conclusion leaves this reader, for one, not altogether convinced. A tendency to form trade unions would seem characteristic of a settled working class: it is not so much their presence as their relative absence that requires explanation in the American case—union membership in Professor Ulman's period seems to have fluctuated between 3 and 9% only of all American wage-earners. In this light, the relative mobility—social and occupational, as well as geographical—of American labour appears overwhelmingly important: a chapter of Professor Taft's, in examining the almost spontaneous outburst of trade unionism among the auto-workers in the 1930s, shows how recently so many of these operatives had been farmers and backwoodsmen. It is notable that the unions from which Professor Ulman mainly draws his detailed evidence each based themselves on an existing and typically European import—the apprenticeship system, which gave a sectional identity to their intended membership that could, at this time, have been possessed by relatively few American labour groups. But the same system was also the organising basis of the British "New Models," and their qualities do not seem quite so different from Professor Ulman's exhibits as his hypothesis would imply. The "travelling member" problem, which he regards as a central pressure to national unionism in the U.S.A., was only

less in the British case because of smaller distances and greater facility of communication: the "New Models" also emphasised collective bargaining rather than political action: and their leaders fought similar, if less intense, battles for central control over strikes, and against forms of labour organisation rival to their national unions. Each generation writes history in its own image: Perlman, working in the 1920s, was incidentally explaining the apparent failure of mass unionism to consolidate and extend itself in a phase of prosperity, and one is left with an impression that Professor Ulman is really attempting to explain, not the exclusive nineteenth-century craft unions about which he mainly writes, but the mass American industrial unionism of the present day.

However, it is less the conclusion than the process of reaching it which is the major merit of this work. This detailed analysis illuminates not only the—astutely opportunistic—economic outlook and method of the national union leaders, but also the peculiarities of American trade-union structure—its high degree of local autonomy, its foundation on the principle of "exclusive jurisdiction" in each organised trade, and the special features of its central organisation. Such intriguing problems as the relative weakness of central representative bodies in American unions, and the special power of their Presidents (as opposed to the General Secretaries of their British counterparts) are all explained by the particular restraints the American environment imposes on effective union organisation. It is these restraints that provide the link between Professor Ulman's period and the present day.

Mr. Roberts' and Professor Taft's studies are contemporary. They are each concerned with the problems of control and democracy in trade unions, but are contrasted in their particular preoccupation.

Thus two questions which have been of major public interest are the extent of communist influence in trade-union government, and the standing and rights of individual workpeople in relation to these powerful organisations. Mr. Roberts, while giving some attention to the first problem in his chapter on politics in union elections, begins with a statement of the legal position of trade unions, in which he notes the courts' increased interest in the impact of trade unionism on individual rights, and continues with a discussion of the status of union members—which he clearly feels to require a more secure definition—in relation to their associations. Professor Taft, on the other hand, begins with an analysis of radicalism (which refers mainly to Communism) in United States' unions, and ends with an assessment of their ability to resist communist penetration. In between, however, he includes a more than ordinarily interesting account of the use of the internal "appeals" procedure in a number of American unions, which is certainly much more frequently invoked in defence of individuals or groups of members than is public law, and which he concludes works with a degree of justice unlikely to be improved by public intervention.

These differing priorities are at first sight surprising. The general out-

look of the British unions is "radical" in the American sense: it was just the vagueness of the demarcation between Communism and left-wing Socialism which until recently facilitated the communist appeal to militancy in the British unions' rank-and-file. The particular footing which their energy, purpose and organising experience gave to Communists in the new C.I.O. unions of the 1930s would seem an insufficient explanation. And, on the other hand, the prevalence of the "union shop" in the United States, and the opposition to dual unionism, restrict that ability of union members to "vote with their feet" which Mr. Roberts regards as still an important assurance that many British unions, at least, will operate on a basis of consent.

What divides the two studies is apparently the status of their subjects in their respective communities. Mr. Roberts' unions are by now massively established institutions: in their American counterparts, however, there is still a sense of minority standing, of a tenure only recently consolidated. Thus Mr. Roberts regards his unions as "individual democracies," in which the internal political controversy that animated their past government is now likely to decline, and in which, therefore, there is a need for the links between union and member to be re-examined. Professor Taft, however, agrees with Professor Ulman in emphasizing the union's need to maintain its members' solidarity before an environment in which it seems still not quite secure. It is this, it appears, that accounts for the relative infrequency of contested elections in American unions, and for the tendency of such contests to decline once the union has passed its initial organising phase and to become less usual the higher (and so the more representative) the office concerned. The "two-party" system of the American typographers' association is an historical oddity: a major duty of union Presidents (and a condition of their unchallenged tenure) is to arrange internal compromises that will avoid open intra-union conflict.

The two studies also are contrasted in their method. The width of their subject requires selection. Professor Taft assumes a general knowledge of American union structure, and has chosen to present several essays treating particular aspects of it—finance, discipline and so on—in a broad way. To this, however, he adds a group of detailed studies of particular unions' recent evolution: his contrast of the steel- and auto-workers' internal histories—as well as his analysis of the Teamsters' development towards a general union of the British type—are, to an outsider, especially revealing. Mr. Roberts, on the other hand, has chosen the eighteen biggest unions in Britain for an exhaustive constitutional analysis. His study is the more systematic, proceeding by comparison at each stage from these unions' local units in the workshops and branches, through their district and central representative machinery and officialdom, to their federal relations with each other. It is the variety of organisational method at each level which is emphasised, and of this his account is by far the most extensive and authoritative of recent

times. The approach is mainly descriptive. Since the episode of Mr. Goldstein's (rather mistitled) *Government of British Trade Unions*, academic inquirers have moved cautiously towards its somewhat irritated subject. Although Mr. Roberts includes, by way of appendix, potted histories of the unions he studied and some interesting brief biographies of their leaders, he attempts no systematic explanation of his unions' diverse constitutional forms, nor any deep analysis of the degree to which form and reality coincide in each case.

Mr. Roberts is similarly cautious in his comment. Though he by no means takes the implied defensive position of Professor Taft, neither his criticism nor his proposals go beyond those which many trade-union officers might themselves make. The avoidance of fundamental criticism, indeed, makes his major emphasis on education as a specific for trade unionism's current frictions seem just a little pious. Education, if it is to cement the relation between leaders and members, must go beyond mere training in union administration and include an element of propaganda: it is here that American unions, with their greater sense of the need for *policies* that capture and retain the wage-earners' imagination, have an advantage. The training of shop-stewards (and even their closer integration in union-branch machinery) would not finally solve the problems of their tendency to form alternative, "unofficial" leaderships, because this arises at least in part from the *structural* fact of dual unionism in the work-place.

Against this, Mr. Roberts' suggestion of the unions' need for internal administrative research is very much to the point. His own collection and analysis of voting results in union elections, in fact, provides considerable evidence that union leaderships who seriously wish to increase their members' participation could do so by reviewing such things as the optimum size of their branches, and the method by which ballots are conducted. But it is perhaps his notes on the salaries of union officials which are most likely to sound an echo in the latter's inner hearts. Nor is the problem of low rewards to union organisers specifically British. Professor Taft shows that the salary of agents in the United States union locals is on the average comparable with that of skilled workmen, and that even the national leaders of American unions are, on the whole (and contrary to the impression current in this country), very modestly paid. For the national leader in each movement there are no doubt other compensations—the interest and variety of his work, his public importance and so on. It is the pay of local officers, from whom the future leaders will be mainly drawn, which now offers—particularly when the job's exacting nature is considered—little attraction to men who possess the abilities that modern industrial relations require, and to whom full employment and extended public education have opened other opportunities. But it is perhaps most important to effective trade unionism that the workpeople should identify themselves with their leaders. And a recent study of British miners by Dennis, Henriques and Slaughter (*Coal is*

Our Life) has shown how even such a small relative improvement in the union official's position as the transfer of lay representatives at the pit to less arduous work may set a barrier between them and their workmates. The solution of the dilemma is not obvious.

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The Future of Socialism. By C. A. R. CROSLAND. (London: Jonathan Cape, 1956. Pp. 540. 42s.)

"TRADITIONAL socialism was largely concerned with the evils of traditional capitalism, and with the need for its overthrow. But to-day traditional capitalism has been reformed and modified almost out of existence, and it is with a quite different form of society that Socialists must now concern themselves. Pre-war anti-Capitalism will give us very little help" (p. 97). This is the keynote to Mr. Crosland's book: "the ownership of the means of production has ceased to be the key factor which imparts to a society its essential character . . . it is now less important than other factors, such as the managerial structure of industry, the level of employment, the strength of the trade unions, the general social climate, and above all the character of the political authority." The revolution is over: power to mould and direct economic activity and to distribute economic resources is overwhelmingly in the hands of the State. What therefore remains is to use this power to foster social and cultural assimilation between the different classes in society, leaving it to a rapidly rising level of productivity, engendered by wisely guided and stimulated private enterprise, and steered along the right channels of distribution by judicious taxation, in part to lessen and in part to render unobservable whatever remains of economic inequality.

This thesis is sustained, with a wealth of economic and sociological quotation, in the four parts of the book. In "The Transformation of Capitalism" it is argued that the "mixed economy" of contemporary Britain is very far from the "classical" capitalism of which Keynes wrote, "The outstanding faults of the economic society in which we live are its failures to provide for full employment and its arbitrary and inequitable division of wealth and income." One of these evils has been overcome, and the other is greatly lessened (with the exception of the distribution of property), to the accompaniment of such a transfer of economic power from the business class to trade unions and the State, that "capitalistic features and attitudes no longer predominate." The extent to which one can agree with Mr. Crosland in his subsequent development of the argument depends largely upon how far one can accept this analysis. Contemporary writing on the border-line of economics and politics is in danger of developing a

"mythology of the thirties," by reference to which, as a period altogether unique, and out of the run of normal economic development, most awkward questions may be shelved. One needs only to adopt the contrary hypothesis, that the post-war decade of full employment and sustained world prosperity is unique and fortuitous, sustained by the enormous task of post-war structural reconstruction and periodically reinforced by the Russians emerging as the *deus ex machina* with renewed intransigence, in anticipation of the collapse of Capitalism whenever it falters, and thus goading the United States into further investment in armaments (a view which the reviewer does not necessarily hold) for the picture to alter most radically.

"The Aims of Socialism," which follows, consists of a description of the traditions of British Socialism: it is a masterpiece of synopsis, but it lacks any attempt to detect any basic unity of principle (a point to which I return in conclusion). It also contains "a definition of the meaning of socialism." The latter is the weakest part of the book: the closest thing to a definition which can be found is the statement that "since we could still have more social equality, a more classless society, and less avoidable social distress, we cannot be described as a socialist society."

"The Promotion of Welfare" deals with the structure and problems of the social services: it is a shrewd and penetrating analysis which deserves fuller treatment than can be given it here, concluding that if material want and poverty go on diminishing at the present rate we shall need to focus attention "not on the economic causes of distress, but on the social and psychological causes." If the author's optimism concerning the rate of economic progress is justified, he makes out a most convincing case for his conclusions. It is followed by "The Search for Equality," of which the main theme is that the most galling sources of inequality in contemporary Britain result from the social structure which we inherit from the past and from the inevitably subordinate position of the manual worker in large-scale industry, irrespective of its ownership. Consequently, educational reforms and improved industrial relations, concerning which latter, alas, legislation can do little, are the main avenues of advancement. The manner in which taxation can aid in the subordinate problem of lessening economic inequality is discussed along lines which have become generally acceptable since the publication of the Report of the Royal Commission: those who agree with the Minority Report will, on the whole, agree with Mr. Crosland.

The section on "Economic Growth and Efficiency" is the basis of all the rest of the book, because if the thesis that there will be a steady and sustained growth of real income at the current rate over the next few decades is not proven, and if the proposals for economic legislation which are put forward should prove more of a handicap on growth than the author supposes, then the rest of the argument must fail. There is very little which Keynes would fail to agree with in the discussion of the dangers of inflation,

and of the need for saving via profits in the private and especially the public sectors of industry during a period of sustained expansion: all that is debatable is the assumption that the marginal efficiency of capital will continue to be as buoyant as at the moment: that is a matter for judgment and not analysis. Similarly, the treatment of wage policy (the author should have succeeded in finally disposing of the proposal for the central regulation of wages) and the discussion of the desirable limits to nationalisation and of the administration of nationalised industries are all orthodox Marshall. In detail, the analysis is scholarly, impartial and well documented: many of the conclusions are controversial, particularly those which concern the relationship between taxation and the supply of risk capital, but none are left unsupported.

If it were not for the illuminating "Conclusions" the book might be dismissed as an essay in Pigouvian economics and sociology, with a touch of Victorian radicalism, and might as well be entitled "A Liberal Economist's Advice to the Labour Movement" as "The Future of Socialism." But in conclusion Mr. Crosland reveals that what he is after is a society sufficiently skilful in production and sufficiently sure of its standards to rise above pre-occupation with economics. This makes sense as a definition of Socialism, provides a principle capable of unifying the concepts of Socialism which he considers so summarily and dismisses as historically irrelevant in Part Two—and causes the reader to look back with a more critical eye on the preceding argument. The creative force of private enterprise, functioning within a skilfully devised framework of stimulus and control, upon which the main function of demand and supply is to fall, can hardly be expected to operate unless economic considerations are sufficiently in the foreground of the public consciousness to offer adequate rewards, in money or esteem, to the successful innovator. It demands that advertising, already perhaps the most powerful force in our contemporary culture, shall still be sufficiently dominant to keep demand one jump ahead of supply. Even if Mr. Crosland's invitation to the Labour movement to plan its policy on the assumption of a steady and continued rise in productivity is justified (it is probably the best thing for them to do in everybody's interest), he provides no safe formula for the achievement of Socialism. His own concluding passages reveal his scholarly, timely and courageous book for what it is; a series of proposals for reform essentially within the framework of the kind of society from which he wishes to escape.

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Readings in Market Research. A selection of papers by British authors. (London: British Market Research Bureau, 1956. Pp. ix + 235. 35s.)

Modern Market Research. A guide for business executives. By M. K. ADLER. (London: Crosby Lockwood, 1956. Pp. 158. 15s.)

"If business men knew what was going to happen, it wouldn't"—as the saying is—and it is through market research that the enterprising manager attempts to reduce the area of uncertainty surrounding his decisions. The larger the scale of business organisation, the greater the scope of managerial decision and the less the producer's direct knowledge of his market; consequently the greater the area of uncertainty, and the greater the cost of mistaken managerial policies. In the present circumstances of increasing scale of industry, hit-and-miss methods become anachronistic, leaving the field open for the development of market research. Market research substitutes information for guesswork, by analysing either data which are already available, or which are specially collected, chiefly by means of sample surveys. These surveys are undertaken in three main fields: amongst retailers a panel kind of sample survey gives the manufacturer continuous information about the retail sales of his product, according, for instance, to the types of shops in which they are sold or according to their relationship to similar products of his competitors. Provision of this kind of information is described as *retail audit research*. The same panel technique is employed among groups of consumers, reporting on their purchasing patterns, either for surveys of the size and characteristics of existing markets or for estimates of public reaction to the development of a particular product. Thirdly, there are *media surveys* designed to measure the effects of various advertising techniques on differing types of consumers, the relative importance of the poster and of "commercials," as well as the increase in sales attributed to a given high-pressure campaign.

Given the practical limitations on assembling suitable data for the analysis of past experience, and the fact that predictions based on such experience require hypotheses about consumers' behaviour which are necessarily less than completely reliable, the remaining degree of uncertainty is large. Nevertheless, the case for collecting and analysing the relevant circumstances is often irresistible. This is the aim of market research, whether carried out by the executive himself, or in his own research department, or, as is becoming more common, undertaken on his behalf by an independent agency.

Market research is almost entirely a post-war phenomenon in Britain, and very little has so far been published here on the subject. The British Research Bureau, Ltd., one of the large commercial market-research agencies, and a subsidiary of J. Walter Thompson, Ltd., has helped to fill this gap by collecting, under the title of *Readings in Market Research*, sixteen

papers published since 1945 by British authors. Not all important articles have been included, since the editors have necessarily been limited in their choice to those which could be reprinted. But it is a good collection, well designed to give "students and practitioners" a picture of the organisation of this new industry, the facilities it offers, roughly what they cost and the methods used. The use of a collection of articles originally written for particular occasions brings out the manner in which common practices are already developing and common problems being encountered by its various practitioners. There is not yet professional agreement or a guaranteed degree of reliability in the results, but events are moving in that direction.

In the view of the Editorial Committee (Messrs. J. S. Downham, E. Shankleman and J. A. P. Treasure) market research since 1945 has "come of age" in Britain. It is conducted by two main types of organisation: firstly, specialist markets and opinion-research agencies which sell their services to other firms, and secondly, market-research departments of manufacturing and distributing firms, advertising agencies and public corporations. There are at present eight important organisations of the first type and some two or three hundred (perhaps more) of the latter. There is co-operation between these bodies and the universities in the study of methodology, particularly the techniques of sample surveys.

The practical experience of these bodies is widely drawn on in this collection of articles. They are mainly written by people actively concerned with particular exercises conducted by bodies like the Government Social Survey, the British Market Research Bureau, Cadbury Brothers, the Gallup Poll, B.B.C. Audience Research and the Oxford University Institute of Statistics. A most interesting detailed description by Mr. H. F. Lydall of the methods used in the Oxford Savings Survey is included. The fundamental question of sampling methods is raised in many of the articles, but this is not meant to be a text-book. The problems arising in market research are described for the most part in terms of the particular possibilities afforded by British data and particular experiences obtained in analysing them. There is a great deal of useful information: for example, on the use of the Register of Electors as a sampling frame, and on the possibility of using the Jurors' index as an index of the economic status of an area. The balance of interest is nicely kept: on the one hand, we have Professor Kendall's excellent paper on the Statistical Approach and, on the other, an article written by two of the research officers of the Government Social Survey on Interviews and Interviewing to remind us that informant errors may outweigh sampling errors. There is also an article on the work of a Coding Section in appropriate recognition that further error may result from the process of arranging data obtained by the interviewers in such a way that it can be analysed.

Altogether, this is a most interesting and useful book in a field where the

potentialities are only just beginning to be explored. Anyone who is at all interested could hardly fail to learn a good deal from it.

Dr. Adler's book is designed to give those who commission market research just enough expertise "to answer some important questions. For instance, what he (the executive) can expect in return for what he is going to spend on the survey? How much should he pay for it? Whom should he entrust with its execution?" In consequence, the volume is studiously non-technical but does give the reader, particularly in the later chapters, a bird's eye view of what goes on in market research, and the types of survey that are made: personal and group interview, mail survey, telephone survey, consumer panel, depth interview, observational method. He defines the problems which are to be solved by these means as "What?", "When?", "How much?", "Where?" The chief interest, however, lies in the "Why?", and Dr. Adler says that "the ordinary questionnaire" is not sufficiently flexible to be used for researches into the motives behind people's actions. This gap, he says, is to be filled by "motivation research" based on the "depth" interview, by means of projective techniques borrowed from clinical psychology: word-association tests, sentence-completion tests, role playing and misperception, thematic apperception tests. Dr. Adler's conjecture that "depth interviews and motivation research will before long take up the place of honour in market research" is surely a particularly hazardous one and runs counter to his recurrent contention that market research is "scientific."

In the course of a few brief chapters the author alerts the executive to the existence of major practical questions involved in sampling, questionnaire construction, interviewing, processing the data and writing the survey report. As one of the intended merits of this book is that it should be short enough for the busy executive to read, the first five chapters could well be abbreviated. They include too many sweeping and uncritical generalisations; for example (p. 33), on the subject of testing the efficacy of advertising copy, we read, "Taste nowadays is fairly uniform, so that a small number of interviews will suffice to determine which draft is most attractive," or again, "when he (the business executive) finally calculates the percentage of his own sales in relation to total home consumption, then he has taken the decisive step from guesswork to the scientific evaluation of the market situation." It is misleading to imply that the calculation of such a percentage carries, in itself, any value judgment, and it is certainly a disservice to the powerful process of statistical inference to claim for it more than that it narrows the area of uncertainty; in the words of Professor Kendall, "we see things hazily not because our vision is defective but because it is so clear."

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Distribution's Place in the American Economy since 1869. By H. BARGER. (Princeton, New Jersey: Princeton University Press for the National Bureau of Economic Research, 1955 (London: Oxford University Press, 1956). Pp. 222. 36s.)

THIS volume is Number 58 in the New York National Bureau of Economic Research's series dealing with Production, Employment and Productivity in American Industry. It is a handsome addition. Dr. Barger should be congratulated on the assembly of a wealth of hitherto inaccessible data on employment, sales, margins and the channels of trade in the American economy since 1869. The figures for the period before the First World War do, as he says (p. xi), "represent the clearest picture of that period that can now be, or perhaps ever will be, assembled for the particular field to which they relate." The Appendices, which are as long as the text itself, contain an excellent account of the sources and methods used. Dr. Barger adds, in the text (p. 42), that the broad outline of his results "is sharp enough to survive any doubts we may have as to the coverage of particular censuses or the methods chosen for weighting or combining indexes." He has experimented within margins of error and found this to be so.

Dr. Barger reaches three important conclusions: First, that the fraction of the labour force engaged in distributing commodities has shown an upward trend and the fraction engaged in producing commodities a downward trend, ever since 1869. Secondly, that output per man-hour, in both distribution and production, has tended to rise throughout this period, but it has risen less rapidly in retail and wholesale trade than in agriculture, mining and manufacturing. Thirdly, that the distributor's share of the retail sales dollar, decidedly stable since the First World War, experienced a definite but very slow expansion in the earlier period.

Dr. Barger bases these conclusions on direct evidence. In Chapter 3, however, he makes a most interesting attempt to check some of his results by indirect means, and, in the course of this check, provides a useful formula relating labour productivity to distributive margins. In effect, he makes a fresh estimate of man-hours by deflating labour cost, which he obtains from value added, which, in turn, he derives from his study of distributive margins.

The analysis starts from the concept of value added, v , which, in distribution, he takes to mean the difference between sales and cost of goods sold, *i.e.*, the gross distributive spread or margin. (He explicitly neglects items, such as packaging materials, fuel and power, which are not included in value added.)

$$v = \frac{nhp}{r}$$

where n and h are respectively numbers engaged and hours worked, p measures average hourly earnings, of self-employed as well as hired labour,

and r is the ratio of nhp to v , *i.e.*, of labour cost to value added (which reflects the degree of capital intensity).

He then introduces q (output) to deduce a labour productivity measure

$$\frac{nh}{q} = v \frac{r}{qp}$$

Dr. Barger then thinks of each symbol as measuring the *ratio* of the quantity's magnitude in distribution to its magnitude in production and, by this means, neatly draws attention to the most important idea that changes in distributive margins are affected by the differential changes in productivity in the fields of distribution and production respectively. For example, it is often supposed that the generally higher percentage gross margins in American than in British retail stores indicate greater efficiency, in some sense, of the British; in fact, they may simply reflect the higher *differential* productivity of production over distribution in the United States as compared with Britain.

Dr. Barger shows how his indirect measures support his conclusion that *MH* has increased less quickly in commodity distribution than in production: the indirect method shows a differential of $1\frac{1}{2}$ –2%, as compared with 4% arrived at by the direct method. He attributes the greater increase in production to the greater increase in capital intensity (more precisely, the term he uses is "the share of labour in value added") and to the greater technical advances, during his period, in production compared with distribution. He says the differential movements of V and Q (both increase) offset each other, and P has a negligible influence. But R is large and positive. The capital letters denote the ratio of the relevant magnitude in distribution to its magnitude in production. In this way he accounts for the lesser increase in productivity in distribution than in production.

Dr. Barger expresses surprise that the increase of productivity in distribution is as great as it is when we consider the unimpressive record of technical innovation in the latter field. In this expression of surprise it seems as though he is sensing what is, in the opinion of the reviewer, a deficiency in his conception and measure of retail output. Dr. Barger takes sales at constant prices, weighted by margins, to represent distributive output. He recognises that in principle this is incorrect, because the output of distribution is not merchandise but is entirely composed of intangible services. But we have as yet no way of measuring distributive-service output. Dr. Barger accordingly attempts to assess how far the amount of services required to sell a given volume of merchandise has changed over his period to reflect the bias contained in his measure of q . Here he is at fault in considering distributive output in terms of a variety of frills, and a sounder approach would be to go, first, straight to the fundamental distributive service which effecting transactions. During the period Dr. Barger is considering, the

average size of transaction probably rose. When more merchandise is sold at one time the distributor's job is, other things being equal, made easier. In the light of this fact, Dr. Barger need not express surprise that distributive output has risen as fast as his measure suggests, because it probably has not. There is one further point on which Dr. Barger's method and conclusions must be questioned. This is in his treatment of the influence of scale of operation on productivity in retail trade. On p. 50 he puts forward figures for the number of employees per store (a measure of size) and the sales per person employed (a measure of labour productivity). He deduces (p. 50) that "one may doubt the influence of mere growth in size in raising productivity in distribution since 1869." But the data he instances are not relevant to this issue. First, the aggregation of data for all the separate trades, for example, trades as dissimilar as grocery and jewellery stores, conceals what are very discrepant tendencies as between tolerably homogeneous groups. Secondly, cross-section data of this kind do not, by themselves, without reference to the widely various environmental differences, imply anything unequivocal about economics of *scale*.

This book is a distinguished contribution to the history of the distributive trades. But, in addition, it raises conceptual problems of the first importance which are only now being appreciated.

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Economics of Transport. By E. TROXEL. (New York: Rinehart, 1955. Pp. 837. \$7.00.)

"It is my impression," says the author in his Preface, "that many college teachers want a transportation text book with more emphasis on economic analysis and less on legal history and business procedures," and it is certainly true that, in general, transport text-books have been unhelpful to the teacher who sets out to give a course on the economics of transport. This work, concentrating on the American scene, supplements but does not provide a substitute for the more modest books, treating of certain aspects of transport, which have appeared from time to time on both sides of the Atlantic.

The author's aim to write a specifically economic text-book on the elements of transport involves arranging the facts of transport in categories easily handled by accepted principles. This treatment emphasises, most usefully, the inter-connections between widely different forms of transport—an orientation which, because of the great variety of technical conditions and organisation in the transport industry, the student may easily lack. There are three main sections—allocation of resources in transport; public control;

and rates for goods transport and passenger travel. The approach adopted has the advantage, for example, that the author is able to treat roads as a "track" giving a service, and capable of analysis into cost and returns, alongside a similar treatment of railway track.

The author's whole treatment, however, is dominated by the view that it is useful to encompass the main phenomena of transport under the "allocative rule" $\Delta TR \geq \Delta TC$. One difficulty is that the student might well be excused for being unsure at the end precisely what the "rule" is meant to convey. Mr. Troxel may be understood to assert at different times that transport firms *do* maximise profit; that they do not but should; that they would do so were it not for the attentions of such regulators as the Interstate Commerce Commission, which, rather perversely in the author's view, pay too little attention to the rule. This mixture of description, prescription and ideal, though, not necessarily inconsistent, would undoubtedly confuse the novice, who gets little hint of the highly restrictive assumptions behind the welfare axioms presented, or that there *are* problems here other than the allocation of resources. Other principles expounded are a demonstration of how demands for transport are derived from demands for goods under pure competition and a discussion of the principles of price discrimination under conditions of imperfect competition.

There are two results of the general commitment to simplicity. First, transport becomes a case-book to illustrate economic principles rather than a series of problems which are susceptible, with due reservations and abstractions, to analysis by a variety of economic tools. Second, the assumptions about behaviour of transport firms must of necessity vary from point to point in the analysis. For example, the author finds it convenient to analyse "spatial-rate discrimination"—the charging of lower rates for given commodities per ton-mile in places having alternative railways than in places not having them—on the assumption that rates are fixed for the shortest route (pp. 681 ff.) This, as the author recognises, by-passes oligopolistic difficulties. Elsewhere, in order to show the importance of relative elasticities of demand for transport of different commodities, the author stresses the railways' concern for the effect of rate changes on railway output (p. 651). The urge to fit phenomena into a simple framework also at times impedes what would be useful as straightforward narrative; a potentially fascinating account of the Teamsters and other Unions is severely restricted by viewing their activities predominantly from the standpoint of their effect on the allocation of resources. All this, however, is merely to underline the formidable task the author has set himself. Engaging to divert the flow of transport text-books on to a more rewarding road, he has had to construct economic evidence from a mass of sources which, as workers in the area know, do not easily yield results. Most economists will find things of interest here, and will agree that the exercise was worthwhile.

The student of transport, on the other hand, will encounter difficulties.

The book neglects some elementary rules of text-book writing. The student is not shown where to go for further enlightenment and the style is not easily readable. Nowhere in the 837 pages is there a select bibliography; in the 1,127 references, unfortunately collected at the end, there is no attempt to distinguish the important from the unimportant, and the following is an example of the style: "an allocative conjunction of extension and contractions amongst substitutable techniques is not a main part of public entry policies in the United States" (p. 398). British readers will miss analysis of the stirring events in transport here in the last ten years. There is still a great need for a text-book which would treat costs, prices and public control in British Transport since 1947, though one can not, of course, reproach Mr. Troxel for having decided to leave Britain largely out of the picture.

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New Sources of Local Revenue. Report of a study group of the Royal Institute of Public Administration. (London: Allen & Unwin for the Royal Institute of Public Administration, 1956. Pp. 260. 25s.)

THIS book is a valuable addition to the literature on the British taxation system, and the Royal Institute of Public Administration is to be congratulated on its enterprise in producing it. A study group of eight experts in the field of local finance (including Mr. D. N. Chester, Mrs. U. K. Hicks and Professor R. C. Tress) met under the chairmanship of Mr. F. A. Cockfield to survey the present system of financing local-government expenditure in the United Kingdom and to consider possible improvements in the light of foreign experience. The result is a main report of 130 pages together with a supplement of some 110 pages on "The Finance of Local Government in Sweden," by Messrs. Imrie and Murphy. Although the latter is much more specialised and of less interest to the general reader, there is nevertheless a good deal of useful and not otherwise easily accessible material in it.

The main report outlines the present position and historical development of local-authority finances in the United Kingdom. An extremely useful comparative survey of local taxation overseas leads to the discussion of possible methods of modifying or improving the existing rating system by such devices as the abolition of de-rating and site-value rating. A chapter on fees, rents and the like (how many people know of the existence of a municipal wash-house in Manchester or an oyster fishery in Colchester?) leads us to the red meat of the report, a chapter on the introduction of a local income tax into the United Kingdom. Although other possible means of bolstering local-authority revenues by, for example, entertainment and motor-vehicle taxes, receive qualified support in subsequent chapters, in the end the main emphasis is on the local income tax.

Although the case is made out carefully and the whole issue discussed much more thoroughly than in any other publication since the 1912 *Departmental Committee on Local Taxation*, it cannot be said that the conclusion is very convincing. One has a nasty feeling that the administrative complications and duplications of any such system are underestimated. Indeed, in this respect the supplemental report on the Swedish system seems to be more hesitant than the main report. But more fundamentally, the implications of any such change of system are not followed through as fully as they might be. It is most probably desirable to reduce the average dependence of United Kingdom local authorities on Central Government grants. But if this were achieved by a reform which heightened the contrast between rich and poor authorities, as a local income tax might very well be expected to do, the preservation of a reasonable degree of uniformity in local standards and amenities would require a more discriminatory and redistributive central-grant system than at present. Although the study group recognises this problem (p. 129), it gives it far too little attention.

Other criticisms might also be levelled at the main report. One cannot help feeling that assigned revenues are dismissed a little too summarily. It is by no means clear that their contribution to the greater independence of local authorities need be as small as is implied. There are also some occasional lapses from the generally high standard of argument. The assumption (pp. 31-4) that 1938 data on the incidence of rates among different income groups are very relevant to-day needs a capacious throat to swallow it. Nor should readers readily accept the bald statement on p. 84: "The rates are generally agreed to be regressive, and a local income tax, however simple, is at least proportional to income and must represent an improvement in incidence." Even though the principal objective of the report is to produce clear-cut policy recommendations, there really is no excuse for begging so many analytical questions in so few words.

As an up-to-date description of the United Kingdom system of local revenue and the possible modifications to it, the report is quite excellent. But a little caution must be exercised before accepting the policy recommendations too quickly.

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The Making of an Administrator. Edited by A. DUNSIRE. (Manchester: Manchester University Press for the Royal Institute of Public Administration, 1956. Pp. 125. 10s. 6d.)

EXETER UNIVERSITY and the South Western Regional Group of the Royal Institute of Public Administration rendered a most valuable service in
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organising the Winter Lectures in 1954, which form the basis of this book, and in calling upon the distinguished speakers, Sir Edward Bridges, Mr. D. K. Clarke, Lt.-Col. Urwick, Sir Harold Banwell and Sir Henry Self they ensured that a high level of experience in their own particular fields should be available in the papers. But an even greater service is rendered in the publication of this series of lectures by the editor, who, in the summation of the talks entitled "Comment," which occupies a quarter of the book, analyses and clarifies the points which have been made and draws the morals. Indeed it would not be too much to say that without this section the student of administration, as it is practised in the Civil Service and in public administration, might have been led into grave error as to the soundness or otherwise of many practices.

It is a pity that the book is mainly concerned with those particular branches of administration, and the speakers confined to it, because "it is recognised that today Civil Service heads are but a small fraction of those calling themselves administrators; in industry, public or private, in commerce, local government, education, and indeed in any organisation to which the epithet 'large scale' can be applied, there will be found jobs labelled 'administrative' their holders recognising themselves as belonging to a fraternity in spite of the diversity of activities that form their administering, and in spite of differences in terminology." It is mainly left to Colonel Urwick to speak of the great amount of fundamental thinking which is taking place throughout the world, and the progress of teaching it. Although great progress is being made in all spheres in the teaching of administration principles, it is in industry that the research in these principles has taken place, rather than in public administration.

The views of the speakers range from such a fundamental approach down to pure scepticism about it—"pick it up on the job." My own experience, at any rate, shows that in general the degree of efficiency of administration in the various spheres represented follows just that same gradation; at any rate, the leaders and the "tail enders" coincide with those who are most prepared for fundamental thinking and with those who are least prepared to attempt it.

It was Disraeli who defined "practical men" as those who practise the mistakes of their forefathers, and Mr. Dunsire quotes from a conference on the training of managers in the cotton industry: "Somebody else said that as the individual progresses upwards in his career in industry he has to learn; either he 'learns from the best or he learns from Buggins.'" Sir Edward Bridges and Sir James Grigg, who are mentioned, did, such was their good fortune, have the best as their particular Bugginses; but how traditional achievements, accomplished them by skimming off the best educated members of our community, are they certain to be able to continue in that position when industry has now awakened to the value of that parti-

cular source of recruitment, and is attracting it by methods and rewards which public authority cannot equal?

The lectures provided a valuable analytical examination of what is meant by administration. Each of the lecturers has put forward a theme or thesis of his own, and although there is obviously no exact answer, all agree about many things which it does *not* mean. Only Colonel Urwick demonstrates that it is there as a body of knowledge on the subject, which is teachable, and indeed brings the note of urgency into the matter.

I cannot sum up better than the editor does himself: "It is accepted that no amount of training, however carefully and elaborately devised, can instil the spark of artistic genius that good administrators seem to be born with. Nevertheless, there is a great deal that can be done to produce a satisfactory level of competence in the young administrator in a reasonably short time by making available the findings of previous practitioners. . . . Today's methods will no doubt seem crude enough to the observer a century from now." We have only to think of the need to administer the electronic brains of the future, and the human beings who instruct them and interpret their findings, to realise that we have to move much faster in our thinking than some of the lecturers are inclined to consider necessary.

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London.

Mercantilism. By E. F. HECKSCHER. Revised edition edited by E. F. SÖDERLUND. Authorised translation by M. SHAPIRO. In two volumes. (London: Allen & Unwin (New York: The Macmillan Company), 1956. Vol. I, pp. 474; Vol. II, pp. 423. 65s. the set.)

PROFESSOR HECKSCHER's great work appeared in Swedish in 1931, Mendel Shapiro's excellent English translation came in 1935, and the two volumes have been a standard work ever since. Before he died in 1952, Heckscher worked on some revisions for a second edition, for the first was by then out of print. He died before the work could appear, and Professor Söderlund has arranged for the revisions to be translated and for this new English edition. To save expense, the text has not been reset, most of the changes are minor and appear grouped together at the end of each volume. Two changes, however, are important. One concerns his treatment of the aims of Mercantilist policy and the other is a completely new final chapter attacking Keynes' views on Mercantilism.

In his first edition Heckscher argued that the prime aim of mercantilism was national power. Wealth was sought too, but almost entirely as a means to power. In the nineteenth century these objectives were reversed. Wealth was the main goal, and power important only as a means to wealth. Jacob Viner strongly attacked this thesis: the twin objectives of power and

opulence were always present, and there is no evidence of a substantial difference of aim between the seventeenth and the nineteenth centuries. Heckscher accepted some of this criticism as early as 1936 in a "Revision" article, and now he has incorporated this in the text of his work. But he only goes part of the way to meet Viner. The two objectives of power and wealth were always present and were usually compatible, but he still believes that the weight given to each shifts markedly away from the first and towards the second as Mercantilism gives way to *laissez-faire*.

The second major change is the new final chapter on "Keynes and Mercantilism." It is a many-pronged attack on Keynes' dictum that throughout history the chronic problem has always been unemployment. Chapter 23 of the *General Theory* used Heckscher's work to show how mercantilist writers were much sounder economists than the classical school which followed. Contemporary writers were cited to show that mercantilists were worried by unemployment, low prices and a "glut of goods." Their pre-occupation with a gold inflow arose from an intelligent appreciation of the problem and the most practical way of solving it. They knew that the power of their government to undertake investment was small and that the most it could do was to encourage a positive balance of payments. The surplus of exports would take goods off the market and help keep up prices. The inflow of gold would boost the money supply, lower the rate of interest, stimulate investment and reduce unemployment; Keynes' own summary is (p. 347):

"It is impossible to study the notions to which mercantilists were led by their actual experience, without perceiving that there has been a chronic tendency throughout human history for the propensity to save to be stronger than the inducement to invest. The weakness of the inducement to invest has been at all times the key to the economic problem."

Heckscher clearly disliked having his work used for what he regarded as mistaken generalisations, and he attacked root and branch. Keynes' choice of authorities was selective and his belief in their sagacity unjustified. They did not argue from experience; their factual knowledge was rudimentary, their use of what statistics existed was often outrageous, and they were as given to a *a priori* argument as any of the later Classical School. Next Keynes was wrong in believing that they were pre-occupied with unemployment, certainly unemployment of the 1930s type. In general, the period of Mercantilism was a period of sharp inflation, rising prices in the sixteenth century, fairly stable in the seventeenth and rising again in the eighteenth. Unemployment there often was, but mostly from agricultural dislocation caused by poor harvests or frictional unemployment in manufactures arising from interruptions in trade (wars, government interference, sharp changes in markets). Unemployment caused by a fall in fixed investment was almost

unknown. This can be labelled almost as a twentieth-century phenomenon, it is not historically a "chronic" condition, and above all ends Heckscher "has nothing to do with the history of mercantilism."

Heckscher hits hard and is less than fair to Keynes' Chapter 23, which does allow that inflation has been the historical norm (p. 340 n.) and that investment in previous centuries was mainly checked by risks and hazards, and not as to-day by the extent of fixed investment. In a very simple sense, too, Keynes is surely right in saying that with more investment and less fluctuations growth would have been greater and "the economic problem" less. But when every defence is made most historians will feel sympathy with Heckscher in his dislike of "chronic tendencies throughout human history" and Keynes' allotting to past centuries modern problems and Keynesian theories.

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NOTES AND MEMORANDA

MARSHALL AND THE WAGES-WEALTH PARADOX

By 1895 A. L. Bowley had polished his Adam Smith Prize Essay into a classic paper entitled "Changes in Wages between 1860 and 1891." This he read before the Royal Statistical Society, making himself the first great pride of Marshall's "Cambridge Stables." His figures seemed to show that the national income had risen dramatically; so, too, had wages, but considerably less than proportionately. As the product got bigger, labour was in general better off, but enjoyed a diminishing share.

This provoked Marshall, in his contribution to the discussion, to consider the problems of growth and distribution. His starting point was the incentive necessary for the provision and application of capital. If this were rendered less effective, then the total national income would fall. Wage-earners would gain in "equity," for their *share* of the reduced output would be greater than before. But average wages, given a constant labour force, would be lower. For capital, the reverse would be true. A smaller total share would accrue, but each individual unit of capital would enjoy higher remuneration. Thus, for growth to proceed, the share of the product going to capital must rise more than proportionately, and the workers must be content to gain as individuals, eschewing attempts to gain a higher share as a class. The opposition was asserted between aggregate equity and rising real wages.

These remarks were made, perhaps *extempore*, in a public discussion. They are necessarily contracted. But they are most revealing. They landed Marshall in the midst of two sets of difficulties. There was the social problem: what were the implications of this kind of scheme as far as labour was concerned? Secondly, there was the theoretical difficulty: Marshall had moved at a bound from micro- to macro-economics.

Marshall had sought, in effect, in his *Principles*, published five years earlier, to avoid the kind of problem here raised. He had made his main approach atomistic; he had sought to get away from aggregate distribution, with its inevitable tendency to set falsely homogeneous groups against one another. For this is inevitable once distributive aggregates are made. Even if the relative share of the majority group is rising, it is still true: *a fortiori* in the kind of situation shown by Bowley's figures. The utilitarians of neo-classical economics had escaped from natural-right claims by the marginal-productivity approach. By arguing as he now did, Marshall was in danger of saying that though natural right might say one thing, namely that the worker was entitled to the product of his labour, natural law said another.

David Chadwick, in the discussion, seems to have perceived this danger. He said that Bowley should have confined himself to particular groups of workers. Marshall himself had refuted those "utopians" who had argued that a fixed or even smaller national income would, if properly distributed, suffice for all the reasonable needs of man. Marshall was in a dilemma: it would be obscurantism and disloyalty to reject the approach of his pupil. Though Bowley himself seems to have been mainly preoccupied with the technical adequacy of his figures, statistics, that "neutral" science, had resurrected the equity question in its most naked form. In doing so it impelled the generous Marshall to leave his painfully built microcosmic defences and join Ricardo, Marx and Henry George in the dangerous game of aggregate distribution schemes.

The labour theory of value, which claims the whole product for the worker, has two aspects: it has implications for the worker/employer dichotomy; no less it is relevant to the relationship between groups of workers. If contribution to the product is the proper basis of sharing, then the skilled worker is entitled to a larger share than the unskilled—the labour theory in this aspect leads to wage differentials. In its palmy days the Junta could have invoked this argument. But tactically it was becoming necessary for labour to offer a common front: if the aggregate share of labour was to be increased, homogeneity of interest must be assumed, and common action followed. This was in fact what was happening when Bowley presented his paper. Labour solidarity was making progress in the direction of breaking the relationship between individual effort and reward, in order to make itself more effective between labour as a whole and capital. This was what the prophets of gloom, like Robert Lowe, had foretold. This was what sympathetic men who had accepted the coming of the unions in individual trades had scarcely foreseen.

Marshall, in the *Principles*, had deliberately omitted to develop a distributive scheme on classical lines. Bowley's approach pressed him into doing so, with startling results. For the aggregate wage picture as thus presented stripped away the reasoning of equal wages at the margin and left revealed the size and trend of the intra-marginal surplus accruing to non-wage-earners. No less important, it shifted the centre of emulation from within the workers' community, and focused it upon the employee/capitalist nexus. This was a double loss—productive emulation would decline, and the capital share would be attacked.

The more purely theoretical implications give rise to even greater difficulties.

How did Marshall arrive at the conclusion that in order that labour might raise its wages it must generate a cumulatively greater capital share? It was, of course, the law of diminishing returns that underlay the theory. This classic construction, useful when applied to variations of the ratio of factors in specific acts of production, was extended to embrace the com-

prehensive categories of labour as applied to capital. (Adam Smith had done more or less the same.) The upshot was that labour, in order to keep its marginal net productivity rising, was obliged to see to it that capital not merely kept abreast of the labour supply, but ran ahead of it. Only so could labour be continuously more effective. In this way an essentially static and micro concept was made the basis of a dynamic theory of production and distribution.

Marshall had done his formative thinking during the latter phase of the wages-fund debate. He believed that much progress had been made since the early nineteenth century by economists in understanding the wages problem. The subsistence theory he repudiated, and involved himself in attack in consequence. The workers could, and did, respond to higher wages. Redistribution might well produce a better labour force, and consequently a higher product. But always, as with John Stuart Mill, who reasoned similarly, capital was crucial: any diminution in its supply as governed by the free market would lower wages. Hence Marshall, like Mill, halted between what appeared to be two mutually exclusive courses: should the product be raised by capital provision, or by improved labour? Marginalism, which disposed of such problems in particular cases, was placed in abeyance by the aggregate approach.

It is curious that Marshall does not seem to have pressed his thinking further. What conditions would determine the net benefit of a redistributive programme, relating the workers' productivity gain to the capital deficiency loss? The choice of desirability would seem to depend upon two elements. First, there was the question of technological potential. Without some assumption on this matter there is no way of saying whether the product would be larger with more equipment or with better men. Marshall's view, as provoked by Bowley's figures, made him by implication a technological optimist, for he comes down on the side of capital accumulation. Secondly, there was the question of improvement potential among the workers. Granted they could benefit by higher wages, how much higher should they go? For Marshall had had a good deal to say about the diminishing utility of income. It was his opinion that "human nature is not far enough improved away from its primitive barbarity" to make rapid redistribution safe from the point of view of its effect on character. In fact, it would appear that Marshall would not redistribute. He would rely upon the improved absolute standard of living generated by the upward trend to see to it that the benefits of a better labour force were made available, and leave the rising capital share to fructify the continuously improving labour.

It was in the classic tradition to set up an economic universe and allow it to run its course under fixed assumptions. This Ricardo was perhaps entitled to do, for his system moved toward a position of rest—the stationary state, in which the renovating role of capital was brought to a halt. But

Marshall was arguing in terms of cumulative expansion, which seems to imply continuously accelerating innovation. Under such conditions his starting assumptions regulating the relationships between factors must become increasingly unreal. No one knew this better than Marshall. Yet, confronted by what appeared to be the real distributive picture over time, he tried to take wings into the dynamic upper air, using elements appropriate to a humbler medium, loosely held together by unsound implications.

It is somewhat surprising that the results of Bowley's calculations, which Marshall in the main accepted, did not give him pause. For the picture was so striking as almost to suggest a *reductio ad absurdum* of Marshall's approach. It was all very well to believe with Say that supply created its own demand, but was there no limit to the redistribution toward capital that could thus take place? It was the more extraordinary that Marshall should hold this view, with the great depression, with its notorious failure of return to capital, an immediate and frightening memory. Foxwell and Wicksteed had been much disturbed about this nine years earlier. It had prompted them to confront an irate Institute of Bankers with the question:

"What would be the effect of an industrial and an economical society in which, as may conceivably be the case, the number of persons who have provided for future emergencies and wish to defer consumption, may be so great as not to find instant correspondents who desire to take it, because the amount a man may take up and profitably use is limited?"

Keynes, starting from an aggregate approach, has been accused of losing sight of the individual and the specific—of blanketing much diversity with his general propensities. Marshall did the reverse—he started on the atomistic plane, and indeed remained at the level of particular equilibrium analysis most of the time; but his excursion into aggregates involved him in illegitimate simplification. Yet, if Bowley was right, the system had worked to date: the product had risen and the worker had become better off. But this is not a sufficient justification, for who is to say whether the increase in unearned incomes was not more than adequate provision for capital? For there were certainly many in England who believed that it was so, and they declined to be silenced by the application to the national aggregates of a static and partial equilibrium argument.

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PRODUCTIVITY IN TWO DOMINIONS: A REPLY TO A REJOINDER

IN his rejoinder¹ to my earlier note,² Mr. Lerdau is kind enough to accept most of my criticism of his methodology, and even chides me for omitting to criticise errors in his conclusions. However, he still upholds his one objection to my original article and suggests that I would have done better to adjust my estimates of Canadian national product to exclude the effects of changing terms of trade before using them as the numerator in a productivity index. As I explained earlier, I ignored the terms of trade in my analysis, not for theoretical reasons,³ but simply because they had no significant influence in Canada in the period under review. I suggested that different techniques were appropriate for New Zealand, where the terms of trade have fluctuated violently and where foreign trade was more important than in Canada. Mr. Lerdau challenges my statement of the facts and claims both that the Canadian terms of trade changed much more than I suggest and that there was no significant difference in the relative importance of foreign trade in Canada and New Zealand.

There are, of course, several concepts of the terms of trade. When I stated that the Canadian terms of trade did not change between 1931 and 1941, I was referring to the relationship between the price of goods and services imported, which rose by 22%, and the price of goods and services exported, which rose by 22.6%.⁴ When Mr. Lerdau asserts that they did change, he is referring only to merchandise trade, and excludes trade in services. Mr. Lerdau's concept is too narrow for the purpose of assessing the impact of the terms of trade on Gross National Product, for the size of the G.N.P. is affected by transactions with foreigners in services such as tourism, insurance, shipping, just as much as by merchandise trade. Mr. Lerdau's narrower concept of the terms of trade is, of course, appropriate in the context of his concept of G.N.O. (*i.e.*, G.N.P. excluding all trade in services), but he is perhaps forgetting that I used G.N.P. as my measure of

¹ E. Lerdau "Productivity in Two Dominions: A Rejoinder," *ECONOMIC JOURNAL*, September 1956.

² "Economic Growth in Two Dominions," *ECONOMIC JOURNAL*, December 1955.

³ On theoretical grounds I agreed with Mr. Lerdau that changes in real income arising from changes in the terms of trade should not be construed as productivity gains. However, I do not think the case for excluding such changes is quite as clear cut for the long run as it is for the year-to-year movements with which he deals. Short-run movements, such as those caused by the Korean war boom, have an obviously accidental effect on real income, but long-run changes in the structure of the economy, *e.g.*, from less to more productive sectors, are not accidental or extraneous to the concept of a national productivity, and these long-run structural changes often affect the external terms of trade as well as the terms of trade between different sectors of the economy. In practice, it is, of course, impossible to separate the accidental short-run factors from longer-term factors which may be at work.

⁴ The figures cited were calculated for the purpose of deflating the official Canadian national accounts estimates, cf. *National Accounts, Income and Expenditure, 1926-1950*, D.B.S. Ottawa, 1952, p. 28.

output. Although I find G.N.P. a clearer and more useful concept than his "G.N.O.," this particular difference in method was not a point of explicit disagreement between us, and the argument here is simply about the correction which I might have made for the terms of trade in my original article.

Mr. Lerdau states that foreign trade was of about the same importance in Canada and New Zealand, and shows that in 1939 and 1946 exports amounted to about a quarter of G.N.P. in both countries. However, he illustrated his point about the terms of trade in his original article by referring to 1950, and in that boom year exports amounted to about half of G.N.P. in New Zealand. I therefore remain convinced that Mr. Lerdau's problem was different from mine and that he is wrong in suggesting that I would have gained anything by taking his advice. I also disagree with him when he says that my arguments on this point were redundant. They might have been if I had been deploying them as a defence of my method, but they are not redundant when they are taken simply as an explanation of the degree to which his problem was different from mine.

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THE SAVING POTENTIAL OF DISGUISED UNEMPLOYMENT

THIS note attempts to analyse some of the assumptions and limitations of the proposition advanced by Professor Ragnar Nurkse¹ that "the state of disguised unemployment implies to some extent a disguised saving potential as well." The reasoning underlying the proposition is briefly as follows. The saving potential is the difference between the output and the consumption of the productive labour on land which, under conditions of disguised unemployment, is offset by the unproductive consumption of the surplus labour. This could be converted into effective saving by transferring the surplus labour to alternative occupations and utilising the resultant food surplus to feed the transferred labour in its new occupation, provided that the marginal propensity to consume of both the retained and transferred labour remains constant.

Some of the limitations on the effective mobilisation of the saving potential of disguised unemployment are no doubt recognised by Professor Nurkse, such as the possibility of leakages in the subsistence fund through increased consumption by the retained and/or the transferred labour and through costs of transport of food to the place of work of transferred labour. He also makes the important qualification that

"the formation of capital through the use of surplus labour is self-financing only if the mobilisation of the concealed saving potential is

¹ *Problems of Capital Formation in Under-developed Countries*, p. 37.

100 per cent successful. If it is less than completely successful the scheme seems to break down; the amount of saving, or in real terms the subsistence fund available to support the workers engaged on real capital accumulation proves insufficient. . . . It seems to be a question of all or nothing. Either the whole of the food surplus that becomes available on the land through the withdrawal of the surplus labourers is mopped up to feed them in their new occupations, or nothing can be done at all."¹

This in itself is an important factor limiting the practical significance of the proposition. But there are other important limitations arising from the nature of the saving potential and its real magnitude and the additional costs of mobilising it.

Firstly, the real magnitude of the saving potential is much smaller than it appears to be if elements which do not constitute genuine saving are excluded from it. The size of the savings fund embodied in disguised unemployment is inflated partly because of abstraction from the implications of the existence of large-scale indebtedness which is a common feature of agriculture in underdeveloped areas. To the extent that the food consumption of surplus labour, and often enough that of productive labour, is financed by borrowing, there is no saving potential in the strict sense. That the magnitude of unproductive borrowing by cultivators is considerable is amply borne out by available data² for at least some underdeveloped countries. Thus this part of the saving potential of disguised unemployment is not genuine saving.

The magnitude of the saving potential also appears to be larger than what it is partly on account of "economies of joint consumption" in the family farm arising from the common use of accommodation and household goods. Thus this constituent of the saving potential exists merely because of the "joint household," which is an institutional feature of disguised unemployment and would naturally disappear with the transfer of labour; and the other part, which is sustained by borrowing, is not genuine saving.

Secondly, the proposition is valid only in real physical terms and on the assumption that the supply of food produced by the retained labour does not decline in response to price changes. This, no doubt, to a limited extent approximates the conditions in the non-monetised subsistence sector of an underdeveloped economy. But it may not necessarily hold good when the effects of price variation on production of food are considered.

The influence of price changes on food output may be illustrated with reference to the alternative uses of food produce, namely, customary pay-

ments in kind, which are usually in the nature of fixed costs, seed for the next season, consumption on the farm and sale in the market. It is obvious that the last three decisions are interdependent among themselves and are together influenced by current and expected prices. And since "saving potential" in the sense in which it is used by Professor Nurkse refers to the food consumption of unproductive labour, on the farm, it is not an independent variable, but depends upon the marketable surplus and also provision for seed and through them on the level of prices. The interdependence of the saving potential and the price level renders it an unstable quantity, and consequently the assumption of an invariant saving potential in the form of a constant supply of food is not valid. Since food output is partly consumed by food producers, their reserve demand has to be taken into account. Any constellation of prices which results in a reduction of the supply of food would mean a reduction of the saving potential, as would happen if the productive labour which stays back on land has a "backward-rising" supply schedule, in which case the savings fund may be wiped out before mobilisation. It is, of course, not suggested that the backward-rising supply schedule is typical of producers' reactions in underdeveloped areas. Even if it were, the schedule would have this shape only for a part of its length and the mobilisation of the saving potential of disguised unemployment could conceivably be completed before the point where the supply schedule become backward-rising. But income effects of price changes on the supply of food are particularly relevant wherever the family farm is the predominant unit of production, as is generally the case under conditions of disguised unemployment. These income effects might so operate as to produce a backward-rising supply curve. Professor Nurkse's analysis implicitly assumes that variations in price data are of no significance for food production. This follows from the static character of his model, but as he interprets the subsistence-fund "as a flow rather than a stock,"¹ a certain dynamic element is introduced into the model in so far as the "flow" is not constant and may vary under the influence of current and expected prices. Consequently, it would be difficult to isolate the saving potential from the effects of price fluctuations.

In addition to the limitations arising from the instability of the saving potential and the existence of certain constituents which are not genuine savings, there are others arising from the fact that the costs of mobilising the savings potential, even if it is assumed to be stable, would be probably greater than its real magnitude. According to Professor Nurkse, the leakage in the subsistence fund through costs of transport of food "can be reduced by scattering the projects in rural areas, but in practice it can probably never be entirely suppressed."² There are, however, distinct limits to decentralisation of those types of capital projects whose location is determined primarily

¹ *Problems of Capital Formation in Under-developed Countries*, pp. 39-40.

² According to the Report of the All-India Rural Credit Survey, "considering for instance, the proportion to total borrowings of borrowing for 'family expenditure' most of which is generally considered non-productive, we find the percentage to be quite considerable being about 47 per cent for the average cultivator. Even for the big and large cultivators, it is as high as 37 per cent and 41 per cent respectively; the proportion of such borrowing is still higher for the medium cultivator (about 49 per cent) and highest of all for the small cultivator (about 60 per cent)" (Vol. II, p. 338).

¹ *Problems of Capital Formation in Under-developed Countries*, footnote on p. 44.

² *Ibid.*, p. 39.

by technical considerations. The mobilisation of the savings potential at relatively low costs may, however, be made possible through development of cottage industries and such other occupations which do not create costs of transfer and housing of surplus farm labour and which involve minimum possible use of additional complementary resources. This line of approach constitutes an important part of the economic case for cottage industries under conditions of disguised unemployment.

Thus the saving potential of disguised unemployment—in itself somewhat exaggerated by the economies of joint consumption—is largely a conceptual magnitude which could be said to exist only under the highly restrictive assumptions of constant population, constant marginal propensity to consume of the retained and transferred farm labour, abstraction from the income effects of price changes on food production, and from the implications of large-scale agricultural indebtedness. Furthermore, in practice the costs of mobilising the saving potential of disguised unemployment, to the extent that it exists, would probably be greater than the magnitude of such saving.

Professor Nurkse's analysis is theoretically significant in so far as it points to the existence "of a relationship between consumption and investment, which stands midway between the classical and Keynesian approach,"¹ namely, the possibility of increasing capital formation without reducing current levels of consumption. But even this relationship is subject to several limitations, as shown in the present note, which have not been brought out by Professor Nurkse's analysis. There is also the important consideration that it would be unrealistic, even if it were practicable, to posit plans of economic development on the basis of current levels of consumption in underdeveloped countries, when these levels are recognised to be both low and even declining.

Bombay.

A. G. CHANDAVARKAR

THE UNITED STATES RECESSION OF 1953/54: A COMMENT

In contrasting the international repercussions of the United States recessions of 1949 and 1954, in his article in the *ECONOMIC JOURNAL* for December 1955, Mr. Balogh states that

"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 'commercial changes' has decreased sharply."

¹ *Problems of Capital Formation in Under-developed Countries*, p. 38.

Actually, if allowance were made for strategic stockpiling the statement about falling expenditure in 1949 would require qualification.¹ Even if we ignore this, however, Mr. Balogh's statement about the proportion of the dollar balance that is sensitive to commercial changes seems incorrect, or at least misleading: as may be seen from the data in the accompanying table, "commercial" imports rose from about 56% of the total supply of dollars to the rest of the world in 1948 to roughly 68% in 1953. In other words, the world supply of dollars—and hence the overall dollar balance—was *more* recession-sensitive in 1953 than in 1948, not less, as Mr. Balogh seems to imply.

Mr. Balogh argues further that the military expenditure and aid policy of the United States Government "happened to achieve the anti-cyclical effect which was (quite unjustifiably) hoped from the establishment of the various international institutions." In fact, however, the data² show that the rise in oversea military expenditure from \$2,266 million in the year ending June 1953 to \$2,649 million in the following year was almost exactly offset by a fall in governmental foreign economic grants and credits from \$2,039 million to \$1,669 million.³

If the United States recession of 1954 had less serious repercussions in the rest of the world than that of 1949, we must look beyond the disbursements of the United States Government for the reason.

S. DELL

New York.

Ratio of Commercial Imports to the Total Supply of Dollars by the United States (In millions of United States dollars)

	1948.	1953.
Total imports of goods and services	10,295	16,467
Military expenditures	799	2,512
Imports for the stockpile [*]	160	733
"Commercial" imports	9,336	13,222
Government economic aid and net long-term credits	5,006	2,060
Private remittances and net long-term capital outflow	1,469	1,013
Total supply of dollars	16,770	19,540
Percentage ratio of "commercial" imports to dollar supply	56	68

Source: *Supplement to the Survey of Current Business*, July 1954, and *Survey of Current Business*, June 1955.

^{*} Assumed equal to stockpiling expenditures. While imports for the stockpile may in fact differ substantially from stockpiling expenditures, the difference is not likely to be large in relation to the total of "commercial" imports.

¹ United States stockpiling expenditures rose from \$160 million in 1948 to \$459 million in 1949, while other military expenditures overseas declined only from \$799 million to \$621 million.

² Sources as for the accompanying table.

³ If, instead, we compare the calendar years 1953 and 1954, the fall in grants and credits much more than offsets a very modest rise in military expenditures.

THE UNITED STATES RECESSION OF 1953/54: A REPLY

I AM somewhat baffled by Mr. S. Dell's comment on my article on the contrast in the international repercussions of the United States recessions of 1949 and of 1954. The whole point of my article was to show that¹ "United States imports at under-employment levels are not sensitive to prices either upward or downward."

Mr. Dell quotes one of the many factors analysed out of context and implies that I wished to attribute the *whole* change in the international reaction of the United States to a fall in production, to changes in United States military expenditure. This certainly was not my intention.² I did look "beyond the disbursements of the United States Government for the reason" for the remarkable difference in the pattern of the development of the balance of payments of the United States between 1949 and 1954. Indeed, Mr. Dell's statistics, if they are correct, and if they bear his interpretation, not only do not weaken but strongly support my case. They support my contention that devaluation (or depreciation), far from being a smooth and effortless method of basic adjustment, might well add to the difficulties of a country because of the repercussions of rumours (and the consequent anticipation effects) on the balance of payments, while visible trade is rather insensitive to price changes.

It should be added, however, that Mr. Dell's calculation of the non-economic (stock-piling) imports is wholly illegitimate. We do not know how much of the stock-piling expenditure represented imports, nor *when* those imports actually took place. As some of the stock-piling contracts were made directly with producers, payments and deliveries may have differed considerably. In the case of purchases in "free" markets the date of import and of effective payment also can be widely spaced in time. And while Mr. Dell's remark (Table, Note (a)) that the "difference [between imports for the stock-pile and the stock-piling expenditure] is not likely to be large in relation to the total of 'commercial' imports" is

¹ "Some Theoretical Implications of the International Aspects of the United States Recession 1953/4," *ECONOMIC JOURNAL*, December 1955. Conclusions, p. 653.

² I plead guilty, however, of having stated without making clear that my reference was to the balance of *trade* (and not to the balance of payments) (and having made a wrong statement on p. 646—not quoted by Mr. Dell) that "the proportion of the balance which is sensitive to 'commercial changes' has decreased sharply." The proportion of the balance of trade including military expenditure did decrease sharply from 93% at the end of 1949 to 79% at the end of 1953. The increasing difficulties of the statistical measurement of the U.S. balance of payments and the supply of dollars are underlined by Mr. W. Lederer's article "Major Developments Affecting the U.S. Balance of International Payments" (*The Review of Economics and Statistics*, May 1956, p. 177) written simultaneously with my article which Mr. Dell entirely disregards. Mr. Lederer accepts the increase of Government transactions as one of the stabilising factors (*loc. cit.* p. 190).

quite true, it is obviously irrelevant. In this regard the extent and timing of stock-pile imports cannot be neglected.

Mr. Dell's case is weakened further by the implicit assumption that American military expenditures have exactly the same effect as Government economic aid and long-term credits, an assumption which is entirely unjustified. The effect on the demand for United States exports, hence on the balance of payments, of the two kinds of "non-commercial supplies of dollars," is entirely different. U.S. military expenditure abroad does not necessarily create additional demand for U.S. exports. U.S. aid in most cases does. Nor must we forget in this connection that economic aid has increasingly taken the form of export of surplus agricultural products, and that this impact has also therefore further increased. Their aggregation with military expenditure abroad is totally illicit.

Thus the statistics quoted by Mr. Dell have only a very limited analytic value. But so far as they go they emphasise my point¹ that "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."

We are yet to hear from the advocates of fluctuating exchanges, coupled with free multi-lateral payments and non-discriminating trade, a defence of their case against the lesson taught by these facts. They have continued to promote the dissolution of the Sterling Area by their propaganda for convertibility. They are now trying to persuade us that all deep-seated, difficult problems posed by the creation of a European Common Market for Britain would be automatically solved by our entry into a European Free Trade Area on the basis of fluctuating exchanges. Some people never learn.

T. BALOGH

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GROWTH VERSUS CHOICE: A COMMENT

In his paper (this *JOURNAL*, June 1956) Mr. Wiles has argued:

- (a) that growth is more important, in a meaningful though not precisely definable sense, than the "right" allocation of resources;
- (b) that, in practice, the requirements for the "correct" allocation

¹ *ECONOMIC JOURNAL*, *loc. cit.*

tion of resources may often conflict with the requirements for (a) "desirable" rate of growth;¹

(c) that, because of (b), pre-occupation with allocation economics is harmful to a (desirably) rapid rate of growth;

(d) that, because of (c), it would appear that "allocation economists" are "not in fact interested in growth" (p. 255), and, moreover, are guilty of "unconscious political bias" in substituting the concept of "consumer sovereignty" for that of consumer "satisfaction" in the context of welfare economics (p. 250).

Most people would accept (a), and various writers, notably Schumpeter, have emphasised it. (b) was pointed out, among others, by Schumpeter in connection with market structures and the effects of monopoly. Mr. Wiles cites other instances of conflict between "the satisfaction of the welfare equations" and the desideratum of growth, of which a few words below. This is not by way of criticism, since Mr. Wiles does not claim originality for his views. Granting (a) and (b), the validity of (c) depends on the historical influence of "scarcity economics" on economic policy and the functioning of the economy. On this question there is hardly any evidence, in spite of Lord Keynes' famous and suggestive *obiter dictum*.² In fact, it is often claimed that the influence of economic theory on economic policy declined markedly with the coming of marginalism. (d), however, seems to rest on an unfair interpretation of allocation economics. The difference between believers in "forced development," on the one hand, and allocation economists on the other, does not spring mainly (if at all) from divergent views of what best tends to foster consumer satisfaction, but rather hinges on a political-value judgment regarding the place of paternalism in economic life. It also does not seem true to say that those who analysed the "implications of the necessity of choice" were not "interested" in growth, in the sense that they regarded growth as unimportant, or even less important than correct allocation.

Given the value judgment that resources ought to be husbanded in

¹ Mr. Wiles fails to show, from a purely theoretical point of view, the precise nature of the conflict. He dismisses this by saying: "On pure welfare grounds, however, the question is much more complicated and we shall not discuss it here . . ." (p. 245).

If growth depended *only* on capital accumulation, *i.e.*, without innovations, and we accept the choice criteria of welfare economics, then there is no conflict, because we can easily state the "optimum" rate of investment. Mr. Wiles does not accept the choice criterion because of "consumer irrationality," and advances the Pigovian argument that in this respect free choice leads to a *bad* allocation of resources. But, even in this case "optimum" conditions can be stated, although, *ex-hypothesi*, the result of a free market would not satisfy them.

But, of course, growth does not depend solely on capital accumulation: and regarding the other factors governing growth, *e.g.*, innovations, changes in attitudes to work and leisure, etc., no "optimum" conditions can be derived from static welfare economics. Hence the possibility of conflict. From a logical point of view, this position is still difficult, for we speak of "conflict" between allocation, for which we have rigorous criteria (at least in principle), and growth, for which we have no similar criteria.

² I. M. D. Little, *Welfare Economics*, p. 5.

accordance with the free choices of consumers and the free offers of producers, recommendations for "forced development" would clearly have been contradictory; the only thing that could be done consistently with this value judgment was to elaborate the conditions under which the economy would best respond to the choices of producers and consumers, and this led naturally to the formulation of the well-known optimum conditions. Government intervention could be shown to be a "good thing" only if it improved the economy's response to consumer and producer choices. The essence of welfare economics is the drawing out of the implications of this value judgment, and it need not *necessarily* be concerned with consumer satisfaction. It may well be true that free choice does not maximise satisfaction. But economic growth cannot be urged solely on the grounds that it increases happiness or satisfaction; surely one must agree with Lewis¹ that the case for growth can rest best on the claim that continuously and rapidly rising output increases the range of choice, and therefore freedom. Mr. Wiles would thus be on surer ground if he based his case on the slogan "less freedom now for more freedom in the future," which is not at all unreasonable. But he should be fair in the interpretation of those whom he criticises, and show where his value judgments differ from theirs.² In addition, he might have pointed out, as Dr. Little has done, that since in practice the "right" allocation of resources can never be discovered, and even in theory the concept is rather shaky, government intervention along the lines he suggests might not even do much violence to the value judgments of "allocation economists."³ Whether this would be so depends on the extent of forced development, and the measures adopted for it.

Mr. Wiles also claims that economists who have been interested in choice have not been interested in growth. If by that he means that their theoretical models have been static, he is quite right. But the reason for the static model, surely, has been a particular view of the scope of economics, rather than evidence of a lack of interest in growth.⁴ Growth embraces almost all of historical development, and economists, especially after the Methodenstreit, generally refused to be drawn into historicism.⁵ Thus the suggestion that they were not interested in growth, in the sense of not

¹ W. A. Lewis, *The Theory of Economic Growth*, p. 421.

² He urges that economists should make "value judgments" (p. 255). But they should try to point out precisely what sort of value judgments they are making.

³ One may also argue, as does Mr. Streeten, that "the recognition that wants and desires are not ultimate, independent, autonomous data, but the product of social relations" . . . makes "the attempt to isolate aspects of 'utility,' satisfaction, etc. . . misleading as a basis for recommendation" (see P. Streeten's Appendix, p. 215, in G. Myrdal, *The Political Element in the Development of Economic Theory*). The policy implications of this argument, however, are not immediately apparent.

⁴ "In 1955 . . . all economists are thinking it necessary constantly to remind one another of what Marshall took for granted—that we are interested in the problems of growth" (Sir Dennis Robertson, *Economic Commentaries*, p. 16).

⁵ See L. C. Robbins, *The Nature and Significance of Economic Science*, 2nd edition: pp. 131–5.

regarding it as important, is rather like saying that a physicist is not "interested" in biology; economists, until recently, held that their tools did not enable them to say much about growth, and they therefore excluded it from their theoretical models. However, they do seem to have held that institutions which best tend to the satisfaction of the welfare equations are also favourable to growth, and in this they may well have been wrong.¹ No economist, though, would have been surprised to learn that forced accumulation would accelerate the rate of growth!

Mr. Wiles argues that "while an emphasis on choice and scarcity is logically compatible with due insistence on growth, it is not psychologically so." As was argued above, since the attempt to achieve more rapid growth may require current infringements of free choice, the incompatibility seems to lie more in the domain of value judgments. Everybody accepts some limitations on free choice; it all depends on what sort of coercion is involved. There is the further and dependent question of *how much* the rate of savings ought to be stepped up, and this is not immediately apparent from "any common-sense view of interpersonal and intertemporal comparisons of utility" (p. 251).²

According to Mr. Wiles, the satisfaction of the welfare equations retards growth, not merely because of the deficient rate of investment it entails, but for other reasons also.

"Too delicate a comprehension of scarcity problems . . . slows up the rate of growth. For it leads to hesitation, whether on the part of the government or the individual entrepreneur." Here, apparently, Mr. Wiles has in mind the "efficiency utopia" devised by Mr. Lerner, and one wonders how many economists took that seriously.³ If, however, he is speaking of real-life entrepreneurs, then it is difficult to see in what way they are supposed to be affected by "a determination never to violate Professor Lerner's welfare equations." Entrepreneurs, we usually assume, aim at profit maximisation; since information has to be interpreted, and the future is uncertain, no doubt they must often hesitate before making decisions. The only way to avoid this would be to guarantee markets at "cost plus" for whatever was produced, a method not necessarily most conducive to growth and efficiency.⁴

¹ See P. Hennisman, "Monopoly: Impediment or Stimulus to Economic Progress," in *Monopoly Competition and their Regulation*, Editor E. H. Chamberlin, pp. 421-2.

² Soviet growth has been spectacular; were the privations it entailed "right" from the point of view of "common sense intertemporal comparisons of utility"? In Note 2, p. 253, Mr. Wiles explains "much of recent Soviet economic history" by means of a logarithmic equation; but he presumably does not hold that these equations yield an answer to the question. And when he exclaims, "Extra funds should then be fearlessly extracted from the consumer and splashed about" (p. 254), we must be grateful that Mr. Wiles remains "fearless" at Oxford, and that occupants of No. 11 Downing Street are (and we hope will continue to be) less fearless and generous.

³ See "Lerner on the Economics of Control," in M. Friedman, *Essays in Positive Economics*.

⁴ It is not easy to decide whether, in pointing to the costs of "satisfying the welfare equations," Mr. Wiles is dissatisfied with the actual functioning of our economy; or whether he is merely

Finally, Mr. Wiles raises the old cry that monopolistic competition leads to too much diversity, and thus prevents the attainment of the economies of standardisation. "Here too, then, the man in Whitehall knows best. Only by excluding this latter aspect of consumer sovereignty is it possible to satisfy the consumer to the fullest extent out of any given quantity of resources." That this does *not necessarily* follow from the theory of welfare economics has already been shown.¹

It is quite possible that consumers would be more *satisfied* if they were not allowed to choose freely. The question, once again, is how far standardisation should be carried; it is not at all clear that "satisfaction" would be increased if, say, furniture were much more standardised than it is now and our friends' flats were all indistinguishable from one another, even though the price of furniture were reduced considerably.

This note merely restates well-known propositions, which no doubt have been stated better elsewhere, but appear to be in need of reiteration. Economists may indeed have misplaced the emphasis in their work, and often mistaken logic for fact. Yet, from a policy point of view, it is surely significant that their formulations emphasised individual liberty. We are continually being urged that our freedom is in danger unless our rate of growth corresponds more nearly to that of communist countries. It now appears that our freedom may be threatened by the very attempt to achieve the growth which supposedly should guard it.

KURT KLAPPHOLZ

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A REJOINDER

ON p. 342 Mr. Klappholz seems to confuse two absolutely different questions: (i) do the *institutional* requirements for a correct allocation of current resources conflict with those for a desirable rate of growth? This is, or ought to be, the content of his question (b), and it is also the main concern of my article. I may have "failed to show . . . the precise nature of the conflict," but I certainly did not "dismiss" it. (ii) can a desirable rate of growth be defined by the reasoning typical of welfare economics? This question I did indeed dismiss, and to it Mr. Klappholz's footnote makes a most interesting contribution; though I cannot agree with the last paragraph of it. Surely static welfare economics *can* cope with

warning us against trying to establish a "Lerner Utopia." The two are by no means equivalent. No one knows to what extent the "welfare equations" are actually satisfied, and only *naïveté* could make one suppose that the allocation of resources between present and future use is guided solely by consumer choices. When Mr. Wiles claims that consciousness of scarcity economics "creates an atmosphere hostile to rationalisation, standardisation and mass production, and thus interferes with the technical efficiency of whatever is, *despite all hesitation*, produced" (p. 248, my italics), he is presumably *not* referring to the performance of the United States economy.

¹ I. M. D. Little, *Welfare Economics*, p. 262.

"changes in attitudes to work and leisure," and could define an optimum rate of growth after taking them into account? As to innovations, again, surely static welfare economics *can* tell us how much to invest in research and development with a view to future growth? Innovation, we all seem to forget, does not just happen. It results from the diversion of resources into innovation-seeking, and those in charge of this diversion do in fact estimate its likely profitability. Admittedly this is of all kinds of investment the most uncertain by far, but that does not remove it from the reach of "static welfare economics."

As a tool of analysis I find good old simple, unsophisticated "s.w.e." unbeatable. Mr. Lerner's "efficiency Utopia" ought to be taken very seriously. My quarrel is not at all with its normative conclusions (if correctly deduced), but with its influence on descriptive economics (*e.g.*, in the text-book theory of the firm) and with an exaggerated view of its importance, which leads to the neglect of growth and to wrong institutional arrangements.

Twice (pp. 342 and 344) Mr. Klappholz defends welfare economists against a charge of neglecting growth. No names, no pack drill. But let him mention just five reasonably distinguished economists (welfare or other) from Marx to, say, 1947 who were interested in growth; or six including Schumpeter. He will probably find that like Schumpeter they have been since youth in contact with Marxism or German historicism. Very possibly the cause of this neglect is, as suggested, that welfare economists dislike economic paternalism—but that was largely because economic paternalism is unnecessary for a correct current allocation of resources. Would they have had the same attitude to it if they had seriously thought about other things? Possibly, too, "they held that their tools did not enable them to say much about growth." But then, first, they could only have remained content with such useless tools if they had underestimated the importance of growth; and secondly, it is very doubtful, as I have tried to show above, if these tools are as useless as supposed. The will to use them was absent.

How much forced savings should there be? Avoiding political questions, there are two theoretical ones here: how much less does each individual save than: (a) he rationally should from his own point of view? (b) would be required from him for an adequate national rate of growth? I do not profess to know, or think the answer simple; but surely on all grounds quite a lot. Then there is the related question: how great are the irrationalities we would find it to our advantage to put up with as a result of the forced investment programme that would probably have to accompany the forced saving? Here again Mr. Klappholz is right to be sceptical: we cannot quantify exactly the rationality sacrificed or weigh it exactly against the growth gained. The decision can only be one of common sense, which will surely mean not giving absolute predominance either to rationality (as in classical welfare economics) or to growth (as in classical Marxist economics).

When I argued for quantification I meant that we can and must decide in every particular case which we think *more* important; there is no principle justifying a consistent extremism. The Soviet Government has, of course, always invested too much, and also quite gratuitously infringed rationality much more than mere forced investment could excuse.

As to forced standardisation, its main field is clearly in producers' and intermediate goods. Obviously it should not be extended to cover furniture, but obviously it should cover, for instance, small electric generators—of which this country has many more types than Sweden, which is blessed with a monopoly in their production.

In conclusion, if anyone still doubts the psychological connection between welfare economics and growth-blindness let him read Mr. Klappholz's p. 343. Growth is *not* mainly justified by the increase in choice it brings, but by the sheer increase in quantity. He comes perilously close to implying that the choice between $\frac{3}{4}$ ton of barley and $\frac{3}{4}$ ton of oats is better than 1 ton of barley. Except in the richest countries, the opposite is clearly true; that, too, is common sense.

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OFFICIAL PAPERS

FINANCE AND TAXATION IN JAMAICA

THE crucial economic issue in Jamaica at the present time is not whether there should be a programme of economic development. That was settled at least as long ago as 1945, when the Economic Policy Committee, presided over by Professor F. C. Benham, reported. Nor is it the content of such a programme. On that there has been a wide measure of agreement since the mission of the International Bank for Reconstruction and Development reported at the end of 1952. The problem is rather the *tempo* of such development and the methods by which it should be brought about. Neither of these wholly concerns finance, but finance has, directly and indirectly, a large part to play in determining each of them. It was well, therefore, that the Government of Jamaica should invite two distinguished teams of economists to visit the island and to advise on fiscal and financial matters. Their Reports¹ are essential reading for anyone wishing to study the Jamaican economy. Both merited much more public attention in Jamaica

¹ *Report on Finance and Taxation in Jamaica.* By J. R. and U. K. HICKS. (Kingston, Jamaica: The Government Printer; London: Crown Agents for Overseas Governments and Administrations, 1955. Pp. 171. 3s.)

The Financial System and Institutions of Jamaica. By G. F. TOWERS, with a Memorandum on Monetary Policy by J. L. FISHER. (Kingston, Jamaica: The Government Printer, 1955.)

than they received owing to the absence of a financial Press and an informed public. Both raise issues which are of more than local interest; on some of these there has hitherto been regrettably little theoretical discussion.

Professor and Mrs. Hicks were invited to visit Jamaica during March and April 1954, in order to report on the existing system of Government finance. When they accepted the invitation they appear to have presumed that there would be available to them on arrival, if not an estimate of the current national income, at least an up-to-date sketch of the general economic position. They found neither. They appear to have presumed also that their main concern would be to assess the impact on the Jamaican budget of the Development Plan then being drawn up. But they found the general budgetary position lacking strength and turned their attention to a general survey of the fiscal position in order to suggest ways of increasing revenue. This survey led in turn to suggestions for the remodelling of an out-of-date and inefficient system. Their *Report* is consequently much broader than their terms of reference might at first lead one to expect.

The absence of information on the general economic situation of Jamaica led Professor and Mrs. Hicks to attempt to sketch the position for themselves. They appear to have regarded the need to fall back on "a more old-fashioned approach" as something of a challenge to their expertise and ingenuity. Heavy reliance was placed on statistics of external trading. This was in part because they were more readily available than other statistics. Thus they admit that "food production for the home market, from which most of the people of Jamaica get most of their living, and on which all the rest is based, is an obscure subject on which we have little information." But it was in part also because Jamaica was thought to be "quite exceptionally dependent on overseas trade." It is important to realise in what sense this is true. Recent estimates of the national income suggest that the value of merchandise exports was less than one-fifth of gross domestic product in Jamaica, where, in fact, the proportion is considerably lower than in some other parts of the British West Indies, notably Trinidad and Barbados. Nor is it to be explained by the fewness of the export crops even though sugar and bananas account for well over half of the total, for the Gold Coast is no less specialised but much less vulnerable economically. The vulnerability of Jamaica—and of the British West Indies generally—is due neither to the percentage importance of export production to national income nor yet to the lack of diversification. It is due to the small dimensions of peasant agriculture. The estate workers of Jamaica cannot turn, as can the producers of West Africa, to subsistence agriculture if their external market fails. This feature has important implications for economic policy, particularly when it is realised how much the existing market depends on pre-arrangements.

The Five-Year Development Programme drawn up in 1954 (while Professor and Mrs. Hicks were reporting) envisaged a total expenditure of

£30 million, of which £2.6 million would be financed out of general revenue, £18.9 million by loans and the rest by grants. The revenue contribution was based on two assumptions: that the national income increased by 3% per annum and so did government revenue, and that there were no new budgetary commitment. While it was not easy to judge the reasonableness of the first assumption, the official draft admitted that the second had already "been somewhat invalidated by the Government's decision to undertake a general salaries revision." The immediate problem was therefore to suggest ways of raising a further £400,000 in revenue to cover these new commitments. The difficulty of doing so led Professor and Mrs. Hicks to undertake a comprehensive survey of Jamaica's system of public finance. Revenue has turned out to be more buoyant than short-run trends suggested, while development expenditure has lagged behind schedule.¹ It is fortunate for Jamaica both that immediate budgetary difficulties have been avoided and that their possibility led Professor and Mrs. Hicks to make a pioneer study of distinction of the system of central and local finance.

Economic policy in Jamaica must, if it is to be in her long-run interest, answer to one or other of two tests: Does the policy in question provide a net addition to budgetary receipts; if not, does it expand employment without a disproportionate loss of revenue?² There is little new to add in the Jamaican context to taxes answering to the first test. Over four-fifths of ordinary revenue is derived from three sources—customs, excise and income tax. All three are high, judged by either West Indian or English standards, and further increases might lead to a drop rather than to a rise in receipts. The only significant positive proposal made by Professor and Mrs. Hicks was the extension of income tax on land and buildings (Schedule A) to include owner-occupied houses. This proposal is more one for correcting an anomaly than for making any very large increase in tax receipts, and it underlines the limited field for new taxation.

Professor and Mrs. Hicks came, therefore, to focus their attention on arrangements which provide tax concessions of one kind or another. Taxable capacity is limited. Any tax concession further restricts it. Such concessions should, therefore, be made only when there is a sufficient compensating advantage. In a country suffering from surplus labour³ the

¹ The revised Development Estimates for 1955-56, for example, are more than one-quarter less than the approved estimates and are still likely to be an over-estimate. While an error of this kind prevents the economy from being as overloaded as the Development Plans threaten, it clearly complicates the task of economic advising.

² The imminence of Federation in the British West Indies suggests a further test: Is economic policy compatible with a customs union? Jamaica is in fact in a special position here, both because of her high import duties and because of her use of quotas and prohibitions to protect local industries. This test is not, however, of immediate relevance, and will be treated on another occasion.

³ Temporarily emigration is the biggest solvent of the surplus labour problem. In 1954, for example, net emigration to all places amounted to 8,400. This figure is equal to about 22.5% of the natural increase for 1954 and well over half of the estimated annual net additions to the labour force.

compensation should be found in increased employment. To what extent do the tax concessions satisfy this test? The answer must be given in four parts. With respect to business profits generally, Jamaica has very little scope for worthwhile concessions as tax rates and tax credits are covered either by double taxation agreements (for the United Kingdom and Canada) or by special legislation (for the United States). Any profits transferred from Jamaica will be taxed in the home country to the extent that they are not taxed in Jamaica. So if Jamaican taxation is lower or tax credits higher than in the capital-exporting country, Jamaica merely presents that country with tax receipts, while if conditions are significantly less favourable in Jamaica imports of capital will be discouraged. This largely explains why the policy of pioneer industry concessions has had little effect hitherto. According to the legislation of 1949, a manufacturer in a new industry is entitled, in each of any five years during the first eight years after commencement, to set off against profits a sum equal to one-fifth of his permitted capital expenditure. Owing to the operation of the double-taxation agreements and special legislation just referred to, this legislation cannot enhance the profits of non-residents but only those of residents. Professor and Mrs. Hicks do not discuss the pros and cons of the policy itself, limiting themselves to suggesting a less-ambiguous wording of the concessions. The policy is, however, one on which opinions differ widely, and while it has had little effect so far, it might be of greater importance in the future, for the Royal Commission on the Taxation of Profits and Income has recommended that the United Kingdom's double-taxation agreements should be modified to permit lenders to benefit from these concessions.¹ It is far from certain that the present policy of pioneer concessions is satisfactory. In the first place, it amounts to an infant-industry concession to firms in new industries which make profits. It is doubtful whether it has a powerful incentive effect: firms that succeed do not require help, while firms that fail do not receive help. A different kind of concession might help more with no more loss of revenue—for example, import of machinery free of customs duty. In the second place, where entrepreneurial skill is scarce there seems to be every reason to foster growth wherever possible and not to confine whatever help is available to new lines. Finally, care should be taken to avoid policies which induce the use of highly capitalistic methods of production which are inappropriate in an environment of surplus labour. From this point of view policies of accelerated depreciation seem to be out of place. A subsidy on the basis of numbers employed might indeed be usefully explored.

¹ It should not be assumed that the volume of capital available for investment in pioneer industries would be significantly greater because of this modification. Lack of knowledge of the risks involved would still limit the flow. What is almost certain to happen is that economies wanting such capital will compete by offering more and more lavish concessions. The value of the modification in the double-taxation agreements should therefore not be exaggerated. Of course, double-taxation agreements are intended to prevent discrimination in the taxation of profits, and now hold economies in check.

An exception to what has been just said about highly capitalistic industries is to be found in the bauxite industry. This is necessarily highly mechanised and employs relatively few. The industry in Jamaica enjoys a favourable long-term taxation agreement, and Professor and Mrs. Hicks very rightly feel that the industry should pay an increased royalty to compensate.¹ The same can be said of cement manufacturing, which also has a favourable taxation agreement. The tourist industry receives three kinds of concessions: the right to import free of duty a whole range of articles; the pioneer industry concessions; and a grant for publicity. Professor and Mrs. Hicks recommended that the first should be more clearly defined, as it was liable to serious abuse, and that the third be financed by the industry. It is not possible on the basis of the existing shaky statistics to estimate the value of the tourist industry. Certainly, on the one hand, tax concessions are high and, on the other hand, the marginal propensity to import of the industry (the import content) is also high. A full inquiry and report are highly desirable.

Professor and Mrs. Hicks deal finally with the form of the public accounts and with local finance. Owing to the importance attached to development, a development budget was introduced in Jamaica in 1953-54. It is suggested that Jamaica should proceed a stage farther and introduce a full investment (or capital) budget alongside the current budget. A schematic reorganisation of the public accounts is provided, distinguishing during the first five years of operation the recurrent cost of new capital works—a useful reminder of the costs of development. What might have been emphasised further is the distinction between the two budgets. Current and capital can be distinguished on several different bases. If, however, the purpose of double budgeting is to segregate ordinary recurrent expenditure from expenditure which will directly increase productive capacity, the distinction should be the ordinary commercial distinction between current and capital. Once social expenditure enters the capital budget the purpose is lost.

Finally, Professor and Mrs. Hicks found that local finance was also in need of overhaul. More than half of the expenditure on public health, poor relief and roads is derived from a land tax assessed on capital value. There has been no revaluation since 1937, when properties of over £50 were revalued. The delay has been largely due to lack of decision as to the basis to be used. A Commission reported in 1943 in favour of unimproved value rating but the case was not closely argued. Professor and Mrs. Hicks addressed themselves to the issue most effectively. They show that a change over from "improved value" to "unimproved value" has two effects. In the first place, sites ripe for development are assessed at their potential value while, in the second place, improvements, such as buildings, are de-rated. They very rightly doubt the practicability of the first and the equity of the

¹ In March 1957 a new twenty-five year agreement was announced raising the royalty from 1s. to 3s. per ton and income tax from 1s. 8d. to 11s. per ton.

second, which would favour the owners of the more expensive buildings as against the owners of agricultural land. The authors suggest an alternative which would have the advantage claimed for unimproved value rating (no discouragement of improvements) without the disadvantages (difficulty of assessment and regressive incidence), namely, the de-rating of certain types of improvements for a period of years. It is unfortunate that at least this part of their valuable Report has not reached a wider public.¹

Fiscal policy in Jamaica does not only assume a "new significance in the face of the problem of capital formation,"² but even more so in the absence of scope for a co-operating monetary policy. Questions are, however, being raised as to whether the role of local financial institutions and of local policy might not be increased to help with the problems of development. The Report by Mr. Graham Towers presents the facts and helps to clear away many misconceptions.³ He shows that the ability of the four commercial banks with branches in Jamaica (three being Canadian and one English) to create credit depends on the size of their sterling reserves, and there has not of late been any difficulty in making credits available in suitable cases. There is undoubtedly a gap between the short-term credits that the banks will normally supply and the long-term loans that can be obtained from abroad for business projects. Medium-term finance must rely on local savings, and the volume of local savings being small in relation to demand, rates on mortgages and hire-purchase are high. This suggests, however, the need for building societies and finance houses rather than any change in banking policy. For while the connection with sterling means that interest rates on bank advances move in sympathy with rates in London—and the present high rates are felt by many in Jamaica to be inappropriate to Jamaican conditions—the holding of reserves in sterling means that there is much more flexibility in credit policy than there would be if reserves had to be held, in whole or part, in a local currency. Furthermore—a point which Mr. Towers does not mention—any restriction on the freedom of movement of funds to London would seriously discourage the flow of capital, on which so much of the finance of development depends.

¹ A Land Valuation Bill has since been passed to permit the valuation of land on unimproved value. Local rates imposed for the purpose of providing for any improvement or public service will apparently continue to be based on improved value. The combination looks like a regrettable compromise greatly inferior to the alternative suggested in the Report.

² R. Nurkse, *Problems of Capital Formation in Underdeveloped Countries* (Oxford, 1953), p. 143.

³ That the misconceptions are not entirely local is suggested by the following statement found in Buchanan and Ellis, *Approaches to Economic Development* (New York, 1955), p. 313: "The unregulated creation of credit has often proceeded in complete absence of central banks, as in Puerto Rico, Egypt, the United Kingdom dependent territories and in many other places until the recent wave of creating central banks." In fact, in Jamaica the opposite is nearer the truth, for it is felt that the existing arrangements impede a desirable policy of inflation. Thus, one writer advocates "a policy of deliberate inflation" as a method of increasing local savings. (A. P. Thorne, *Size Structure and Growth of the Economy of Jamaica*, Supplement to Vol. 4, No. 4, *Social and Economic Studies*, University College of the West Indies, Mona, Jamaica, p. 98.)

Mr. Towers cautiously concludes that "a soundly conceived and soundly administered development programme financed to a reasonable extent by budget surpluses and contributions from the Colonial Development and Welfare Fund is unlikely to be held back by reason of the Government's inability to borrow." The credit-worthiness of Jamaica is, of course, because of, rather than in spite of, past policy. There is one respect, however, in which past policy has been somewhat too conservative, and that is in respect of the accumulation and use of sinking funds. As Mr. Towers says, "sinking funds accumulated to pay for sterling debt must obviously be invested in sterling securities." But even so, the rate at which it is accumulated might be varied. This is especially relevant to Jamaica, where it seems that there had been a habit of writing-off debt at an earlier date than necessary. By varying the rate of accumulation it would be possible, within limits, to operate an offsetting policy, accumulating more when export income was high and less when export income was low. With the growth of external debt the possibilities of such a policy increase.

Mr. Fisher's memorandum on monetary policy succinctly states the case against a central bank at this stage. The economy is small; the existing banks co-operate with the Government; and "over the next few years any policy involving banking credit would be one which might be designed to restrain its expansion rather than the reverse." He suggests that in the meantime the Minister of Finance might engage an adviser with experience appropriate to the financial operations of government. It may well be that what is wanted is in fact not a central bank at all but a credit corporation. But that possibility cannot be explored further on this occasion.

D. J. MORGAN

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of the West Indies.*

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 4th. After formal business Sir Alexander Carr-Saunders will address the Society on "The Teaching of Economics in Schools."

THE following have been admitted to Life Fellowship of the Society:

Andrew, D.
Brandt, Dr. K.
Caplan, Dr. B.

Lim, Dr. T. B.
Niculescu, B. M.
Rose, B. E.

Vongsathorn, X.
Wilson, Dr. T.

THE following have been admitted to Fellowship of the Society:

Alexander, E. P.	Goodridge, J.	Montuory, M.
Amusu, A. A.	Gregory, W.	Morris, J. F. C.
Antony, C.	Guerra, Dr. J. A.	Nayak, P. L.
Ashton, R. M.	Gunn, J. M.	Neville, P.
Baerncopf, D. A.	Hards, A. E. C.	Ogunyemi, D. A.
Basu, A. K.	Horwich, Prof. G.	Okafor, D. C.
Batson, R. W.	Huli, B. C.	Pandya, H. G.
Bellei, Dr. D.	Ibezue, N.	Pierce-Saunderson,
Berkoh, F. K.	Ifill, M. B.	W. R.
Birtwhistle, W. P.	Jackson, B. G.	Plumridge, K. L.
Brown, N. N.	Kenny, D. G.	Poapst, J. V.
Chaudhuri, P. K.	Kolmar, F.	Prowse, A. R.
Chu, Sing Chi.	Koolman, G.	Ripley, G. W. D.
Cina, L.	Lampsey, J. K.	Roberts, R. S.
Cochrane, A. L.	Latiche, Prof. J. M.	Robertson, D. S.
Cohen, Prof. J.	Lee, G. C.-P.	Robinson, G.
Collett, D.	Macdonald, D. G. I.	Sams, K. I.
Cooper, S.	MacIver, M. J.	de Saram, D. H.
Cope, J. A.	Mangaiji, S. J.	Shaw, D.
Dickerson, R. G.	Marsden, K.	Smail, R.
Duncan, G. S.	Massacesi, E.	Smith, N. S.
Edwards, J. A.	Masters, J. D.	Sutherland, A.
Encarnacion, J.	Mattar, R. E.	Terry, S.
Fadare, M. W.	McCracken, P.	Tsouroulis, J. G.
Foulds, D.	Mehta, H. A.	del Vecchio, Prof. G.
Frankland, J. R. J.	Miller, V. A.	White, A. J.
Gal, N. P.	Mojekwu, C. E.	White, K.
Galenson, W.	Möller, S. A. B.	

THE following have been admitted to Library Membership of the Society:

Adelphi College Library, New York.
 College of Wooster Library, Ohio.
 Confederazione Generale dell'Industria Italiana, Rome.
 Finance Corporation for Industry Ltd., London.
 Indiana State Library, Indianapolis.
 Institute of Inter-American Affairs, Pan Chilian Library, Chile.
 International Air Transport Association, Montreal.
 Ketua Fakultas Hukum/Edonomi, Macasar, Indonesia.
 Library of the Federal Bank of St. Louis, Missouri.
 Presidency College, Madras.
 Wake Forest College Library, North Carolina.

It may interest our readers, and might have interested our founders, to know from how wide a field the ECONOMIC JOURNAL attracts contributions to our science. The following columns have been deliberately drawn up so as not to be comparable with one another, since some articles published in 1956 were submitted in 1955, and some articles submitted in 1956 were accepted for publication in 1957. (Thus it is not the case, for instance, that we have been totally inhospitable to India!)

From :	Number of articles submitted in 1956.	Number of articles published in 1956.
Oxford	10	6
Cambridge	5	6
Rest of England	38	11
Rest of Britain	4	2
Total Britain	57	25
Canada	1	0
New Zealand	1	0
South Africa	1	0
India	5	0
Ceylon	2	0
Malaya	0	1
Total Commonwealth	67	26
United States	34	8
France	0	1
Holland	2	2
Israel	2	0
Grand Total	105	37

"Notes," which have not been included in the above totals, were also submitted from Iceland, Puerto Rico and Tasmania.

RECENT PERIODICALS AND NEW BOOKS

Economica

VOL. XXIV, No. 93, FEBRUARY 1957. *The Sixteenth and Seventeenth Centuries: The Dark Ages in English Economic History?*: F. J. FISHER. *The Heckscher-Ohlin Trade Model: A Geometric Treatment*: K. LANCASTER. *The Theory of Customs Unions: Trade Diversion and Welfare*: R. G. LIPSEY. *Colonial Trade and Payments*: I. GREAVES. *A Note on the English Capital Market as a Source of Funds for Home Investment Before 1914*: A. R. HALL. *The Estimation of the Time-response Functions in Complete Economic Systems*: J. WISE. *A Testimonial from Ricardo*: B. A. CORRY.

Oxford Economic Papers

VOL. 9, No. 1, FEBRUARY 1957. *Learning about Economic Development*: U. K. HICKS. *Investment and the Demand for Electricity*: E. K. HAWKINS. *Armstrong and the Utility Measurement Controversy*: T. MAJUMDAR. *Fluctuations in Stocks: A Nineteenth Century Case Study*: R. H. CAMPBELL. *The Theory of Public Utility Price—an Empty Box*: J. WISEMAN. *Gross Margins in Retail Distribution*: J. D. HUGHES and S. POLLARD. *Interdependence and Foreign Trade*: M. F. G. SCOTT. *Analysis of the Generation of Price Inflation (Statistical Appendix)*: J. C. R. DOW.

The Manchester School of Economic and Social Studies

VOL. XXV, No. 1, JANUARY 1957. *Expenditure, Capital Gains and the Basis of Progressive Taxation*: W. VICKREY. *The Northern Weavers, Independent Labour Representation and Clitheroe, 1902*: F. BEALEY. *Games, Capitalism and General Location Theory*: M. L. GREENHUT. *The Taxation of Overseas Profits*: P. STREETEN.

Transactions of the Manchester Statistical Society

1955-56. *Trends in Technical Education*: P. F. R. VENABLES. *Population Trends*: COLIN CLARK. *Financing Symphony Orchestras*: K. E. CRICKMORE. *Electronic Computers for Statistical Work*: B. B. SWANN. *Some Uses of Statistics in Road Safety Work*: F. GARWOOD.

Scottish Journal of Political Economy

VOL. IV, No. 1, FEBRUARY 1957. *Is Economics Biased?*: R. L. MEEK. *Electricity in the North of Scotland*: SIR M. MACDONALD and J. M. KAY; *A Rejoinder*: D. L. MUNBY. *The Linear Programming Approach to Production Planning*: H. C. MACKENZIE. *The Revision of the Jute Wages-Structure*: I. F. GIBSON. *The Dundee School of Economics—In Memoriam*: D. L. MUNBY.

Yorkshire Bulletin of Economic and Social Research

VOL. 8, No. 2, NOVEMBER 1956. *Changes in Productivity and the Price Level in a Closed Economy*: J. C. GILBERT. *The State of Economic Research in the Soviet Union*: A. GABOR. *Some Aspects of the Marketing of South African Oranges in Great Britain*: R. L. SMYTH and D. MACE. *Labour in British Retail Trade, 1950*: J. D. HUGHES and S. POLLARD. *The Home Market in Wool, 1500-1700*: P. J. BOWDEN. *Dr. Thomas Short, an Eighteenth Century Writer on Population*: G. P. JONES.

The Sociological Review

VOL. 4, No. 2, DECEMBER 1956. *The Problem of Social Change: The Docks Industry—A Case Study*: T. S. SIMEY. *The Distribution and Segregation of Roman Catholics in Belfast*: E. JONES. *The Placings Service of the Ministry of Labour*: E. J. CLEARY. *Employment of Negroes in Manchester*: J. REID. *Modern Marriage and the Roles of the Sexes*: C. SLAUGHTER. *The Organisation of Coronation Street Parties*: M. BROADY. *A Study of Student Societies in the University of Manchester. Student Societies in the University College of North Staffordshire*: A. H. ILIFFE.

Political Studies

VOL. IV, No. 1, OCTOBER 1956. *Alternatives to Independence*: K. ROBINSON. *The French Election of 1956: III: Guy Mollet's Election Campaign*: S. ROSE; *IV: The Campaign in the Department of Vienne*: M. THOMAS. *Peaceful Coexistence and Peaceful Co-operation*: R. I. AARON and P. A. REYNOLDS. *The Popular Press in the British General Election of 1955*: A. H. BIRCH, P. CAMPBELL and P. G. LUCAS.

Soviet Studies

VOL. VIII, No. 3, JANUARY 1957. *Some Notes on Soviet Bashkiria*: E. H. CARR. *Attempts to Formulate a Legal Theory of Public Ownership*: A. K. R. KIRALFY. *Soviet Ideas Weighed in a Christian Balance*: J. MILLER.

Journal of Agricultural Economics

VOL. XII, No. 2, FEBRUARY 1957. *Some Thoughts on Agricultural Policy*: E. M. H. LLOYD. *The Social Environment of Farm Work*: G. P. HIRSCH. *Some Aspects of Commonwealth Agricultural Development*: G. S. DUNNETT. *Farm Classification in Britain—an Appraisal*: R. B. JONES. *Cattle Drought Losses in Queensland*: K. L. KINSMAN. *System and Yield Indices in the Eastern Counties*: D. B. WALLACE and S. E. VINCENT. *Note on the Measurement of Demand for Fatstock*: J. R. RAEBURN.

Accounting Research

VOL. 8, No. 1, JANUARY 1957. *Operational Research and Financial Management*: S. BEER. *Railway Auditing: A Report of 1867*: H. POLLINS. *Local Taxation in Western Germany*: H. B. MARKUS. *Cost and Value of Management Information as Functions of Age*: R. H. GREGORY and T. V. V. ATWATER.

The Incorporated Statistician

VOL. 7, No. 3, DECEMBER 1956. *The Design of Experiments: Part I: The Scientific Background*: M. J. MORONEY. *Business Forecasting as Applied to Agriculture*: K. E. HUNT. *Market Research and Consumer Durables*: J. S. DOWNHAM and J. A. P. TREASURE.

The Banker

VOL. 107, No. 373, FEBRUARY 1957. *Alternative to Bank Rate? Sterling after the Run. Cracks in the Rouble Bloc. New Power for Britain—at what Cost?*: J. E. HARTSHORN. *Why Higher Money Rates Squeezed Credit Less. Wage Payments and the Truck Acts*: F. R. RYDER. VOL. 107, No. 374, MARCH 1957. *Into Europe. Squeezing by Easing. French Expansion Trips up on Trade. Ghana and the Sterling Area*: A. RUDD. *State Banking in the Gold Coast*: J. W. WILLIAMS. *America's Changing Banking Scene: I: The Structure as a Whole*: J. S. G. WILSON. *Irish Banking. New Patterns in Life Assurance*: T. H. PEACE.

The Bankers' Magazine

VOL. CLXXXIII, No. 1355, FEBRUARY 1957. *The Banker's Economic Survey. Banking Profits in 1956. Hire Purchase in the Consumers' Sector*: K. H. STRAW. *Survey of Economic Conditions in the U.S.A.: A Continuing Boom in Capital Formation. Is Europe About to Federate? National Expenditure in the First Three Quarters of 1956*. VOL. CLXXXIII, No. 1356, MARCH 1957. *So it Must Be Sterling*: G. H. MORISON. *Why Do Prices Rise?*: J. C. R. DOW. *Hire Purchase in the Consumers' Sector*: K. H. STRAW. *The Economy of the Irish Republic in 1956*: G. A. DUNCAN.

Barclays Bank Review

VOL. XXXII, No. 1, FEBRUARY 1957. *The Chairmen. Changes in United Kingdom Foreign Trade. The Restrictive Trade Practices Act*.

District Bank Review

NO. 121, MARCH 1957. *Economics and Defence*: J. JEWKES. *The Role of Man-made Fibres*: D. DUXBURY. *The Results of a Savings Budget*.
No. 266.—VOL. LXVII.

Lloyds Bank Review

NO. 43, JANUARY 1957. *The Real Incidence of Personal Taxation*: F. W. PAISH. *The American Boom in Canada*: T. W. KENT. *The Maner and Fourme how to kepe a Perfekte Reconung*: D. SOLOMONS.

Midland Bank Review

FEBRUARY 1957. *The "Macmillan Report" Outdated?* *The Board of Trade. New Capital Issues in 1956.*

National Provincial Bank Review

NO. 37, FEBRUARY 1957. *The Brake on Expansion*: A. MAUDE. *Britain's New Export Products*: G. L. REES.

The Three Banks Review

NO. 33, MARCH 1957. *Business Loans of American Commercial Banks and Inflation*: B. H. BECKHART. *Full Employment without Inflation*: E. LINDAHL. *Kirkman Finlay: Merchant, Manufacturer and Mentor.*

Westminster Bank Review

FEBRUARY 1957. *The Chairman's Statement. The Role of Stocks in the British Economy*: R. BRECH. *The Growth of the Electricity Supply Industry*: E. SHANKLEMAN. *The Present State of Agricultural Co-operatives in the United Kingdom*: W. H. BECKETT.

Planning

VOL. XXIII, No. 406, JANUARY 1957. *Statistics for Government.*
VOL. XXIII, No. 407, FEBRUARY 1957. *Agriculture and Land Use.*
VOL. XXIII, No. 408, MARCH 1957. *Salaries of Graduates in Industry.*

Town and Country Planning

VOL. XXV, No. 2, FEBRUARY 1957. *Art and the English Garden*: F. STREET. *The Doom of Oxford*: E. FITZGIBBON. *New Towns for Ontario*: R. N. PERCIVAL.
VOL. XXV, No. 3, MARCH 1957. *Dispersal Machinery for Scotland. Tapiola Garden City, Finland*: H. v. HERTZEN. *Planning and Practical Realities*: R. W. DALE. *Industry in Inner London*: J. E. MARTIN.

The Journal of the Institute of Transport

VOL. 27, No. 3, MARCH 1957. *Man Must Measure*: SIR C. GOODEVE. *Management and Men*: SIR J. BENSTEAD. *Marine Insurance of Cargo*: W. B. SMITH. *Organisation Problems of Civil Air Transport*: P. H. S. WROE.

Progress

VOL. 45, No. 253, WINTER 1956-7. *The Trans-Antarctic Expedition*: SIR M. CLIFFORD. *Impressions of a Conference of Senior Managers*: M. GREEN. *Electronics in the Service of Mankind*: H. A. THOMAS. *University College, Ibadan*: SIR A. CARR-SAUNDERS.

Cartel

VOL. 6, No. 4, OCTOBER 1956. *Cartel Legislation in the Netherlands*: J. F. H. WIJSEN. *Voluntary Decartelization in Sweden*: A. IRSTEN. *Oil Cartel*: R. MILLAR. *European Economic Integration*: A. KAY. *Restrictive Trade Practices—U.K. Legislation*: LORD MESTON.

The Canadian Journal of Economics and Political Science

VOL. 23, No. 1, FEBRUARY 1957. *The Vital Revolution Reconsidered*: K. F. HELLEINER. *From Acceptance of Nature to Control*: J. HENRIPIN. *Parliamentary Government in Manitoba*: M. S. DONNELLY. *The Nature and Control of Hostile Crowds*: W. A. WESTLEY. *The Development of National Transactions Accounts*: L. M. READ. *Inter-Generation Occupational Mobility in the Province of Quebec*: Y. DE JOCAS and G. ROCHER. *International Unions and the Canadian Trade Union Movement*: J. T. MONTAGUE. *Some Thoughts on the Public Service*: J. J. DEUTSCH. *The Formation of Borden's First Cabinet*: H. N. MACQUARRIE.

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VOL. XXXII, No. 63, NOVEMBER 1956. *The Australian Economy, September 1956*: D. C. ROWAN. *The New Zealand Economy, 1955/56*: G. P. BRAKE. *Making Economic Policy in New Zealand*: M. J. MORIARTY. *The Price Mechanism and the Australian Balance of Payments*: J. E. MEADE. *Ownership and Control of the Electricity Supply Industry in Australia*: E. A. BOEHM. *Interstate Road Transport*: R. R. HIRST. *Structure and Price Determination in the New South Wales Road Haulage Industry*: H. KOLSEN. *The New Zealand Monetary Commission 1955-56*: W. P. HOGAN. *Social and Economic Revolution for the Development of Backward Countries*: J. P. BELSHAW. *Economic Growth and Capital Accumulation*: T. W. SWAN.

The South African Journal of Economics

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JANUARY 1957. *The Principle of Central Planning and the Role of the New Planning Commission. The Execution of the Six-year Plan for the National Economy*: P. SULMICKI. *The Structure of the Six-year Plan of Investment*: A. SZERWENTKE. *The Methods of Preparing a Long-term Plan*: T. MRZYGLÓD. *The Principal Trends of Economic Development of the Warsaw Region*: K. LIER.

Planované Hospodářství (Czech text)

- No. 10, 1956. *Long-term Development Planning in Czechoslovakia*: K. ROLÍNEK and Z. KASPAR. *On the Tasks of Internal Trade during the Second Five-year Plan*: J. PÁTEK. *Adjustment of State Wholesale Prices in the Foundry Industry*: J. TYPOLT. *The Economy of the German Democratic Republic in the Second Five-year Plan*: G. KROFF. *Shortcomings in the Present Organisation of Marketing Ready-made Clothes*: J. VONDŘEJC and O. MESÁROŠ.

Finansi i Kredit (Bulgarian text)

- No. 10, 1956. *The 39th Anniversary of the Great October Socialist Revolution. The Pricing of Agricultural Produce*: K. LAZAROV. *Some Problems of the National Income*: P. PETROV. *The Essence of the Changes in Credit Supply Foreseen in the Proposed Lending Regulations of the Bulgarian National Bank*: G. TERZIEV. *The Economic Analysis of Capital Construction Arranged by the Bulgarian Investment Bank*: M. STOICHEV.

Ikonomicheska Misl (Bulgarian text)

- No. 4, 1956. *Todor Pavlov and Economics. The Rate of Growth of Industrial Production, Structural Changes and Technical Progress in our Industry*: T. ANGELOV. *The Economics of the Turnover Tax*: G. PETROV. *The Effect of the Law of "To Each According to his Work"*: R. GOICHEVA. *Transport as an Economic Sector*: N. DOINOV. *Some Unsolved Problems in Cutting Production Costs on State Farms*: D. KINOV. *Long-term Credits for Co-operative Farms*: K. ZANEV. *The Struggle for Middle East Oil*: T. YULCHEV. *Improvements in Quality and Variety in the Textile Industry*: P. SPIRKOV and V. VUTOV.

Ekonomist (Croat text, English summaries)

- No. 3, 1956. *Economic Fundamentals of a Long-term Plan*: K. MIHAILOVIĆ. *Marx's Scheme of Capital Reproduction and the Gross National Product*: A. BAJT. *A Projection of the Skill Structure and of the Educational Level of Manpower in Yugoslavia*: T. MULINA and R. CVETKOVIĆ. *The Problem of the Reform of Railway Rates*: M. ALEKSIĆ. *A Symposium on the Methodology of Long-term Planning (held at the Federal Planning Institute)*.

Probleme Economice (Rumanian text, French and Russian summaries)

- No. 11, 1956. *The Continuing Progress of the Economy of the U.S.S.R. Some Problems on Fixing the Normal Level of Production Stocks*: M. SIBIANU. *The Location of the Food Industry*: E. TRATTNER. *Some Aspects of the 1929-33 Economic Crisis in Rumanian Industry and Agriculture*: N. MARCO. *Chinese Foreign Trade*: CHIO CHI CHIAN. *The Problem of the Socialist Transformation of Agriculture in the German Democratic Republic*: R. ZIERDEL. *The Economic Development of Mongolia*: E. TRONARU. *Some Industries on the Place of Imperialist Germany in World Capitalism*: I. LANGR. *Bourgeois Theories on the Economic Aspects of Automation*: M. DIMA. *Aspects of the Economies of Near and Middle Eastern Countries*: S. VERONA.
- No. 12, 1956. *Social Structure and Class in the Rumanian People's Republic*: M. DULEA. *Problems in Planning the Engineering Industry*: V. I. SAVA. *Economic Effects of Standardization in Construction*: I. VIRGIL and V. HOPU. *The Calculation of Production Costs in Small and Medium Farms*: D. SCHARFSTEIN. *Scope for Reducing Costs in Trade*: C. DANGIU and A. SNAK. *Some Aspects of the Teaching of Costing at the Lenin Institute of Economics and Planning*: M. NICOLAESCU and D. MARGULESCU. *Current Problems of Manpower Requirements in the U.S.S.R.*: M. SONIN. *The Development of Yugoslav Foreign Trade*: G. GAVRILA. *On the Methods of Establishing Wholesale Prices*: M. LAXER. *Fetishism about Defining Commodities*: I. ADAM. *The Economic Collaboration of Finland with Socialist States*: A. MARIUS.
- No. 1, 1957. *The Unity and Cohesion of Socialist States. A Means to Technological Progress—the Modernization of Equipment*: H. D. STERIAN. *Aspects of Cost Prices in MTS*: N. BRAȘOVEANU, M. ZAHARIA and C. ENACHA. *Problems of Cost Prices in State Farms of the Bucharest Region*: V. BAGHINSCHI. *Commissariat and its Role in the Socialist Transformation of Agriculture*: V. SPIRIDON. *The Evolution of the Banking System in Our Country*: M. NASTASE. *The Nature of the Railway Concessions Granted in the Bourgeois—Agrarian Period*: T. SAVIN. *On Certain Aspects of the Trade Cycle in the Principal Capitalist States*: I. VERVERCA. *The Economic Concepts of B.P. Hașdeu*: C. DUMITRESCU and D. TEODURA. *On the Establishment of Wholesale Prices*: I. BLAGA.

Statisztikai Szemle (Hungarian text, English and Russian summaries)

- OCTOBER 1956. *Population Movements in 1955 in Hungary*: GY. ACSÁDI and E. SZABADY. *National Income Statistics in Czechoslovakia*: V. NACHTIGAL. *Production Costs of Certain Products in 1955*: GY. REJTÖ. *Development of the Demand for Commodities by Peasants*: I. FENJÖ and F. ZALA. *Some Problems of Productivity Analysis in Coal Mining*: GY. JÁGER.

NEW BOOKS

British

AITCHISON (J.) and BROWN (J. A. C.). *The Lognormal Distribution, with special reference to its uses in economics*. University of Cambridge, Department of Applied Economics Monograph No. 5. London: Cambridge University Press, 1957. 10". Pp. xvii + 176. 35s.

[To be reviewed.]

AUBREY (H. G.). *United States Imports and World Trade*. London: Oxford University Press, 1957. 9". Pp. 169. 21s.

[To be reviewed.]

BELL (C.). *Old Friends. Personal recollections*. London: Chatto & Windus, 1956. 9". Pp. 200. 21s.

[To be reviewed.]

BELLAMY (D.). *The Domestic Consumer. An address delivered to the eighth annual meeting of the British Electrical Power Convention*. London: British Electrical Power Convention, 1956. 8½". Pp. 77.

[Mr. Bellamy is Chairman of the Yorkshire Electricity Board. In this paper he discusses first questions of cost and load development on the supply side, thus bringing up to date an earlier paper of his. He then proceeds to consider in more detail the present and possible future uses of electricity in existing houses and in new-built houses. His paper is followed by a report of the discussion that it elicited at the Conference where it was delivered.]

BIRNIE (A.). *A Short Economic History of the United States*. London: University Tutorial Press, 1956. 7½". Pp. 146. 7s. 6d.

[To be reviewed.]

CARDWELL (D. S. L.). *The Organisation of Science in England. A retrospect*. London: Heinemann, 1957. 9". Pp. 204. 18s.

[To be reviewed.]

CRUMP (N.). *The A B C of the Foreign Exchanges*. 12th edition. London: Macmillan, 1957. 8". Pp. 374. 16s.

[This work was completely revised and rewritten for its last edition in 1951. Mr. Crump has now brought it up to date to describe conditions as they stood at the beginning of 1956. A large part of the task of revision has consisted of cutting out descriptions of exchange restrictions that have been abolished since 1951.]

DAVIDSON (B. R.) and WIBBERLEY (G. P.). *The Agricultural Significance of the Hills*. Wye: Department of Agricultural Economics, Wye College, University of London, 1956. 10". Pp. 63. 5s.

[The purpose of this is to provide quantitative information to help in the formulation of policy towards upland and hill farming in Great Britain. The farms in question occupy 31% of the agricultural land in the country, including rough grazing. More than half of this is in Scotland. They produce about 4% of the nation's agricultural output by value. Their contribution to total slaughtering of sheep in the country is considerable—between 30 and 50%. As is to be expected, the value of output per unit of input is less than in lowland farms, but this divergence has tended to diminish. The authors show that the proportion of all agricultural subsidies accruing to hill farmers is somewhat less than these farmers' proportional contribution to the total value of agricultural output, so that in a sense it does not appear that they are receiving unduly favourable treatment, although of course it remains open to question whether the resources they employ might not find better use elsewhere.]

ELLIOTT (F.) and SUMMERSKILL (M.). *A Dictionary of Politics*. Harmondsworth: Penguin Books, 1957. 7". Pp. 329. 4s.

[The items are alphabetically arranged, with about two or three to the page on the average. The majority of them relate to countries, persons or institutions important in present-day affairs. A fair proportion of more general items are also included: thus Absolutism, Agent Provocateur, Aggression, Anarchism, Anti-Semitism, to take some examples from the first thirty pages. There are comparatively few specifically economic entries, but those that there are in general balanced and well-informed. The authors fall below their usual standard of accuracy in their definition of the terms of trade as "the relationship between the demand for a country's exports and the cost of its imports."]

FARMER (B. H.). *Pioneer Peasant Colonization in Ceylon. A study in Asian agrarian problems*. London: Oxford University Press for the Royal Institute of International Affairs, 1957. 9". Pp. xv + 387. 55s.

[To be reviewed.]

FERGUSON (J.) and GUNNISON (J.). *In Their Early Twenties. A study of Glasgow youth*. London: Oxford University Press for the Nuffield Foundation, 1956. 8½". Pp. 110. 12s. 6d.

[To be reviewed.]

FLORENCE (L. S.). *Progress Report on Birth Control*. London: Heinemann, 1956. 7½". Pp. 260. 21s.

[This describes the work of the Birmingham Family Planning Clinic and in particular the results of a survey and follow-up of patients who registered at the Clinic in 1948. One of the most interesting of the findings is that the contraceptive method most commonly favoured by the medical experts is, for reasons that are not always entirely clear, unpopular with a considerable proportion of women. Despite the great progress that has been made, the purely medical side of the problem must therefore be regarded as not yet fully solved.]

FLORENCE (P. S.). *Industry and the State*. Hutchinson's University Library. London: Hutchinson, 1957. 7½". Pp. 196. 10s. 6d.

[To be reviewed.]

GOUGH (J. W.). *The Social Contract. A critical study of its development*. Second edition. London: Oxford University Press, 1957. 9". Pp. 259. 30s.

[The first edition of this book appeared in 1936 and has become a standard work. The author has revised it and rewritten certain parts that seemed to him to be inadequate.]

GRAAFF (J. DE V.). *Theoretical Welfare Economics*. London: Cambridge University Press, 1957. 9". Pp. 178. 22s. 6d.

[To be reviewed.]

Graduate Employment. A sample survey by PEP. London: Political and Economic Planning in conjunction with Allen & Unwin, 1956. 9". Pp. 300. 30s.

[To be reviewed.]

HALPERIN (H.). *Changing Patterns in Israel Agriculture*. London: Routledge & Kegan Paul, 1957. 9". Pp. 290. 28s.

[The author of this book is Director General of the Israel Bank of Agriculture and a former Director General of the Israeli Ministry of Agriculture. He has written a factual and not particularly critical account of recent trends and of the present position in agriculture in his country, dealing with such topics as agricultural geography, resources of land and water, changes in the economy (in a simple manner) and official agricultural policy. His book is not without confusions and oddities of arrangement, and some passages may strike the reader as naïve, but nevertheless it will be a useful source of recent facts and figures.]

HARBURY (C. D.). *Descriptive Economics*. London: Pitman, 1957. 7½". Pp. 258. 12s.

[To be reviewed.]

HILL (POLLY). *The Gold Coast Cocoa Farmer. A preliminary survey*. London: Oxford University Press, 1957. 8½". Pp. 140. 16s.

[To be reviewed.]

Industrial Trade Associations. Activities and organisation. A report by PEP. London: Political and Economic Planning and Allen & Unwin, 1957. 9". Pp. xiii + 340. 30s.

[To be reviewed.]

JONES (P. D'A.). *An Economic History of the United States since 1783*. London: Routledge & Kegan Paul, 1956. 9". Pp. 280. 21s.

[To be reviewed.]

LEES (D. S.), APPLEYARD (W.), HOGG (D. A.), KEELING (H.), WATSON (T.) and ROBERTS (S. P.). *Local Expenditure and Exchequer Grants. A Research Study for the Institute of Municipal Treasurers and Accountants*. London: Institute of Municipal Treasurers and Accountants (1 Buckingham Place, S.W.1), 1956. 9". Pp. 352. 42s.

[To be reviewed.]

LITTLE (L. T.). *Economics for Students*. Fourteenth Edition. London: Jordan, 1956. 7½". Pp. 652. 18s. 6d.

[To be reviewed.]

MATHER (L. C.). *Banker and Customer Relationship and the Accounts of Personal Customers*. London: Waterlow, 1957. 10". Pp. 291. 25s.

[This is a reprint of articles recently published in *The Bankers' Magazine*, designed for the guidance of the practical branch banker. Its object is to explain the legal principles regarding the various aspects of relations between banker and personal customer and then to show how these principles apply in practice.]

MEYER (F. V.). *United Kingdom Trade with Europe*. London: Bowes & Bowes, 1957. 9". Pp. 197. 21s.

[To be reviewed.]

MILNE (A. M.) and LAING (A.). *The Obligation of Carry. An examination of the development of the obligations owed to the public by British railways*. London: The Institute of Transport, 1956. 8½". Pp. 129. 5s.

[To be reviewed.]

MINCHINTON (W. E.). *The British Tinplate Industry. A history*. London: Oxford University Press, 1957. 9". Pp. 286. 35s.

[To be reviewed.]

NEEDHAM (J.). *Science and Civilisation in China. Vol. 2: History of Scientific Thought*. London: Cambridge University Press, 1956. 10". Pp. 696. 80s.

[To be reviewed.]

NEVIN (E. T.) (Ed.). *The Social Accounts of the Welsh Economy 1948 to 1952. Welsh Economic Studies No. 1*. Aberystwyth: University College of Wales, 1956. 11". Pp. xiv + 17.

[This elaborate set of social accounts for Wales, based on estimates prepared by the Welsh Economic Research Group, is designed as a replica at the regional level of the Blue Book estimates for the United Kingdom. There is a short introduction to the tables and a statistical appendix indicating the sources of the estimates. Those interested in the levels and performance of the Welsh economy relatively to the United Kingdom will find much useful information here. However, the conceptual problems of defining a system of regional social accounts are largely ignored. It is not obvious, for example, how the consumers' expenditure generating the output of enterprises operating in Wales comes to be equal to the consumption expenditure of persons resident in Wales. The fact that the links between the accounts are not adequately explained makes it difficult to use them for any kind of flow analysis.]

PROUDFOOT (M. J.). *European Refugees: 1939-52. A study in forced population movement*. London: Faber & Faber, 1957. 9". Pp. 542. 52s. 6d.

[To be reviewed.]

ROBERTS (G. W.). *The Population of Jamaica*. London: Cambridge University Press for the Conservation Foundation, 1957. 8½". Pp. xxii + 356. 40s.

[To be reviewed.]

ROBSON (R.). *The Cotton Industry in Britain*. London: Macmillan, 1957. 9". Pp. xx + 364. 60s.

[To be reviewed.]

ST. CLAIR (O.). *A Key to Ricardo*. London: Routledge & Kegan Paul, 1957. 9". Pp. xxi + 364. 35s.

[To be reviewed.]

SCOTT (W. M.) (Ed.). *A Hundred Years A-Milling*. Commemorating an Ulster mill centenary. Second edition. Dundalk: Dundalgan Press, for W. & G. Scott, Ltd., Excelsior Mills, Omagh, 1956. 9". Pp. 333. 15s.

[This discursive miscellany published on the occasion of the centenary of the Tyrone family milling business which formerly had the historian W. R. Scott as its head was reviewed in the *ECONOMIC JOURNAL* of March 1952, p. 175, by Professor A. L. Macfie. This second edition contains a number of new contributions.]

STUART KIRBY (E.) (Ed.). *Contemporary China*. Vol. I, 1955. Hong Kong: Hong Kong University Press (London: Oxford University Press), 1956. 9". Pp. 264. 30s.

[This is the product of a Research Seminar on Problems of Contemporary China that has been set up in the University of Hong Kong. It is intended that further publications along similar lines should appear annually or oftener. It contains eleven papers by writers connected with the Seminar, five of them on economic issues in present-day China. This is followed by a reprint and translations of some important official Chinese documents. Also included are a bibliography of recent publications on communist China by authors in Hong Kong and Formosa and a chronology of leading economic, social and political events in China between July 1954 and June 1955.]

Australian

BAILEY (J. D.). *Growth and Depression*. Contrasts in the Australian and British Economies, 1870-1880. Australian National University, Social Science Monographs, No. 6. Canberra: Australian National University, 1956. 10". Pp. 135. 25s.

[In this monograph the author sets out to analyse why during most of the 1870s the Australian economy was expanding and prosperous, unlike the British economy at that time (and still more unlike the United States economy). The value of Australian exports fell after 1873, though by rather less than might have been expected, because of a certain shift in British demand towards wool and in particular Australian wool. But real capital formation continued to rise till 1877. Mr. Bailey unfortunately did not have access when he wrote to N. G. Butlin's recently published figures of private capital formation in Australia in this period; if he had had, he would no doubt have given even more emphasis than he does to the importance of agricultural and pastoral investment in bringing about this upward movement. However, he provides a lucid explanation of how it was that this class of investment came to be rising, despite the fall in primary product prices. It was partly a question of new areas being opened up by railway building; partly of the rapid extension of fencing and other innovations; partly of a decline in fertility in older areas. A further factor favourable to Australia in the mid-1870s was the willingness of British investors to buy Australian government securities, in their revulsion from the more exotic foreign bonds fashionable at the beginning of the decade. In 1878-79 the flow of British capital to Australia greatly diminished, perhaps because of the difficulties being experienced for other reasons in the British balance of payments, and Mr. Bailey believes that the resulting monetary stringency in Australia had a good deal to do with the relatively mild contraction that ensued. He describes the monetary links between Britain and Australia and the way in which movements in Australian banks' London funds served up to a point to bridge balance of payments disequilibria. Altogether this is a valuable and interesting piece of work of a type that is needed.]

Canadian

EASTERBROOK (W. T.) and AITKEN (H. G. J.). *Canadian Economic History*. Toronto: The Macmillan Company of Canada, 1956 (London: Macmillan, 1957). 9½". Pp. 606. 50s.

[To be reviewed.]

PHILLIPS (W. G.). *The Agricultural Implement Industry in Canada*. A study in competition. *Canadian Studies in Economics*, No. 7. Toronto: University of Toronto Press, 1956 (London: Oxford University Press, 1957). 10". Pp. xi + 208. 36s.

[The main aim of this substantial monograph is to elucidate the nature of competition in the industry, but the author regards its past history as having an important bearing on this, so a large part is occupied by a historical survey of the industry in Canada and in the United States. Until about 1900 no serious competition from the United States was encountered, but thereafter the reduction in tariffs under pressure from farm interests and the emergence of revolutionary innovations in tractors and other implements increasingly strengthened the position of American producers in the Canadian market. In some implements, however, Canadian producers could hold their own. This specialisation has now developed further, and the desire of Canadian producers to free themselves from excessive dependence on the very unstable home market has led to the curious situation in which "the tendency is for the bulk of the implements purchased in Canada to be imported, and the bulk of those produced in Canada to be exported" (p. 161) to the United States. Within the industry price competition has never been prominent, and price-leadership prevails—though the same firm is not the leader for all classes of implements. But competition has been very active in securing retail outlets and in granting credit facilities. The author considers that geographical factors have had a good deal to do with the competitive structure that has evolved.]

American

ABRAMSON (A. G.) and MACK (R. H.) (Eds.). *Business Forecasting in Practice: Principles and Cases*. New York: John Wiley (London: Chapman & Hall), 1956. 9½". Pp. xi + 275. 52s.

[There are eight chapters, each by a different author. Most of the contributors are economists employed in business. The first chapter gives a brief general survey of business-cycle theories, rather along the lines of Professor Haberler's *Prosperity and Depression*. The second chapter gives a similarly general survey of the various forecasting techniques that are available. In the remaining contributions different practitioners of forecasting describe the methods they employ and how forecasts relating to the economy as a whole are translated into forecasts for a particular industry or firm. The forecasting discussed is almost entirely short-term, and several of the authors use the experience of the 1949 recession as an illustration. The procedures described by the different authors have a much in common with one another. The method is almost always an eclectic one, employing a wide range of data and drawing common-sense inferences from them. Econometric techniques are comparatively little used, and not a great deal of reliance is placed on "sensitive indicators" of the old Harvard type, at least not taken by themselves.]

BOBER (M. M.). *Intermediate Price and Income Theory*. New York: Norton 1955 (London: Bowes & Bowes, 1956). 8½". Pp. 526.

[To be reviewed.]

BOULDING (K. E.). *The Image*. Ann Arbor, Michigan: University of Michigan Press, 1956 (London: Oxford University Press, 1957). 8½". Pp. 175. 30s.

[To be reviewed.]

CHENG (YU-KWEI). *Foreign Trade and Industrial Development of China*. An historical and integrated analysis through 1948. Published under the auspices of the American University and the China International Foundation. Washington, D.C.: University Press of Washington, 1956. 9". Pp. 278. \$7.00.

[To be reviewed.]

CLARK (M. G.). *The Economics of Soviet Steel*. Cambridge, Mass.: Harvard University Press, 1956 (London: Oxford University Press, 1957). 9½". Pp. 400. 60s.

[To be reviewed.]

CONAN (A. R.). *The Changing Pattern of International Investment in Selected Sterling Countries*. Essays in International Finance No. 27. Princeton, New Jersey: International Finance Section, Princeton University, 1956. 9". Pp. 20.

[The author presents and discusses estimates of the post-war inflow of investment capital from abroad, its relation to total capital formation, its division between public and private and its source of supply for selected commonwealth countries (Australia, New Zealand, South Africa, Rhodesia, India, Pakistan, Ceylon and Colonial Territories). These particulars are compared with those for pre-war. Interesting conclusions that emerge include the relative decline of public borrowing as a form of capital inflow, this being associated with the increased facility experienced by the governments of many of these countries in raising finance at home. The United Kingdom is shown to be still much the most important source of capital, especially if attention is confined to private investment.]

DAHLBERG (A. O.). *How U.S. Output Is Measured*. National income diagrammed. New York: Columbia University Press, 1956 (London: Oxford University Press, 1957). 11". Pp. 42. 8s.

[This booklet is an abbreviation of the same author's *National Income Visualized*, noted in the *Economic Journal* of March 1957, p. 173. It is designed for students in elementary courses and the general reader seeking to obtain a broad understanding of national-income accounting.]

DAY (J. S.). *Subcontracting Policy in the Airframe Industry*. Boston, Mass.: Harvard University Graduate School of Business Administration, 1956 (London: Bailey Bros. & Swinfen, 1957). 8½". Pp. 327. 32s.

HARLAN (N. E.). *Management Control in Airframe Subcontracting*. Boston, Mass.: Harvard University Graduate School of Business Administration, 1956 (London: Bailey Bros. & Swinfen, 1957). 8½". Pp. 256. 32s.

[These are two companion studies in the same field. Professor Day is concerned with the general aspects of sub-contracting in the industry. He describes how sub-contracting practice has developed and how prime contractors reach the decision whether to sub-contract, what method to use and which sub-contractor to select. Professor Harlan deals with the prime contractor's problems of maintaining control over the sub-contractors. In both studies cost emerges as the least satisfactory aspect of sub-contracting. According to Professor Day, prime contractors are too prone to regard sub-contracting as an expedient to employ only if their own capacity is inadequate for the job. While cost is given careful attention in choosing between alternative sub-contractors, it is less influential in the initial decision whether to sub-contract at all. This tendency to regard sub-contractors as a source of reserve capacity also hampers the establishment of an orderly and stable sub-contracting industry. Professor Harlan finds that quality and delivery are controlled reasonably well by prime contractors, but that this is often achieved only by relegating cost considerations to a subordinate position, especially under the stress of national emergencies. Both these studies are illustrated throughout by extensive reference to particular cases.]

FISHER (I. N.). *My Father, Irving Fisher*. New York: Comet Press, 1956. 8". Pp. ix + 352. \$4.50.

[To be reviewed.]

FRIEDMAN (M.) (Ed.). *Studies in the Quantity Theory of Money*. Chicago: University of Chicago Press, 1956 (London: Cambridge University Press, 1957). 9½". Pp. 265. 37s. 6d.

[To be reviewed.]

GREBLER (L.), BLANK (D. M.) and WINNICK (L.). *Capital Formation in Residential Real Estate. Trends and prospects*. Princeton, New Jersey: Princeton University Press for the National Bureau of Economic Research, 1956 (London: Oxford University Press, 1957). 9½". Pp. 519. 80s.

[To be reviewed.]

GRIFFIN (J. I.). *Industrial Location in the New York Area*. New York: New York Area Research Council, The City College, 1956. 9". Pp. 212.

[The central section of this monograph reports the result of an inquiry among a sample of large manufacturing firms in New York about their attitudes towards alternative locations within the New York area. This report, and indeed the whole monograph, is descriptive rather than analytical. It is preceded by a statistical account of the characteristics of the area and of recent trends in location there. The author accepts the view advanced by many industrial spokesmen that the vexatious policies of public authorities bear much of the responsibility for the drift of industry away from New York, and he suggests ways in which this could be corrected. He does not, however, put forward any constructive proposals of how the needs of city planning can be reconciled with the interests of industry. An appendix contains a classified list of all manufacturing firms in New York with 100 or more employees.]

HALM (G. N.). *Economics of Money and Banking*. Homewood, Illinois: Richard D. Irwin, 1956. 9½". Pp. 577. \$7.20.

[The scope of this text-book includes monetary theory in the narrow sense, U.S. monetary institutions and their problems, the theory of the rate of interest and effective demand, fluctuations and employment policy, and the mechanism of international payments. The emphasis throughout is on theory, but sufficient factual material is included to enable the book to serve as a self-contained text suitable for American college use.]

HARPER (F. A.). *Why Wages Rise*. Irvington-on-Hudson, New York: Foundation for Economic Education, 1957. Pp. 124. \$1.50.

[This is a lucid and brightly written account of the elementary facts of economic life, rather similar both in style and content to a well-known feature in the *British Sunday Press* translated into the American idiom. The author explains that the main source of increases in real wages is increasing productivity, that this is largely due to capital accumulation, and this in turn to saving, which accordingly must be rewarded; that inflation must be resisted, that fringe benefits and shorter hours are at the expense of money income and so on. Much of what he says is sensible and well put. Only towards the end does he lapse into downright fallacy, when he asserts that unemployment is due solely to too high wages and that Professors Pigou and Douglas have proved that a % cut in wage-rates will lead to a roughly 3% rise in total employment. This last statement is several times repeated.]

ISARD (W.). *Location and Space-Economy*. A general theory relating to industrial location, market areas, land use, trade and urban structure. New York: Technology Press of the Massachusetts Institute of Technology and John Wiley (London: Chapman & Hall), 1957. 9½". Pp. xiii + 350. 70s.

[To be reviewed.]

MEIER (R. L.). *Science and Economic Development: New Patterns for Living*. New York: Technology Press of the Massachusetts Institute of Technology and John Wiley (London: Chapman & Hall), 1956. 9". Pp. ix + 266. 48s.

[To be reviewed.]

PHELPS (C. W.). *The Role of Factoring in Modern Business Finance*. Studies in Commercial Financing, No. 1. Baltimore, Maryland: Commercial Credit Company, 1956. 9". Pp. 70.

[Factoring is an arrangement under which a specialised financing institution takes over from a manufacturer or other firm the function of arranging credit for its customers and collecting debts from them, the financing institution actually buying outright the firm's receivables. The arrangement thus both serves as a source of finance to the manufacturing firm and relieves it of the administrative and other work involved in running a credit department. The author describes the working of the system and the advantages it affords to the firms making use of it.]

ROLL (E.). *The Combined Food Board*. A study in wartime international planning. Stanford University Food Research Institute, Studies on Food, Agriculture and World War II. Stanford, California: Stanford University Press (London: Oxford University Press), 1957. Pp. 385. 9½". 60s.

[To be reviewed.]

ROOSA (R. V.). *Federal Reserve Operations in the Money and Government Securities Markets*. New York: Federal Reserve Bank of New York, 1956. 9". Pp. 108.

[To be reviewed.]

SADY (E. J.). *The United Nations and Dependent Peoples*. Washington, D.C.: The Brookings Institution, 1956. 9". 205. \$1.50.

[This volume is one of a series of separate but related studies on major features of the United Nations system. It describes the institutional machinery through which the United Nations deals with the concerns of dependent peoples, the issues that have arisen with regard to particular territories and the more general problems of the future.]

SCHULTZ (T. W.). *The Economic Test in Latin America*. Ithaca, New York: New York State School of Industrial and Labor Relations, Cornell University, 1956. 9". Pp. 30.

[The author suggests that the wide variety of economic experience encountered among the twenty or so countries of Latin America provides a good opportunity for testing the relative importance of the various factors that have been held to be significant in stimulating economic growth. He suggests first, though without very much documentation, that agricultural under-employment is a much less real phenomenon in poor countries than is often believed; or at least that it should not be interpreted in a sense which would lead to the conclusion that efforts at development should necessarily be concentrated on industry rather than agriculture. He then goes on to argue that the most profitable use to which resources can be put is in education and in the improvement of productive methods, rather than in capital accumulation as normally understood. This conclusion he finds to be confirmed by the evidence of two of the most progressive areas in the region, Mexico and Puerto Rico. In both of these education of the labour force has been given a high priority.]

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[To be reviewed.]

WHITTAKER (E.). Economic Analysis. New York: John Wiley (London: Chapman & Hall), 1956. 9½". Pp. ix + 460. 52s.

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[A popular and mainly factual discussion of world food production and its development in relation to population trends.]

HEECKT (H.). Der Verkehr als Integrations-faktor der Europawirtschaft. Kiel: Institut für Weltwirtschaft an der Universität Kiel, 1956. 9". Pp. 106. DM. 10.

[Reviews the present state of unification of international traffic on the continent.]

Die Nürnberger Hochschule im Fränkischen Raum. Nürnberg: Glock und Lutz, 1955. 9½". Pp. 232.

[A collection of essays dealing with the social and economic situation in Northern Bavaria.]

WILBRANDT (H.). Die Regulierung des Milchmarktes in der Schweiz. Kiel: Institut für Weltwirtschaft an der Universität Kiel, 1956. 9". Pp. 303. DM. 25.

[A case study of agricultural policy, based on a thorough examination of the Swiss experience of various methods of regulating the dairy industry from 1914 to the present day.]

Swiss

SCHERRER (P.). Die "Terms of Trade" und die Beschäftigung. Zürich: Polygraphischer Verlag A.G., 1956. 9". Pp. 155. Sw. fr. 13.80.

[This doctoral thesis gives a systematic exposition of the effects of changes in the terms of trade on employment. The consequences of shifts in demand and supply-curves and of subsidies and duties are traced separately for the two-country case.]

Dutch

VAN GLINSTRA BLEEKER (R. J. P.). Guided Money. A new monetary instrument. Amsterdam: North-Holland Publishing Company, 1956. 9". Pp. 173. 30s.

[To be reviewed.]

GROENEVELD (K. J.). Algemene Bedrijfseconomie. Leiden: H. E. Stenfert Kroese, 1956. 9". 2 vols. Pp. 300 and 314. Dfl. 9.75 each.

[A text-book of business economics in the continental tradition, which aims at a factual treatment of the problems of the firm within the framework of economic theory. The first volume contains an introduction and a survey of the functions of transport, insurance and financial institutions. The second deals with the structure of the firm, the allocation of gross profits and provisions for capital depreciation. Two more volumes will follow.]

NEMMERS (E. E.). Hobson and Underconsumption. Amsterdam: North-Holland Publishing Company, 1956. 9". Pp. 152. 31s.

[To be reviewed.]

Rooy (M.). Her dagbladbedrijf in Nederland. Leiden: H. E. Stenfert Kroese, 1956. 10". Pp. ix + 613.

[A survey of the present economic structure of Dutch newspaper publishing by the Nieuwe Rotterdamse Courant. The book contains a summary in English of about ten pages.]

TINBERGEN (J.). Economic Policy: Principles and Design. Contributions to Economic Analysis, No. X. Amsterdam: North-Holland Publishing Company, 1956. 9". Pp. 276. 53s.

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Twenty-five Economic Essays, in Honour of Erik Lindahl. Stockholm: Ekonomisk Tidskrift (Malmstorgsgaten 8), 1956. 9½". Pp. 412. 31s. 6d.

[To be reviewed.]

Danish

ALKJAER (E.). Ungdommen på det danske marked. En analyse af de 14-19 åriges indvirkning på købe og forbrugsvaner. (The Danish Teen-age Market.) Copenhagen: Copenhagen School of Business Administration, 1956. 10". Pp. 86.

[This study of the role of teenagers in the Danish market analyses the subject under two heads: the teenagers' own consumption and their influence on household consumption. Conclusions under the first head include the importance of means of transport, cameras, record players and other such durable goods and the comparatively small interest shown in clothes. Under the second head it emerges from the statements of parents that teenagers' preferences exercise a considerable influence on household purchases of food, furniture and notably on their mother's choice of her own clothes; though the teenagers' own statements show that they are often not aware of this.]

Egyptian

SUVIRANTA (B.). The Viability of the Competitive Market. National Bank of Egypt Fiftieth Anniversary Commemoration Lectures. Cairo: National Bank of Egypt, 1956. 9½". Pp. 28.

[These three lectures are arranged in the Hegelian form of thesis, antithesis and synthesis. The thesis is the classical theory of free competition as an impersonal device by which the public interest is served. The antithesis is the theory of imperfect competition developed in the inter-war period, which showed the extreme rigour of the conditions needed to give perfect competition and tended to proceed from this to the conclusion that the largely inevitable monopolistic elements in the system virtually destroyed the vaunted merits of the competitive price mechanism as a device for allocating resources. Finally, the synthesis is based on the notion of *workable* competition: competition which does not necessarily preclude many short-term monopoly positions but which suffices in the long run to keep prices broadly in line with costs and prevents excessive profits. Professor Suviranta does not consider the criticism that has been brought against the workable competition idea, that to define the degree of competition in terms of its results, which is more or less what is proposed, is liable to lead to conclusions in conflict with normal use of words; for example, a completely monopolised industry, in which prices are kept low either because the monopolist is benevolent or because he is very efficient, must then be described as *workably* competitive.]

Official

BRITISH

SAVAGE (C. I.). Inland Transport. History of the Second World War, United Kingdom Civil Series, edited by Sir Keith Hancock. London: H.M. Stationery Office and Longmans, 1957. 9½". Pp. xv + 678. 47s. 6d.

[To be reviewed.]

DEPARTMENT OF AGRICULTURE, STATES OF JERSEY. Milk Production Costs in Jersey, 1955-6. Agricultural Costing Survey, Report No. 9. St. Helier: Department of Agriculture, 1957. 12½". Pp. 225.

[This very detailed report is the ninth of an annual series. The average cost of milk production in the farms in the sample rose considerably between 1954/55 and 1955/56—by about 9%. This is attributed to higher labour costs, reductions in milk yields and higher charges for herd depreciation.]

CANADIAN

RESTRICTIVE TRADE PRACTICES COMMISSION, DEPARTMENT OF JUSTICE, OTTAWA. Report Concerning the Production, Purchase and Sale of Flue-cured Tobacco in Ontario. Ottawa: Department of Justice, 1956. 10". Pp. 146.

[This report relates to the activities of an Association set up in 1936 which is alleged to have engaged in restrictive practices in production, purchase and sale in the industry. The report finds that many of the alleged restrictive effects are at present no more than potential, but it suggests that if producers are as firmly convinced as they appear to be that the industry can be kept prosperous only by means of a powerful apparatus of control, then the appropriate instrument would be a statutory marketing agency rather than a private one.]

INDIAN

KALDOR (N.). Indian Tax Reform. Report of a survey. Delhi: Department of Economic Affairs, Ministry of Finance, 1956. 10". Pp. 139. 2s. 3d.

[To be reviewed.]

NORWEGIAN

Avskrivning og Skattlegging. (Depreciation and Taxation.) Samfunnsøkonomiske Studier, No. 5. Oslo: Statistisk Sentralbyrå, 1956. 9½". Pp. 85. Kr. 3.00.

[The chief purpose of this is to compare the tax provisions relating to depreciation in Norway and in nine other countries. The comparison is preceded by a theoretical analysis of the economic issues involved. The list of contents, a summary and a useful table showing tax rules in force in different countries are provided in English.]

INTERNATIONAL

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT. Eleventh Annual Report, 1955-56. Washington, D.C.: International Bank for Reconstruction and Development, 1956. 11". Pp. 75.

[Details are given of loans made by the Bank and of its other work during the year. Although there is not much discussion of general issues, the overall pattern of the Bank's activities emerges plainly enough, in particular its established practice of relating loans to specific investment projects and to the foreign-exchange cost that they directly involve.]

INTERNATIONAL LABOUR OFFICE. International Comparisons of Real Wages. A study of methods. Geneva: I.L.O., 1956. 9½". Pp. 89. 6s.

[To be reviewed.]

INTERNATIONAL LABOUR OFFICE. Problems of Wage Policy in Asian Countries. Geneva: I.L.O., 1956. 9½". Pp. 141. 7s. 6d.

[This report considers the relation between the level and structure of wages in Asian countries and their underlying general economic problems. In accordance with the ILO's own special concerns, particular attention is given to methods of wage determination and problems of minimum wage regulation in the conditions prevailing in Asia.]

INTERNATIONAL LABOUR OFFICE. Yearbook of Labour Statistics. Geneva: I.L.O., 1956. 12". Pp. 503. 36s.

[This year's edition closely follows the lines of previous issues. The subjects covered are labour force, employment, unemployment, hours of work, wages, consumer prices, family budgets, social security, industrial injuries, industrial disputes and migration. An appendix includes some newly available data for the U.S.S.R.]

INTERNATIONAL MONETARY FUND. Annual Report of the Executive Directors for the Fiscal Year ended April 1956. Washington, D.C.: International Monetary Fund, 1956. 9". Pp. 197.

[This contains the usual thorough survey of developments during the year in international payments, exchange practices and other matters coming in the province of the Fund.]

INTERNATIONAL MONETARY FUND. Summary Proceedings of the Eleventh Annual Meeting, September 1956. Washington, D.C.: International Monetary Fund, 1957. 9". Pp. 165.

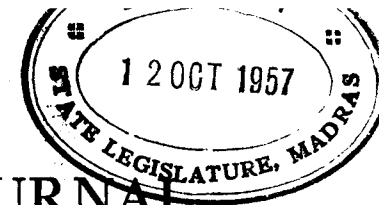
[These summary proceedings include the presentation of the Annual Report by Mr. Rooth, and statements in discussion of the report by the Governors for the several countries. Mr. Rooth's address is the last delivered by him in his capacity as Managing Director of the Fund before resigning in favour of Mr. Per Jacobsson.]

UNITED NATIONS. Economic Survey of Latin America, 1955, including an essay on Government Income and Expenditure, 1947-54. Prepared by the Secretariat of the Economic Commission for Latin America. New York: United Nations Department of Economic and Social Affairs, 1956. 11". Pp. 176. 14s.

[Rather more than half of this is devoted to an account of economic trends in the area during 1955. This was a year when production rose rapidly and income also rose fairly fast despite an adverse movement in the terms of trade. Some cause for concern is found in the continuing downward trend in the proportion of output devoted to investment. The remainder of the volume consists of a special survey of government income and expenditure in Latin America since 1947. Figures are given showing the importance of the public sector in income, investment and savings in the various countries of the area. Attention is also given to tax structure and to the use of foreign-exchange policy as an instrument of public finance.]

VINING (R.). Economics in the United States of America. A review and interpretation of research. Paris: UNESCO, 1956. 9½". Pp. 62. 5s.

[This is an individual essay rather than a survey. After a methodological discussion of the nature and purposes of research in economics, Professor Vining takes up for more detailed treatment two branches of study: first, "the choice of means for a well-defined end," i.e., activity analysis, games theory, etc., and secondly, business-cycle theory and policy, chosen as an example of the broader and more "classical" type of economic problem. The author has some interesting things to say, but his essay can hardly be held to give even the "bird's-eye view of general tendencies and preoccupations" that the series in which it appears purports to provide. Not merely is it confined to two particular fields of study, but a large part of the section on business cycles is occupied by quotation and discussion of the past and present views of politicians and other public men, which can hardly be considered to come under the heading of research. While it is good to have Professor Vining's decidedly personal views on these subjects, it is rather surprising that the sponsors of the series should have chosen to use their opportunity in this way.]



THE ECONOMIC JOURNAL

SEPTEMBER 1957

THE BALANCE-OF-PAYMENTS PROBLEMS OF A EUROPEAN FREE-TRADE AREA¹

I do not propose in this lecture to inquire into the effect of the institution of a free-trade area in Western Europe upon productivity, standards of living and so on. I propose only to raise some of the financial issues which are involved. Is it possible in Western Europe to combine free trade with full employment and balance-of-payments equilibrium?

Balance-of-payments problems as between the members of a European free-trade area can be avoided if each member takes steps to keep its own overall balance of payments in equilibrium. It will not matter if France, for example, is in deficit with the rest of the free-trade area provided she is in overall balance, *i.e.*, in equal surplus with outside countries. She can then use the outside currencies which she earns to pay her debts within the free-trade area. And these outside currencies will be needed by the other members of the free-trade area; for if France is in deficit inside the free-trade area, some other member or members (say, Germany) must be in equal surplus within the free-trade area. But if Germany is also in overall balance, then the German surplus in the free-trade area must be matched by an equal German deficit with outside countries. If France has no overall deficit on her balance of payments, she can pay Germany with her earnings of outside currencies; and if Germany has no overall surplus on her balance of payments, she will need these outside currencies to pay her debts to the outside world.

This multilateral principle is well illustrated by the history of Benelux. Within Benelux the natural structure of trade and other transactions is such that the Netherlands is practically always in bilateral deficit with the Belgium-Luxembourg Economic Union. In the early post-war years the Dutch balance of payments was in overall deficit; and in these conditions the finance of her bilateral deficit with Belgium gave rise to problems which could be solved only by restricting Dutch imports from her partner. But from 1951 onwards the Dutch international payments regained an overall balance; and the Dutch were earning a surplus with outside countries which matched their deficit with the Belgium-Luxembourg Economic

¹ Presidential Address to Section F of the British Association, delivered on September 5th, 1957 at Dublin.

Union. The Dutch could pay the Belgians with the currencies of third countries.

Consideration of the payments problems of Benelux suggests that the maintenance of overall equilibrium in the balance of payments of each partner country is not merely a possible, but also the only acceptable, method of dealing with payments between the partners. Consider the alternative principle that each partner should keep its payments with the other members of the union (rather than with all the other countries of the world) in balance. This result could be achieved in Benelux without restrictions on intra-Benelux trade if there were a very great rise in Belgian prices and costs (brought about by inflation in Belgium or by an appreciation of the Belgian franc) so as to cause an increase in Belgian purchases from, and a decrease in Belgian sales to, the Dutch on a sufficient scale to bring the bilateral Belgian-Dutch balance of payments into equilibrium. But this would have threatened to put the Belgian overall balance of payments into serious deficit, since the rise in Belgian prices and costs would have increased Belgian imports from, and would have decreased her exports to, the rest of the world as well. Belgium would have had to impose strict controls over payments to other countries. Or if the Dutch-Belgian balance of payments were put into bilateral balance by such a deflation in the Netherlands as to reduce Dutch purchases from, and to increase Dutch sales to, Belgium to the required extent, then this would have caused a great decrease in Dutch imports from, and an increase in Dutch exports to, the outside world as well. The Dutch would have to deal with a large undesired surplus in their overall balance of payments.¹ In conditions in which the structure of trade and payments is such that some members of a free-trade area naturally have deficits with their partners matched by surpluses with outside countries, while other members are in the opposite situation, the principle that each member should be primarily concerned with its overall balance of payments is the only acceptable one.

Our first and basic principle is, therefore, that each member of the free-trade area should maintain equilibrium in its overall balance of payments. But before proceeding further I would like to make two comments on this general principle.

First, the maintenance of overall equilibrium in a country's balance of payments is nothing like so precise a criterion as might at first sight appear. Obviously, since some countries will naturally and properly be lending

¹ Suppose that the Netherlands were in overall surplus (its deficit with Belgium being less than its surplus with the outside world), while Belgium were in overall deficit (her surplus with the Netherlands being less than her deficit with the outside world). Suppose then that the Dutch inflate and the Belgians deflate. The Dutch will get rid of their overall surplus by decreasing their surplus with the outside world but *increasing their deficit with Belgium*, while the Belgians will get rid of their overall deficit by decreasing their deficit with the outside world and *increasing their surplus with the Netherlands*. The solution of a balance-of-payments problem of a free-trade area may thus well involve the increase of the deficits and surpluses within the area itself.

abroad or borrowing from abroad for ordinary commercial and developmental purposes, by equilibrium in the balance of payments we do not mean an equality between current payments and current receipts. We are concerned with the balance of all normal current and capital payments and receipts. Even so, we cannot make an exact equality between payments and receipts our criterion. A country which has very inadequate reserves of gold and dollars may properly aim at some surplus of normal receipts over payments which will enable it to bring its reserves to a reasonable level. We can only lay down a general principle that it is the duty of each member of the free-trade area to avoid a continuing deficit or surplus on its overall balance of payments which threatens to result in the unreasonable accumulation or loss of its reserves.

Second, we must allow for the fact that not all outside currencies are convertible into each other. To return to my Benelux example, suppose that the Netherlands and Belgium are both in overall equilibrium, but that the Belgians have a deficit with the outside world and a surplus with the Netherlands, while the Dutch have a deficit with Belgium but a surplus with the outside world. If the outside currency which the Dutch are earning is a "hard" currency which is convertible into the outside currency which the Belgians are spending, all is well. The Dutch can pay the Belgians with this currency, and the Belgians can use it to finance their outside debts.

But trouble might arise if Benelux as a whole, while it is in overall balance, has an outside surplus of "soft" currencies and an outside deficit of "hard" currencies. The Netherlands might be earning a surplus of outside "soft" currencies which were not convertible into the "hard" currencies needed by Belgium for the finance of her outside deficit.

There are in fact two very different types of case in which a European free-trade area as a whole might be earning a surplus of "soft" currencies.

In the first case the surplus earnings of the free-trade area may be in terms of a currency which is not freely convertible into other outside currencies but is more or less freely convertible into the currency of one of the members of the free-trade area. The outstanding example of this is, of course, the overseas members of the sterling area. Suppose that in the European free-trade area the Germans have a dollar deficit and that the French are in debt to the Germans but are earning a surplus in Australian pounds, which are freely convertible into United Kingdom pounds, the United Kingdom being a member and Australia not a member of the free-trade area. If sterling is not freely convertible into dollars, the French cannot pay the Germans in an outside currency which the Germans need. The basic cure in this type of case is, of course, that the sterling area as a whole, rather than just the United Kingdom, should be in overall balance. If the free-trade area (excluding the United Kingdom) has a surplus with the sterling area, then the sterling area (including the United Kingdom)

will be in overall balance only if it has a surplus with some country outside the free-trade area and the sterling area, *e.g.*, with the dollar world. Once again the circle is closed. France can pay Germany with her sterling earnings and, since the sterling area has a dollar surplus, Germany can convert this sterling into dollars for the finance of her dollar deficit without putting a strain on the sterling area's dollar reserves.

The basic balance-of-payments rule for the free-trade area must thus be modified to the effect that each national government undertakes to maintain overall equilibrium in the balance of payments of the monetary area of which it is the centre rather than merely overall equilibrium in its own national balance of payments. This puts the United Kingdom in a special position which has become a familiar problem in the European Payments Union and the Organisation for European Economic Co-operation. The United Kingdom, as banker for the sterling area, has cleared all sterling-area payments through E.P.U., but in the adjustment of the O.E.E.C. trade liberalisation programme to maintain balance-of-payments equilibrium she has been able to enter into commercial-policy commitments only for the United Kingdom and not for the other members of the sterling area such as Australia.

A different type of problem might arise if the outside deficits of the free-trade area were in dollars and the outside surpluses were in some currency like the Brazilian cruzeiro, which is convertible neither into other outside currencies (such as the dollar) nor into the currency of a member country (such as sterling). But the countries of Western Europe are now in a sufficiently strong position to deal with this type of problem in a simple but decisive manner. If the monetary authority of each European country does not undertake to exchange into its own European currency any Brazilian cruzeiros which its exporters may earn, then in self-defence the individual European exporters to Brazil will demand from the Brazilian importers to be paid in their own European currencies or in other acceptable convertible currencies. This means that the Brazilian authorities have to take steps to see that their importers do not purchase more from Western Europe as a whole than Brazil can finance out of the proceeds of her exports or other earnings. Immediately after the War each country of Europe dealt with this problem by a separate bilateral payments arrangement with Brazil or with similar "soft" currency countries. This is now unnecessary; and, through the so-called Hague Club, arrangements are now being made whereby the Brazilians can transfer any earnings which they may obtain in one European currency into another European currency for the purchase of goods from that second European country. In these conditions while one European country alone may have an excess of exports to Brazil and another an excess of imports from Brazil, there can be no problem of an excess of earnings of the "soft" Brazilian currency by the free-trade area as a whole.

But let me return to my main problem. By what means can each member of the free-trade area keep its overall balance of payments in equilibrium? There are at least five possible lines of approach to this problem which I shall call the liquidity approach, the gold-standard approach, the integration approach, the direct-control approach and the exchange-rate approach.

By the *liquidity approach* I mean that steps might be taken to increase the availability of liquid reserves to the European countries which are in overall deficit so that they can thereby tide over temporary balance-of-payments difficulties. This cannot, of course, provide a full cure for lasting and permanent balance-of-payment deficits. But it can deal with temporary balance-of-payments problems and, above all, it can provide a buffer which will enable other measures for dealing with permanent difficulties to have time to work out their effects. Reserves of some European countries and particularly of the United Kingdom are still lamentably low. An increase in liquidity is an essential ingredient in a satisfactory solution of our problem.

How can this best be achieved? One's thoughts naturally turn to the European Payments Union, which provides a mechanism whereby, according to the credit element in the monthly settlements, European countries with a surplus in their payments to other European countries automatically provide credit, and so liquidity, to those European countries which have a deficit in their payments with other European countries. Could the European liquidity problem be solved by a development of this European instrument whereby European surplus countries provide credits to European deficit countries?

There are two serious objections to reliance upon an E.P.U. type of mechanism.

In the first place there may well be times when the European free-trade area as a whole is in deficit with the outside world. This means that the overall deficits of the European deficit countries are greater than the overall surpluses of the European surplus countries. In such circumstances, it is impossible to cover the deficits of the deficit members by the surpluses of the surplus members. For this reason it would be much more satisfactory to proceed by means of a more "universal" approach (such as an extension of drawing rights with the International Monetary Fund) which would give each European country, regardless of the position of its European partners, greater international liquidity to deal with its own overall balance-of-payments problems.

If, however, this more "universal" approach is for any reason ruled out, it is possible to do something by methods whereby European surplus countries lend temporarily to European deficit countries. But there is now a second objection to an E.P.U. type of mechanism. My basic theme has been that if each member is in overall balance-of-payments equilibrium,

then the settlement of payments within the free-trade area should be possible. Suppose that the Netherlands has a dollar surplus matched by a deficit with Belgium; while Belgium has a dollar deficit matched by its surplus with the Netherlands; it should be possible for the Dutch to pay the Belgians with dollars. But with the E.P.U. arrangements the Netherlands will continuously pile up reserves of gold and dollars, since their surplus is earned wholly in that form, while their deficit is payable through the E.P.U. partly in book credit. But Belgium will run out of gold and dollar reserves, since her dollar deficit must be financed wholly in that form while her surplus is with E.P.U. and will be financed partly by a book credit with E.P.U. This difficulty is avoided if settlements through E.P.U. are 100% in gold; but in this case E.P.U. does not fulfil the function of providing additional credit by overall surplus to overall deficit members.

It is, of course, possible to devise methods for European surplus countries to lend to European deficit countries, which are not open to this objection. This might be done merely by arrangements between the exchange equalisation accounts or similar authorities of the members to the effect that the authorities of an overall surplus member would hold more of the currencies of an overall deficit member. Or it might be rather more institutionalised in the form of a European Monetary Fund into which all members paid certain amounts of their own currencies, and possibly also of their reserves of gold and dollars, and from which members with overall deficits were able to make temporary drawings. Or it might take the extreme form of the payment of all the gold and dollars of all the members into a common single pool, payments between members being financed by the transfer of claims on this pool, and payments to the outside world by drawings from the pool. This last system would, of course, have special implications for the United Kingdom, since it would mean pooling with the Europeans the reserves held against the claims of the whole Sterling Area; and although there is nothing inherently illogical (indeed there is much positively desirable) in extending the payments mechanism to cover a wider region than the commercial free-trade area, the political difficulties involved are obviously very great.

In any case an increase in international liquidity for European countries is not a complete cure for our problem. What methods could be used to deal with persistent balance-of-payments problems in the European free-trade area? Let us consider first what I have called the *gold-standard approach*.

By this I mean the application of the principles of the old gold standard as they are expounded in the text-books. Any member of the free-trade area which is in overall deficit will lose reserves of foreign exchange; it should allow this to lead to a restriction of the domestic supply of its money until its domestic money incomes, prices and costs are so deflated that it has put its overall balance of payments into equilibrium by buying less imports and supplying more and cheaper products for export. Simultaneously any

surplus member of the free-trade area should allow its receipt of foreign-exchange reserves to cause a monetary inflation domestically, which should lead to an increase in its imports and a decrease in its exports. This solution is dangerous. It requires that each European national government should devise its domestic monetary and budgetary policies essentially with regard to its balance-of-payments situation and with little or no thought for its domestic situation. Financial policies to prevent domestic inflations or to preserve full employment must be more or less abandoned.

This would mean that Germany, so long as she has an overall balance-of-payments surplus, must inflate her domestic money incomes, prices and costs. But Germany, with her memories of past hyper-inflation, is very unwilling to do this. And, as recent events show, a surplus country like Germany is always able to restrain an inflation; she can, through restrictive domestic monetary and budgetary policies, offset the domestic inflationary effects of a balance-of-payments surplus and continue to pile up balances of gold and foreign currencies. But this means that a potentially deficit member of the free-trade area such as France might have to make an undue share of the adjustment by a domestic deflation of its money incomes, prices and costs; for it cannot indefinitely postpone the adjustment, since its stock of gold and foreign currencies is limited and exhaustible. It might have to abandon a domestic financial policy of expansion for full employment just at the time that the structural adjustment of its industries due to the removal of trade barriers within the free-trade area may be causing some redundancy of labour in its less efficient industries, so that it was especially desirable to have a domestic background of financial expansion to ease the development of its more efficient industries. Governments are nowadays so wedded (and, in my opinion, rightly so wedded) to the idea that it is one of their duties to preserve full employment that the probable outcome of this solution would in fact be the breakdown of the free-trade-area arrangements.

Many who accept these criticisms of the gold-standard approach may ask whether we could not get rid of payments difficulties, at least within the free-trade area, by combining with the building of a free-trade area in Western Europe the integration of European financial arrangements so as to make it as easy for a Frenchman to pay a German within Europe as it is for a Welshman to pay an Englishman within the United Kingdom.

The logic of this *integration approach* is unassailable. But it is not, I think, always realised how far-reaching this proposal is. This we can best see by asking why it is that the adjustment of payments between England and Wales is so much easier than that between Germany and France. There are at least five elements to the answer.

In the first place, the fact that goods, labour and capital can move freely between England and Wales makes adjustment easier. Suppose Wales is in economic difficulty. A deflation of prices and incomes in Wales relatively to prices and incomes in England will have more effect in inducing

consumers to buy Welsh rather than English products and in inducing workers to work in England rather than Wales, because there are no restrictions on the movement of goods or workers from Wales to England. Moreover, any rise in interest rates in Wales caused by a scarcity of money capital due to the deflation of money supplies in Wales would have more effect in attracting new capital funds from England because there are no barriers to the movement of capital within the United Kingdom. Indeed, the Welsh and the English share in common the London capital market. A complete common market for goods, labour and capital throughout Western Europe would similarly make the mechanism of adjustment of payments easier. There is some truth in the contention that the gold-standard approach is less dangerous when it is applied to the payments between the members of an economic union than when it is applied to payments between national States which maintain impediments to the movement of goods and services between them.

But this is not the whole of the story. A second reason why the adjustment of payments between England and Wales is much easier than between Germany and France is because the United Kingdom has, while Western Europe has not, got a single common currency and banking system. If the Welsh balance of payments with England is £1 million in deficit, then this means that £1 million of currency or bank deposits passes from the ownership of Welshmen to that of Englishmen. This deflation of £1 million in Wales and inflation of £1 million in England is the end of the direct monetary adjustment. But if the French balance of payments with Germany is 1 million francs in deficit, then the French central bank loses 1 million franc of foreign-exchange reserves and the German central bank gains an equivalent amount of reserves. There are many reasons why a change of 1 million in a country's foreign-exchange reserves may cause a change of many millions in its total domestic supply of money. In particular, if France has only a small proportion of her total domestic supply of money covered by foreign-exchange reserves, she may have to deflate her domestic supply of money by many times any loss of her reserves, in order to prevent a dangerous fall in her foreign-exchange reserve ratio. In other words, the absence of a single money means that the abruptness and speed of adjustment in France and Germany may have to be much greater than in Wales and England. Much of this problem would, of course, be solved by sufficiently far-reaching arrangements for increasing international liquidity between the members of the European free-trade area. In the example just given, if France has foreign-exchange reserves equal to 100% of her domestic money supply, then any given loss of reserves would no longer make it necessary for her to deflate her domestic money supply by many times that loss of reserves.

Thirdly, England and Wales have a single national government which by the adoption of a stricter or easier central-banking monetary policy or by running a budget surplus or deficit can pump monetary purchasing

power out of or into the system as a whole. This means that there can be an effective anti-inflation or anti-deflation financial policy for the United Kingdom as a whole which can take into account the interest both of Wales and of England. Trouble with the Welsh balance of payments need not be intensified by a failure of monetary demand in England to expand sufficiently. This is a most far-reaching difference between interregional and international payments. In Europe at present it is the function of each national government by control of its central bank's monetary policy and through its own budgetary policy to prevent undesirable domestic inflations and deflations. Free trade combined with fixed exchange rates (the gold-standard approach) would prevent European governments from devising their domestic financial policy for the purpose of preserving domestic stability. But the prevention of widespread booms and slumps is an essential feature of modern government. To entrust this task to a supranational European authority would require a very far-reaching surrender of powers by the national governments to ensure a single central-bank policy and a single budgetary policy for Western Europe as a whole.

Fourthly, suppose that the balance-of-payments deficit of Wales is greater than the balance-of-payments surplus of England, so that the United Kingdom as a whole has a deficit with the outside world. There exist central authorities for the United Kingdom which will then do something to correct the United Kingdom balance of payments. Restrictions on imports into the United Kingdom as a whole would cause consumers in the surplus area, England, to purchase from the deficit area, Wales, goods which could no longer be procured from abroad. Similarly, a depreciation of the pound would cause outside goods to rise in price relatively to goods inside the United Kingdom, and England would buy more from Wales and less from outside countries and would sell more to outside countries and less to Wales. This also is a very far-reaching point. A European supranational authority with extensive governmental powers would be needed to devise and administer a single programme of control over imports into the free-trade area from outside (we shall return to this problem at a later stage) and to decide upon any changes in the exchange-rate between all European currencies, on the one hand, and all outside currencies, on the other.

Fifthly, if in the United Kingdom (in spite of the factors which we have just mentioned) some economic adjustment does bring concentrated depression in a single region (like South Wales in the 1930s), then the central government in London exists to take special measures to bring new investment and enterprise to South Wales and to help to move labour out of South Wales. No such supranational authority exists to take such "special-area" action on the part of Western Europe as a whole for the promotion of economic development in, say, a particular region of Europe, like Southern Italy.

The integration approach thus involves—in addition to the formation

of a common market for goods and for factors of production and the provision of much greater international liquidity for European monetary authorities—a very extensive range of powers for what would amount to a single European government. Such a government would have to be able to control central-bank monetary policy and governmental budgetary policy throughout Europe, to determine a single European commercial and exchange-rate policy *vis-à-vis* third countries, and to carry out an effective special-area policy for depressed regions in Europe.

This is in my opinion ultimately desirable; let us hope that it will prove ultimately practicable; but it is not a starter at the moment, and it would be a great shame to sacrifice the present real political possibilities of building a commercial free-trade area to this ideal of simultaneous monetary and budgetary integration.

Let us consider next the possibility of dealing with a deficit in a country's balance of payments by imposing restrictions on imports from abroad or on payments to other countries. This *direct-control approach* is more desirable than sole reliance on the gold-standard approach, with its potential threat to full employment; and it is more practicable than the integration approach with its very far-reaching political implications. But in so far as it involves a deficit member of the European free-trade area restricting imports from another member of that area, it cuts deeply into the idea of a true free-trade area. Its interference with the free-trade principle is not to be measured merely by the amount of restriction of imports which actually exists at any one moment of time. The mere knowledge that trade may be restricted in this way in the future will discourage the large-scale investments that may be necessary to build up localised specialised mass production for the whole European market. The mass production of motor cars in Detroit in the United States involves the investment of huge sums of capital in plant and equipment in Detroit, which is undertaken because the producer knows for certain that the whole United States market will always be freely open to him.

If restrictions on trade between the members of a European free-trade area are to be avoided, it must, of course, be possible for traders to make payments for such purposes. This does not in itself imply the absence of all exchange controls over the currencies of the countries concerned. Thus any one member country, say France, could maintain strict exchange controls; every Frenchman who wanted a foreign currency, say, German marks, to purchase goods from Germany, might be required to obtain the currency from a central French exchange-control authority or its agent; and every Frenchman who acquired any foreign currency, say, German marks from the sale of French products to Germany, might be required to surrender the currency to the central French exchange-control authority or its agent in exchange for francs. All that is necessary to ensure the free entry of German products into France is that the French exchange-control

authority should in fact always grant a Frenchman's request for foreign currency if he can show that it is required to finance the import of German products into France.

But the problem is very different if it is intended that there should be freedom of capital movements between the member countries. Full freedom of movement of capital funds from France to Germany, for example, means that the Frenchman must be free to buy German marks for all purposes, capital as well as current. But suppose that the German exchange control differs from the French, the French forbidding and the German allowing the movement of capital funds into dollars. If the Frenchman is free to lend to the German, and the German is then free to lend to the American, it does not require great ingenuity on the part of financiers (who are not conspicuously lacking in that quality) to devise means whereby in effect the Frenchman is lending his money to the American by way of a German intermediary. The control of the movement of capital from France to the United States will become much less effective if there is freedom of movement of capital funds from France to Germany and the German mark is fully convertible. To make one member's control over exports of capital to countries outside the free-trade area effective, the exchange-control regulations of all the members must be harmonised, if freedom of capital movement within the free-trade area is to be maintained. This is a very difficult operation. If it should prove too difficult, then freedom of movement of capital funds cannot be allowed in Europe so long as some members are in heavy deficit and need to control the outflow of capital at least to the outside world, while others are in strong surplus and wish to make their currencies convertible into outside currencies.

But let us return to the problem of trade controls. Is it possible for a member of the European free-trade area to deal with a deficit in its overall balance of payments by restricting imports from outside countries without restricting imports from the other members of the free-trade area? ¹

The use by the members of the European free-trade area on balance-of-payments grounds of restrictions on imports from third countries can be organised in either of two ways which I will call the *national* and the *supra-national* methods respectively. By the national method I mean simply that each individual member of the free-trade area might restrict imports from outside countries into its own national market as an aid to the preservation of equilibrium in its own overall balance of payments. By the supra-national method I mean that the members of the free-trade area should set up some joint authority which would determine the total amount of outside goods which could be imported into the free-trade area as a whole, using this instrument to preserve equilibrium in the balance of payments of the area as a whole with the outside world.

¹ I do not propose to consider on this occasion which, if any, of the systems of import control discussed below would require a special waiver under the General Agreement on Tariffs and Trade.

There can, I think, be little doubt that in the circumstances of the European free-trade area it is the national method which must be employed, at least until there is some further movement towards extensive European integration. There is great difficulty in the supranational method. Suppose that Germany is in overall surplus and France in overall deficit, but that France's deficit is greater than Germany's surplus and the area as a whole is in deficit. To get a single joint programme of control of imports into the area from outside agreement has got to be reached on at least three basic points. First, how severe should the total restrictions be? Germany may want the problem solved mainly by deflation or depreciation by France with little common import restriction, and France may want it solved mainly by inflation or appreciation by Germany with much import restriction. With the supranational method this choice would have to be made by common agreement. Second, given the degree of total restriction, which particular imports should be restricted? France may want severe restrictions on the import of wheat which she produces, but not on chemicals which she does not produce; and Germany may want the opposite type of import programme. Thirdly, given the degree of restriction of each particular import, how many of the import licences should be given to German and how many to French importers? If we may draw any conclusions from the history of the Benelux economic union, we can safely conclude that the formation of a common programme of restriction of imports from third countries is one of the most difficult things to achieve even when there are only two trading partners to be considered.

Let us then consider the case of a member of the European free-trade area which is in an overall balance-of-payments deficit and which is trying to deal with this by restricting imports from outside countries without restricting imports from the other members of the free-trade area. In these conditions too much reliance cannot be placed upon the weapon of import control. In any free-trade area comprising the main countries of Western Europe each individual member would in fact purchase a large proportion of its total imports from other members of the area. In 1955 the United Kingdom purchased 28%, Western Germany 51%, France 33%, Italy 46%, the Belgium-Luxembourg Economic Union 59% and the Netherlands 59% of its imports from other countries of Western Europe. Import restrictions which were confined to imports from other sources would thus be limited in their scope.

Moreover, the limitation of this weapon is rather greater than these crude figures suggest. For the imports of the typical Western European country from outside Europe consist very largely of raw materials and food-stuffs which are less easily dispensable than many manufactured goods which it imports from its Western European partners.

There is a further reason why restrictions on imports from outside countries imposed on what I have called the national as opposed to the supra-

national principle may in certain circumstances prove a rather weak weapon of control. Suppose that France restricts imports of United States products because she is in deficit, but that Germany does not do so because she is in surplus. Then if United States products can move freely from Germany to France, the French restrictions become very ineffective. Indeed, for the system to have any sense at all it must be open to France to restrict the import of United States produce whether it comes into France directly or *via* Germany. But even if this is done, French restrictions on some United States products (say, motor cars) may mean that more such cars are imported into Germany, thereby releasing for export to France some German cars which would have been wanted in the German market if Germany had also been restricting the import of United States cars. The national method will, because of such substitutabilities, be somewhat less effective a device for causing a net reduction in total imports than the supranational method. France will have to rely rather more on disinflation or depreciation than would otherwise be the case, when France is in deficit and Germany in surplus.

But when all the members of the free-trade area are simultaneously in overall deficit, when—that is to say—the free-trade area is in deficit because the outside world is in surplus with all the individual members, then the national method will work very effectively. If Germany is restricting the import of United States cars because she (Germany) is in overall deficit, then the restrictions which France is putting on the import of United States cars will not be offset by the increased import of German cars which are being replaced by United States cars in the German market. If and when developments in the outside world (and, of course, in particular in the United States) impose an almost universal strain on European balances of payments, then the national method will automatically regain its full effectiveness. I personally regard the fact that it will be rather an ineffective tool, except in circumstances such as these, as a strong recommendation of it.

Because of the difficulties involved in operating the supranational method, even the six countries forming the full European customs union would probably have to operate their restrictions on imports from outside countries by the national method. They would then have to maintain a customs control at their common frontiers to prevent the products of outside countries from entering a member country with severe import restrictions indirectly *via* a member country with lax restrictions on the products of outside countries. But the experience of Benelux suggests that, unless they are successful not only in imposing a single tariff of duties on imports from outside countries, but also in unifying all domestic excise duties and turnover taxes and in removing all their domestic agricultural support policies, they will in any case have to maintain customs controls at their common frontier.

But whatever the members of the full customs union may do, the United

Kingdom must employ the national method for her restrictions on imports from outside countries. She will wish as far as possible to avoid discriminating against the products of Commonwealth countries, particularly if they are members of the sterling area; but if she joined in any common European supranational import-control plan, she might be forced to restrict imports from sterling-area-commonwealth countries, even though she had to admit similar European products without restriction.

Incidentally, because of this special relationship both to Europe and to the sterling-area countries the United Kingdom will find restrictions on imports from outside countries a particularly weak weapon. In 1955 the United Kingdom purchased 28% of her imports from Western Europe and 38% from the Sterling Area, leaving only 34% from other sources for restriction; and much of this 34% consists of basic materials and foodstuffs which it would be undesirable to restrict.

There remains the *exchange-rate approach* to the problem. A simple process of elimination leads inevitably to the conclusion that if the European national governments are going to use monetary and budgetary policies for purposes of domestic stabilisation—if, for example, in their present situation of balance-of-payments surplus the German authorities are nevertheless going to use their monetary policy to prevent a domestic inflation—and if it is desired to avoid the use of quantitative import restrictions on trade within the free-trade area, a greater use of the weapon of exchange-rate variations will have to be made. Some re-alignment of exchange rates may be particularly necessary during the initial stages of building the free-trade area. The removal of trade barriers of varying degrees of severity and the consequential development of import and export trades of varying degrees of expansibility may leave some members in deficit and others in surplus. The correction of this initial structural disturbance may require some exchange-rate adjustments quite apart from any need for exchange-rate variations to maintain equilibrium when once it has been achieved. Members of the free-trade area with a persistent surplus in their overall balance of payments will have to be ready to appreciate, and those with a persistent deficit will have to be ready to depreciate, the foreign-exchange values of their currencies.

This question is a difficult and controversial one, and it is not possible to discuss it at length in this lecture.¹ There are, of course, serious disadvantages in variations of exchange-rates. There is the possibility that anti-social speculative movements of funds will be generated by the expectation of depreciations. There is the danger that a depreciation by raising the price of imports and so the cost of living will itself cause a rise of wage-rates which, by making exports more costly, will give rise to yet a further depreciation.

¹ For my own views on the subject, see J. E. Meade, "The Case for Variable Exchange Rates," *The Three Banks Review*, September 1955.

These dangers will be much less if the European governments adopt effective domestic measures to prevent domestic inflations as well as to prevent domestic deflations. Speculation against a currency is most serious and dangerous when speculators think that a depreciation may set in motion the vicious inflationary spiral of higher import prices, higher wage-rates, higher money costs, more depreciation and so on without end. Exchange-rate variations are certainly not a substitute for sensible and effective domestic policies to prevent inflation; on the contrary, they can be expected to work only if they are accompanied by such domestic policies.

The governments of all the countries of Western Europe are nowadays technically and politically in a position to control the total money demand within their countries by means of suitable budgetary and banking policies. What is much less certain is their ability to cope with inflation arising on the side of costs. If the institutions for the fixing of wage-rates are such that, so long as there is reasonably full employment, money wage-rates are pushed up more quickly than output per head, the European governments will be faced by an unhappy dilemma: through their control over banking and budgetary policies either they must allow an increase in the total money demand for goods and services which will provide employment for all workers at the higher money wage-rates (in which case prices will rise as rapidly as costs) or else they must restrict monetary demand so as to prevent domestic purchasers from offering higher prices for the country's output (in which case higher money costs are likely to lead to unemployment). Only if suitable wage-fixing arrangements can be devised will the European governments be able to use their control over banking and budgetary policies in such a way as to combine full employment with sufficient stability of prices to reassure their own citizens and foreign holders of their money that it is not necessary perpetually to speculate against a further loss of value and depreciation of the national currency concerned.

This problem of control of inflation from the cost side as well as the demand side is perhaps the most important economic issue which now faces the governments of Europe. In present circumstances it can be tackled only on a national basis, since trade unions are national organisations and wage-fixing methods and habits vary widely from country to country. There are sure to be some divergences in its treatment; and differences in the annual percentage rate of change of prices and costs in different European countries, though very moderate in amount, could give rise to serious balance-of-payments problems as they accumulate at compound interest over a period of years. For this reason, if for no other, rates of exchange between the European currencies must be variable, if it is desired to avoid more or less permanent restrictions on imports from being used as the way of meeting a growing divergence in levels of prices and costs.

But while exchange-rate variations are a necessary weapon in the armoury, it is of the utmost importance that they should not be regarded

merely as another name for exchange-rate depreciations. Strong currencies should be expected to go up as much as weak currencies to go down. In order to establish this principle, it is especially important to initiate the use of this weapon in Europe with the appreciation of a strong currency rather than with the depreciation of a weak currency. There should probably be some depreciation of the French franc; but first and foremost at this moment there should be a substantial appreciation of the German mark.

I think that my attitude to exchange-rate variations is very much like Sir Winston Churchill's attitude to democracy, which he once described as the worst of all possible forms of government except the others. And I am reminded, too, that Mr. E. M. Forster once wrote a book entitled *Two Cheers for Democracy*, so I ask you to join with me in giving one cheer for a depreciation of the French franc and two cheers for an appreciation of the German mark.

I will conclude by outlining my own tentative conclusions on this difficult problem.

Full employment is more important than free trade for Europe; and financial policies to prevent booms and slumps must for some time remain primarily the function of the European national governments. In order to ensure that they could not be forced to abandon their full-employment policies on balance-of-payments grounds they should for the time being be able to restrict imports even from their partners in the free-trade area, until experience has shown that alternative balance-of-payments arrangements can be made to work. But such restrictions are a serious derogation of the principle of European free trade; they should be used only as a very last resort; and their imposition and use should be subject to the close supervision of an appropriate European authority.

A workable positive arrangement which would enable full employment to be maintained without restrictions on intra-European trade could meanwhile be worked out on the basis of three main principles. First, the European national governments must carry out effective domestic stabilisation policies, the surplus countries putting the emphasis on the avoidance of deflation, and the deficit countries on the avoidance of inflation. Second, the foreign-exchange values of the currencies of countries in a persistent balance-of-payments surplus must be appreciated and of those in a persistent balance-of-payments deficit must be depreciated. Thirdly, greater foreign-exchange reserves must be extended to the deficit countries to tide over the process of readjustment.

There are many ways of implementing these three general principles; but by way of illustration I will tentatively recommend one particular method.

As I have said, domestic monetary stabilisation would remain essentially the concern of the national governments; but something can be done to encourage suitable national action by international discussion and co-

operation. Each member of the free-trade area should formally recognise that its partners had a legitimate interest in the successful stabilisation of its own domestic incomes, prices and costs, and, in particular, in the avoidance of deflations by surplus members and of inflations by deficit members. There should be some European institution like the Organisation for European Economic Co-operation at which the national governments would regularly consult each other about their domestic financial policies.

Against a background of domestic stability the exchange rates of the national currencies of the members of the free-trade area should be allowed to float in a more or less free foreign-exchange market. This suggestion is liable to raise up a picture of wildly fluctuating European currencies, many of them losing their value completely. If reasonable domestic policies for domestic stabilisation are applied, nothing could be more absurd; and unless such policies can be applied, no sensible balance-of-payments policies for a true free-trade area can be devised. If reasonable domestic policies for domestic stabilisation are applied, there will still be some moderate external disturbances or some moderate divergences in price and cost levels requiring adjustment. To meet these, exchange rates will float moderately upwards or downwards; and every encouragement should be given for the development of a free market in forward exchange, so that the moderate inconveniences and uncertainties for traders resulting from these moderate fluctuations in exchange-rates may be minimised.

In such circumstances there should be no essential difficulty for the countries of continental Europe in allowing their exchange rates to float. There would be more difficulty in the case of sterling, which is a currency used extensively by traders in other countries, held in large amounts by residents in other countries, and backed by inadequate reserves. There are, therefore, much greater possibilities of speculation by non-resident holders against sterling than against other currencies. But this is a difference of degree rather than of kind. It means that it is more important for the United Kingdom to obtain greater reserves or a greater degree of international liquidity by one means or another; and it means that it is especially important for the United Kingdom to devise an effective domestic policy for the avoidance of inflation from the cost as well as from the demand sides. In such conditions the pound could be confidently expected to float up as often as to float down; and there is no reason why in such circumstances a floating pound should not continue to be used as an international currency.

But what would be the use of a country's international reserves of gold and foreign-exchange in such a system, in which its currency was allowed freely to find its own level in the foreign-exchange markets? The foreign-exchange markets, though in general free, might be subject to the intervention of the exchange equalisation account or similar authority of each member country, the authority selling some of its reserves of foreign-exchange

for its own domestic currency to mitigate what it considered an unreasonable speculation against its currency, or *vice versa*. Cushioned in this way by the use of a country's reserves, the necessary fluctuations in a country's exchange rate could be taken at a very moderate speed.

Such a system is, of course, open to misuse if the authority in one country attempts to manipulate the exchange rate between its currency and the currencies of its partners to obtain some commercial or other advantage which its balance-of-payments position does not really need. Partly to avoid this danger and partly to provide greater liquidity for European countries there might be instituted a European Monetary Fund into which each member would pay an amount of its own national currency. This fund would be under some form of independent "supranational" management of a technical banking character; and its management would be empowered on its own initiative to buy and sell the currencies in the fund to ease the balance-of-payments adjustments of the members. This fund would also provide a forum at which the policies of the fund itself and of the national exchange equalisation funds could be continuously discussed and integrated. To avoid speculation such integration would, of course, have to take the form of secret discussions between the central monetary authorities of the member countries. Such a system would be capable of almost indefinite development. As an integrated Europe became more and more of a reality, so the member States could pay greater and greater sums of their own currencies into the European Fund and could start also to pay into it part of their reserves of gold and dollars as well, until finally the supranational fund had superseded the national exchange equalisation funds. And as their domestic financial policies became more and more harmonised and integrated, so smaller and smaller fluctuations in exchange-rates need be permitted, until finally the conditions for what I have called the integration approach to the balance-of-payments problems have been fully met and exchange-rate variations can be abandoned.

The proposals which I have just made are, of course, riddled with difficulties and imperfections. I put them forward only as a challenge to others to produce something which is simpler, but equally effective, for dealing with European balances of payments without preventing European free trade or destroying European full employment.

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MONETARY POLICY AND THE CAPITAL MARKET, 1955-56¹

THE impact of British monetary policy in 1955-56 on the banking system, including the money market, has been the subject of frequent discussion. The effect of the Government's monetary measures on the capital market outside the banks and their consequences for company finance have received far less attention and can be considered most conveniently by taking the impact of monetary policy on the banking system as given. In order to isolate the financial repercussions of monetary policy it is also necessary to take a step that admittedly risks by-passing what may have been the crux of the Government's problem: for the purpose of this analysis, that is to say, business expectations and investment plans must be taken as data.

This one-sided approach makes it possible to concentrate on the question of how inflation was financed during this period in the face of a policy that succeeded in reducing bank deposits after the spring of 1955. Between February 1955 and the middle of 1956, by which time the inflation can be said roughly to have come to a halt, bank deposits, as exemplified by the seasonally corrected index published by Lloyds Bank, fell by about 7%. Bank advances, on the other hand, did not decline until the Chancellor's directive to the banks of July 1955, but then fell by 10% over the following year. How, then, was the excess of realised investment over planned saving financed in this period, in which there was a reduction in the total stock of money? The answer is, of course, that relatively idle cash balances were drawn on to finance expenditure in excess of current saving, and the velocity of circulation increased; the ratio of gross domestic expenditure at market prices to total clearing bank deposits rose from 2.73 in 1954 to 2.97 in 1955 and 3.12 in 1956. The financial weakness of the restrictive monetary policy of 1955-56 can therefore be expressed as the ability of spenders to make use of cash balances already in their own hands or made available through one of the many channels that traverse the capital market in its widest sense. The provision of finance to insistent spenders is, however, the very function of the capital market, and it should not give cause for surprise if in buoyant business conditions idle money is tempted out of perhaps over-abundant hoards. Nevertheless, the disinflationary object of monetary policy was to block some of these cash flows, either on the side of demand or of supply, and it is with the latter that this review is concerned.

Cash balances were supplied from within the business sector itself and from outside, from the personal sector of the economy. One important difficulty in using *recorded* changes in cash balances in the various sectors of

¹ Based on a paper read to the Marshall Society, Cambridge, February 14, 1957.

the economy to illustrate the finance of inflation, however, lies in the nature of the concept of the latter. What is required is an illustration of the use of cash balances in the *ex ante* sense; what is available from published data is only the *ex post* change, which for the community as a whole is identical with the change in the total quantity of money, but which may differ considerably from the *ex ante* change in the case of any particular sector. This presents less of an obstacle to the interpretation of company finance than to the understanding of the deployment of cash balances in the personal sector. If companies as a whole were forced to run down their cash balances in 1955 to finance the excess of their investment over current saving plus the proceeds of new capital issues, part of this movement of cash will have resulted in transfers to the personal sector; indeed, published statistics do show that persons increased their liquid asset holdings in 1955. But this *ex post* change is still consistent with the argument that idle balances were drawn on by persons to finance investment by companies, for cash will have been returned to persons in the form of wages, salaries and dividends paid during the year. Within the personal sector cash balances will have been redistributed in the process, but on this aspect the published statistics have little to say, so that inference has to some extent to stand in for statistical observation.

COMPANY LIQUIDITY AND THE RESTRICTION OF BANK ADVANCES

The annual balance sheets of public companies that are tabulated quarterly by *The Economist* provide a valuable source of information on company finance. Excluding oil, rubber, tea and a miscellaneous category consisting of financial and other non-manufacturing concerns, the gross income reported by roughly 1,700 accounts published in 1956 represented nearly half the figure recorded for the company sector by the preliminary national-income accounts for that year, if a rough deduction is made for insurance, banking and finance. *The Economist's* sample is thus a useful guide to public-company finance in manufacturing, building and distribution.

The Economist's figures, like those in the national-income accounts, show that companies were in a comfortably liquid position at the end of 1954. Retained earnings had been increasing since the 1951-52 recession, and since then had been in excess of gross investment. In 1954 liquid resources were supplemented by a perhaps precautionary increase in new capital issues, which rose by proportionately more than net investment. New issues by companies increased from £92 million in 1953 to £186 million in 1954,¹ against a rise in net investment by the company sector as a whole from £307 million to £456 million.²

¹ Midland Bank series, relating to "new money" raised by public quoted companies only.

² National Income Blue Book 1956.

As a result, gross liquid assets at the end of 1954 recorded in *The Economist's* sample of balance sheets, in the form of cash and gilt-edged securities, appear to have been well in excess of the gross investment carried out in 1954, if the 1,015 accounts published in the first half of 1955 can be accepted as a rough indication of trading in the calendar year 1954. Only a crude estimate of gross investment can be made from *The Economist's* tabulation, since no accurate adjustment is possible for the revaluation of assets carried out in these company accounts; but the balance sheets of these companies, as Table I indicates, show an increase in the book value of stocks and fixed assets, adding back depreciation, of £728 million, compared with an end-year figure of £893 million for cash and gilt-edged securities. Even if the possibility of window dressing in regard to the latter is admitted, it would appear that this group of companies, as a group, was in a position to finance a sizeable increase in investment in 1955 out of its own liquid resources, as long as net profits were maintained.

TABLE I
Gross Investment in 1954 and Gross Liquid Assets at End-1954

	1,015 accounts published 1st half 1955,* £ million
Increase in book value of fixed assets	324
Depreciation	187
Gross fixed investment (approx.)	511
Increase in book value of stocks †	217
GROSS INVESTMENT (approx.)	728
Cash	746
Gilt-edged securities	147
GROSS LIQUID ASSETS	893

* Excluding oil, rubber, tea, canals and docks, entertainment, finance and land, hotels and restaurants and warehousing.

† Includes stock appreciation.

In July 1955 the Chancellor instructed the banks to make a "positive and significant" reduction in their advances. This seems to have been interpreted as calling for a cut in total overdrafts to the private sector of about 10%, but the company accounts tabulated by *The Economist* make it clear that such a reduction would have been mild if it had indeed been applied to companies. For another reflection of the ample liquidity of the company sector was the smallness of outstanding overdrafts compared with gross liquid assets when the "squeeze" began. The 707 accounts published in the second half of 1955, with an average balance-sheet date not far from the middle of the year, recorded cash and gilt-edged securities that together were nearly four times the size of outstanding advances.

It is true that this end-year comparison may overstate the size of liquid assets in relation to advances that a company would hold at some other time during its trading year, for many companies choose their balance-sheet dates to coincide with a period when their stocks are seasonally low and net liquid assets correspondingly high.¹ But overall the degree of

TABLE II
Gross Liquid Assets and Bank Advances at Mid-1955

	707 accounts published 2nd half 1955,* £ million.
Cash	353
Gilt-edged securities	58
GROSS LIQUID ASSETS	411
BANK OVERDRAFTS AND LOANS	107

* Excluding oil, rubber, tea, canals and docks, entertainment, finance and land, hotels and restaurants and warehousing.

variation is not likely to be sufficient to destroy the conclusion that a 10% reduction in advances could have been paid off by a proportionately much smaller decrease in gross liquid assets.

In fact, the subsequent accounts of these 707 companies, published in the second half of 1956, show that, far from a reduction being made in their bank advances, a further expansion in bank accommodation of about one-quarter was secured in 1955-56. The clearing-bank statements, on the other hand, record a decrease of 10% between June 1955 and June 1956. One explanation of this contrast is that the reduction in advances was concentrated on certain sections of the banks' customers, on the nationalised industries, hire-purchase finance companies, service trades (retailing, etc.) and on "personal and professional borrowers." If the quarterly analysis of bank advances published by the British Bankers Association is examined, on the other hand, it will be found that in the categories of manufacturing, shipping and shipbuilding and "unclassifiable industry and trade," advances rose by 6% over the year to May 1956. While this change is in the same direction as that recorded in *The Economist's* balance sheets, it is still much less than the increase of 26% calculated for a broadly similar industrial distribution for reports published in the second half of 1956.

The obvious inference that the banks were deliberately more generous in the provision of credit to their larger customers because of their bargaining power is not necessarily the correct explanation for the large increase in bank overdrafts enjoyed by the concerns comprising *The Economist's* series. The

¹ I am indebted to Dr. R. F. Henderson for this observation.

company reports published in the second half of 1956 and tabulated by *The Economist* constitute a very small sample against the aggregate of bank advances, accounting for less than one-tenth of the total of all advances outstanding in these categories; although the hypothesis that the larger companies secured more favourable treatment is not entirely dispelled if the whole year's batch of *Economist* accounts is examined. Part of the explanation is that the banks were officially enjoined to be less restrictive in granting overdrafts to "essential" industries, such as the export and capital-goods trades; and these contain a higher than average proportion of large public companies. In the third quarter's published accounts, for example, electrical manufacturing firms obtained one-half of the total increase in bank advances recorded by *The Economist*, and in the fourth quarter's reports nearly the same proportion of the rise went to iron and steel.

Companies possessing ample liquidity in 1955, of course, were not necessarily those intending to use it immediately for capital expenditure, and it is not possible to use *The Economist's* summary to relate liquidity to investment by individual companies. Neither can the flow of funds between companies be traced in detail. But *The Economist's* figures support the conclusion that the ample liquidity possessed by many companies, together with an increase in bank advances to the larger concerns and a rise in new capital issues, enabled them to finance the excess of their own investment over their own current saving and also to provide credit for those firms less comfortably situated.

The evidence for this is to be found in the large increase in trade credit recorded in *The Economist's* accounts. The 707 balance sheets published in the second half of 1956 report a rise in trade debtors¹ of 10%, a figure that must have been well in excess of the rise in the value of business turnover between the middle of 1955 and the middle of 1956, during which time industrial production was stagnant. Trade credit is a feature of post-war company finance that has received insufficient study. *The Economist's* tabulations show that it has expanded far more rapidly than bank overdrafts since 1948, having more than doubled in the eight years to 1956. In the 1,700 accounts tabulated for 1956 total debtors outstanding amounted to nearly five times as much as bank overdrafts and loans—£2,073 million as against £428 million. The continued spread of trade credit in 1955-56 must have enabled those businesses that were short of cash, including those whose bank advances were reduced, to draw instead on the more abundant resources of other firms, including those whose favoured status secured for them a further increase in bank credit or permission from the Capital Issues Committee to raise capital in the new-issue market.

The Blue Book on National Income² records that in 1955 companies

¹ *The Economist* does not separate creditors from other current liabilities for this period.

² *National Income and Expenditure 1956*, Table 45.

were able to finance their domestic investment and add to their financial and overseas assets to the extent of £219 million, compared with an increase of £489 million in 1954. *The Economist's* accounts, on the other hand, show that the companies covered were forced to run down their gross liquid assets and increase their advances, so that the decrease in *net* liquid assets was substantial. Because the Blue Book is obliged to combine overseas investment in physical assets by British companies with the change in their financial assets the two calculations are not necessarily inconsistent.

TABLE III
Liquid Assets 1955-56

	984 accounts published 1st half			707 accounts published 2nd half		
	1955, £ million.	1956, £ million.	% change.	1955, £ million.	1956, £ million.	% change.
Cash	676	641	- 5	353	300	-15
Gilt-edged securities	124	152	+23	58	55	- 5
GROSS LIQUID ASSETS	800	793	- 1	411	355	-14
Less Bank overdrafts and loans	255	296	+16	107	132	+23
NET LIQUID ASSETS	545	497	- 9	304	223	-27

As Table III indicates, and the inspection of the individual industrial categories of *The Economist's* compilation confirms, where companies were obliged to run down their liquid assets the brunt of the reduction was borne by their cash and not by their gilt-edged portfolios. Because their cash holdings (which include Tax Reserve Certificates), at the beginning of 1955 were several times the size of their gilt-edged securities the weakness of the gilt-edged market in 1955 could have constituted no great obstacle to companies wishing to utilise their liquid assets.

THE NEW-ISSUE MARKET

Although companies possessed liquid assets at the beginning of 1955 that were high in relation to their previous level of investment, the increase in investment in 1955, continued in 1956, was so substantial in money terms as to necessitate a further rise in new capital issues; according to the 1956 National Income Blue Book the increase in gross investment by companies in 1955 was 38%.¹ But most growing firms who come to the new-issue market raise amounts in excess of their immediate needs because of the economy in expenses of large issues, and part of the excess must have gone to swell the pool of trade credit.

¹ *National Income and Expenditure 1956*, Table 45.

Although interest rates rose from the beginning of 1955, the expansion of new-issue finance during the first half of the year was facilitated by the boom in Ordinary Share prices which had begun in the previous year. According to Moody's Investment Service, the average market price of a sample of sixty ordinary shares increased by 12% between December 1954 and the peak month of July 1955, after a rise of 17% in the previous six

TABLE IV
*New Capital Issues 1953-56 **
£ million

	Home issues.		TOTAL.	Overseas issues.	TOTAL ISSUES.
	Public bodies.	Companies.			
1953	246	92	337	59	396
1954	225	186	410	61	471
1955	306	219	525	42	567
1956	54	211	265	31	296

* Midland Bank's Series. The figures omit issues by the United Kingdom Government and exclude sales of securities which do not add to the resources of the company whose securities are offered.

months. The cost of Ordinary Share issues, in the form of the earnings yield that had to be offered to investors, remained broadly stable over the year, both reported equity earnings and equity prices increasing by almost 30%. The equity boom not only held down the cost of new issue finance in the face of rising interest rates but may also have strengthened optimism in company board rooms (as well as fed the demand for consumer goods out of capital gains realised by the sale of Ordinary Shares to investors utilising previously idle balances). The rise in Ordinary Shares prices was thus a feature of no little importance; and traditional monetary analysis, with its emphasis on interest rates on bills and bonds, would not have much relevance to the finance of investment in this period.

The fall in Ordinary Share prices that began in July 1955 owed much to the deterioration in the general economic situation and to the introduction of further official measures to check inflation. But it was greatly strengthened by the Chancellor's request for a reduction in bank advances, for the sharpness of the fall was accentuated by the fear that individuals would have to sell equities to repay their overdrafts; this aspect was the subject of much attention in the financial Press. The results of a sample survey conducted by the Oxford University Institute of Statistics¹ indicate that sales of securities did in fact take place on some scale in 1955-56. In so

¹ L. R. Klein, K. H. Straw, Peter Vandome, "Savings and Finances of the Upper Income Classes," *Bulletin of the Oxford University Institute of Statistics*, November 1956.

far as the sharp decline in Ordinary Share prices made new-issue finance more difficult, reduced consumption because of capital losses and generally checked entrepreneurial optimism, the reduction in bank advances to persons¹ can be said to have had important disinflationary consequences for business investment.

In fact, however, Ordinary Share issues made in the second half of 1955 amounted to more than those floated in the first half of the year, despite the more difficult conditions of the market. Companies which had already commenced arrangements with the issue houses went ahead with their plans, and those concerns that could shelve plans not as far advanced were replaced by those eagerly waiting to join the new-issue queue and those influenced by the Chancellor's directive to the banks. The maintenance of a high level of new issues by companies was the natural reflection of a situation in which a long queue existed for capital goods and in which it would have required an exceedingly sharp cut in investment plans to have produced any early reduction in the actual level of investment.² This was not, in any case, the Government's avowed intention.

TABLE V
*Types of Securities Issued by Companies **

	Loan capital, %.	Preference shares, %.	Ordinary capital, %.
1953	50	8	42
1954	50	14	36
1955	27	8	65
1956	34	1	65

* Based on Midland Bank's series, and including issues by overseas companies but not those by railway, gas and water undertakings.

The decline in Ordinary Share prices continued in 1956, and by June amounted to 15%. Table V shows the effect of the increase in the tax on distributed profits in the April 1956 Budget in leading to a further replacement of Preference Shares by Debenture issues, but would appear to indicate that the share of Ordinary Share issues was unchanged. In the latter respect the scope of the Midland Bank's statistics makes the course of these figures a little misleading, for they exclude the £40 million convertible Debenture issue made by I.C.I. in December 1956, on which no call fell due until 1957. They also exclude private placings, which are generally loan stocks and in which there was thought to be some increase towards the end

¹ The quarterly analysis of bank advances published by the British Bankers Association shows a fall in advances in the "personal and professional" category from £401 million in May 1955 to £364 million in November 1955 and £315 million in November 1956.

² See R. F. Harrod, "The British Boom, 1954-55," *ECONOMIC JOURNAL*, March 1956.

of 1955. If these omissions could be made good in Table V a shift in emphasis from Ordinary Shares towards Debenture and other loan-stock issues would be apparent.

Since the local authorities were also being pushed into the open market from the autumn of 1955 and gilt-edged prices were also tending to fall, the rate of interest that had to be paid even on first-class Debentures rose quite substantially. The yield on Debentures included in the Actuaries' Investment Index increased from 4.4% in December 1954 to 4.9% in June 1955, 5.4% in December 1955 and 5.7% in June 1956, reaching its peak after the second Suez crisis. But Debentures will always find a warm reception in institutional investment portfolios when interest rates are high, and some institutional investors seem to have sold government securities to take up the increasing supply of these industrial stocks.¹ The result was that gilt-edged prices were further depressed but that the fall in Debenture prices was cushioned, so that Debenture yields actually rose by less than the yield on irredeemable government securities in the first half of 1956.

TABLE VI
Yields on Industrial Debentures and 2½% Consols

	Debentures, %.	2½ Consols, %.	Ratio, %.
December 1954	4.44	3.76	1.18
June 1955	4.94	4.15	1.19
December 1955	5.36	4.39	1.22
June 1956	5.66	4.74	1.19

Source: Actuaries' Investment Index.

Although over much of this period it was apparent to institutional investors that interest rates might continue to rise in the immediate future, they were eager to take up the increased supply for two reasons. First, because of the conveniently large size in which new issues were available; it is usually difficult to obtain "old" Debentures in large blocks. Secondly, current yields seemed sufficiently in excess of those expected in a year or two's time to justify their purchase on what might be immediately disadvantageous terms. On the other side of the market, companies had little reluctance in accepting the preference of the capital market for loan rather than equity capital in 1956. As a result of high money profits and conservative dividend policies since the war, the capital structure of most companies contains only a very small debt element, unlike the position after the

¹ In his annual speech to the shareholders in May 1956 the chairman of the Prudential Assurance Co. Ltd. said, for example "For the first time since the war opportunities to invest in first-class industrial securities, mortgages and properties exceeded the amount of our accruing funds, and because of this we have made some reduction in our holdings of gilt-edged investments."

boom that followed the First World War, when many companies were exposed to loan-capital interest that was high in relation to net income. *The Economist's* tabulations show that in 1955 net Debenture interest was equal to only 4% of net profits after tax and Preference dividends only a further 4%. This is a very low rate of gearing.

The experience of this period makes it clear that the new-issue market is far less vulnerable to the shock of monetary policy than it was, for example, in the 1920s. The quality of the new-issue institutions and of the issues themselves, together with the deep-rooted demand by institutional investors for new issues as a supply of securities in conveniently large blocks, has made the market much less prone to the fit of "indigestion" which traditional monetary analysis has sometimes postulated as the impact of a tight monetary policy. The importance of the support provided by insurance companies and pension funds to the new-issue market can be gauged by the fact that the annual increase in life-assurance and pension funds is now of the order of £500 million, representing about 115 per cent of the 1954-56 level of new issues, excluding those by the central Government. In 1938 this proportion was only about one-half, in 1927 only one-fifth and in 1913 a mere 7 or 8%. With the growth of these institutional investors the practice of private placings has spread, strengthening the resistance of the market to a sudden weakening of confidence on the part of the ordinary individual investor. At moments of acute strain a small rise in underwriting commissions, as during the Suez crisis, is sufficient to keep the market in public issues in full operation.

THE SUPPLY OF FUNDS OUT OF PERSONAL CASH BALANCES

The personal sector must be divided broadly into two parts: into the "institutional" persons—insurance companies, pension funds, trades unions, etc.—and ordinary "individuals." By and large, the institutions cannot be described as having run down their cash balances to any significant extent. The requirements of their financial commitments and the conservative nature of their management make these institutions reluctant to build up large cash balances for the acquisition of securities when the time is ripe. In the case of life-assurance companies, for example, cash balances amounted to only 2% of total assets at the end of 1954, and even this proportion was swollen by the inclusion of balances held on account of short-term non-life liabilities and business overseas. The cash balances of the institutions, or to be more precise, any excess over normal working requirements, are not large enough to make much of an impression on the finance of inflation; those held by the life-assurance companies at the end of 1954 amounted to only £88 million, while private pension funds probably held a similar figure. Indeed, life-assurance companies and pension funds can be roughly described as having an "illiquidity preference," and if all our saving

were channelled through such bodies the absence of hoarding would bring us close to a classical monetary system.

It is to the cash balance of individuals to whom we must look for the second source of finance of inflation in 1955-56. *The Annual Abstract of Statistics 1937-1947*¹ records a figure of £1,692 million for net personal non-business bank deposits at the end of 1947, and the 1956 *National Income Blue Book*² estimates personal deposits to have increased by £212 million by the end of 1954. This means that bank deposits owned by persons at this date were in the region of £1,900 million, and the Inland Revenue statistics of deceased estates confirm the observation that the bulk of personal deposits are held by the comparatively rich. In estates of between £2,000 and £10,000 something like 20% of net assets appears to be held in cash. This proportion falls as we ascend the scale, and in the £100,000-300,000 group bank deposits average only 8-9% of net assets, but even this would mean cash holdings of between £8,000 and £27,000. The various analyses made in the post-war years of the distribution of property³ enable us to guess that something like £1,500 million of net bank deposits are held by people with net property in excess of £10,000, an average of approximately £3,000 per estate. Admittedly the use of estate-duty statistics may exaggerate the cash holdings of wealthy individuals of less advanced age, and some part of these cash balances is probably held on business account; but we should not go far wrong in using these figures. The significance of this estimate of £1,500 million for bank deposits held by people with net estates of £10,000 and over is easily appreciated by comparing it with the £1,100 million held by the 1,700 *Economist* companies in 1955.

Whether these personal deposits should be described as "transactions" or "precautionary" balances, or whether they are held because the high taxation of investment income renders the net yield foregone of negligible marginal utility to people already possessing large net incomes, and perhaps consuming more, is a matter for conjecture. The point is that they are in the hands of people who are acquainted with stock-exchange investments and to whom the possibility of untaxed capital gains is of particular importance. It is this consideration that justifies calling these deposits, *at the margin*, "speculative" balances in the Keynesian sense.

There is no direct statistical evidence of the way in which these cash balances were used in 1955-56. But the very existence of the equity boom implies that idle balances in the personal sector were drawn on to purchase Ordinary Shares in 1954 and the first half of 1955, helping to finance the increase in new equity issues and investment by small companies whose owners had marketable shares to sell. However, the volume of *new* Ordinary

¹ London: Her Majesty's Stationery Office.

² *National Income and Expenditure 1956*, Table 27.

³ See A. M. Cartter, "A New Method of Relating British Capital Ownership and Estate Duty Liability to Income Groups," *Economica*, August 1953.

Shares available for purchase by these wealthy individuals is small in relation to their total cash balances, and the main effect of the strong demand for Ordinary Shares in this period was to drive up share prices and redistribute cash balances between the "bulls" and the "bears" within the personal sector itself; both sets of consequences must be considered together. The experience of this period confirms the view that it is not the rate of interest on bonds that is important to the role of "speculative" balances in trade-cycle theory but the much greater possibility of capital gain or loss on Ordinary Shares.

Nevertheless, one aspect of the interest-sensitivity of personal cash balances is worth consideration. Whereas the effect of *company* taxation is to reduce the interest-elasticity of demand for funds to be used for business investment, when the change in the rate of interest is expressed gross, the result of high *personal* taxation is greatly to increase the interest-elasticity of the supply of funds from personal cash balances. This is because a given change in the capital value of a security represents a greater variation in its grossed-up equivalent, the higher the rate of tax on income. The increase in the level of taxation on company and personal incomes has thus altered the operation of monetary policy on both sides of the equation; on the supply side the important point is, of course, not the actual change in interest rates but the expectation of future changes. The effect of a high rate of income tax is generally to amplify the fluctuations in security prices, but in the autumn of 1955 and especially in the spring of 1956, after the increase in Bank rate, one result of tax was to make the grossed-up redemption yields¹ available on short-dated bonds very attractive to surtax payers, since short bond prices were below par. To a man paying 12s. 6d. in the pound on his marginal investment income, for example, a five-year Government bond (*e.g.*, 2% Exchequer bonds 1960) provided a grossed-up yield to redemption of over 7% in November 1955 and an even higher return, over 8%, in March 1956. Ignoring tax, the yield on these bonds at these dates was only 4.5 and 4.9% respectively, the difference being due to the grossing up at surtax rates of potential capital appreciation to maturity. Because of the nearness of the redemption date, short bonds are relatively immune to capital depreciation, and the high yield obtainable was sufficient to compensate for any risk of a further but probably short-lived increase in Bank rate. Short bonds thus became considerably more attractive to surtax payers than bank deposits, and the result was that in the spring of 1956 the use by surtax-payers of cash balances to purchase short bonds was one of the factors causing the prices of these to rise at a time when longer-term Government security prices were still falling. This had some practical importance in making it easier for the local authorities to raise money on short-term mortgages.

¹ That is, the grossed-up equivalent of net interest together with the capital appreciation to redemption.

LOCAL AUTHORITIES AND THE CAPITAL MARKET

In October 1955 the local authorities were obliged to turn for a large part of their borrowing from the Public Works Loans Board to the open market, a step which held out some promise of checking expenditure in this field. The local authorities, particularly the smaller ones, are averse to paying high rates of interest on long-term loans. In three respects they differ in this matter from companies. First, they receive no tax relief on interest charges. Secondly, they find it politically uncomfortable to pass on an increase in interest charges by way of higher rates; although on this particular occasion the change in rating valuations, which transferred part of the rate burden to shopkeepers and raised residential rateable values, allowed local authorities more room for manoeuvres. Thirdly, the smaller authorities are concerned with their financial prestige, because, unlike the growing company, they have no clear way of publicising an improvement in their borrowing status. Their willingness to pay a high long-term rate of interest in 1955-56 might have "branded" them as inferior borrowers and damaged their individual borrowing status in the future. Normally this may not be an important practical consideration, but it must be remembered that many local authorities were going to the open market for the first time since the War.

In the year following this change in practice the local authorities raised about £33 million in loans of more than one year's maturity, excluding mortgages, compared with only £5 million in the previous twelve months. The interesting feature of the financial problem facing the local authorities at a time of high interest rates is that in these conditions they do not like borrowing "long," whereas certain types of institutional investors to whom they normally look to subscribe to their loans, such as insurance companies and pension funds, will not lend "short" at interest rates that are not greatly in excess of those available on long-term investments. This opposition of interests might be expected to depress the volume of local-authority borrowing, since the authorities are by and large unwilling to pay the extremely high yields that these lending institutions demand on short-term loans when they have the alternative possibility of investing "long" at high rates of interest. However, partly as the result of the effect of surtax in making the rise in interest rates on short-term bonds particularly attractive in 1956 to the wealthy personal investor, and thus in keeping down rates of interest on short-term bonds in general, the local authorities were successful in raising a great deal of money in the form of short-term mortgages by offering only a small premium over gilt-edged rates.

The local authorities were therefore to some extent protected against the rise in long-term rates of interest. A borrower will be willing to pay $\frac{1}{2}\%$ more on a five-year loan than on a thirty-year loan if he is strongly of the opinion that in five years' time he will be able to extend his borrowing on

terms cheaper than those initially prevailing;¹ and at no time during this period was the extra cost of borrowing "short" more than of this order. This favourable situation for short-term borrowing was only partly due to the support given to the short-term bond market by surtax payers, to whom these bonds became more attractive than bank deposits. It can also be regarded as an inevitable feature of a market in which the interest rates charged on other important forms of short-term borrowing—bank deposits and bank advances—are prevented by agreement between the banks from rising to an equilibrium level, for the whole structure of short-term yields is held down in boom conditions by the policy of the banks, with the approval of the authorities.

Estimates made public by the Chancellor and the Financial Secretary to the Treasury indicate that roughly £150 million was raised on mortgages by local authorities by the middle of 1956. A large part of this will have been relatively short-term loans of under ten years, at rates of between 5½ and 6½%, compared with the 5¼–6% payable on long-term mortgages.

In addition, the local authorities were able to escape part of the burden of high long-term interest charges by raising even larger sums in the form of short-term money on deposit. In the words of *The Economist*:² "Institutional money, temporary liquid surpluses of industrial companies, some bank money, quite substantial temporary deposits of foreign funds and much of the temporary surpluses of the local authorities themselves go into this volatile market." Here rates generally ran only a little above the Treasury bill rate for deposits of seven-day notice. In order to reduce still further the need to borrow on long-term loans, the local authorities were willing to pay higher rates on deposits made by the ordinary public, obtained by advertisements in the local newspapers, at rates of 6% and above; these were generally for three or six months. As a result of these alternative sources of finance, Exchequer loans to the local authorities were substantially reduced—from £282 million in the period April–December 1955 to £82 million in the corresponding period of 1956. To this extent the Government's policy was of assistance in reducing the overall Exchequer deficit and thus in keeping down the level of the banks' liquid assets. But it may not be very wide of the mark to suggest that the arrival of the local authorities in the open market may have had something to do with the departure of the nationalised industries, which were obliged to resort first to bank finance and subsequently to loans direct from the Exchequer. Thus the reluctance of the authorities to countenance the higher interest rates that would have been the consequence of both the local authorities and the nationalised industries having to resort to the open market diminished the Treasury's

¹ If a borrower can choose between a thirty-year loan at 5½% and a five-year loan at 6% he will prefer the latter if he believes that in five years' time he can renew his loan at a rate of interest only 0.2% lower than that ruling initially.

² *The Economist*, September 1, 1956.

ability to reduce bank liquidity in this as well as in other ways during this period.

BUILDING-SOCIETY FINANCE

This presents another situation where the demand for funds in 1955–56 was less interest-elastic than their supply, but one in which the volume of lending was kept down as a matter of deliberate building-society policy. In 1954 the fall in interest rates outside the movement—in the bank deposit rate, the Treasury bill rate and yields on Government bonds—caused a large inflow of funds into the building societies, so that a further substantial increase in mortgages for private house-building could be financed. Despite the latter, however, building societies were able to raise their liquid assets to 4.9% of total assets at the end of 1954, against 14.2% at the end of 1953 and 13.7% at the end of 1952. New mortgage advances were running at particularly high levels towards the end of 1954. With the rise in Bank Rate in February 1955 and the increase in the rates available on Treasury bills and Tax Reserve Certificates, this comfortable liquid state of the movement suddenly evaporated. The net inflow of funds fell sharply, and

TABLE VII

*Building Societies—Receipts and Withdrawals **

£ million

	Shares and Deposits.			Mortgages.	
	Received.	Withdrawn.	Net inflow.	Repayments and interest.	Advances.
1954: 1st quarter . . .	88	48	40	53	71
2nd " . . .	90	47	43	60	84
3rd " . . .	94	50	44	62	93
4th " . . .	97	51	46	68	96
1955: 1st " . . .	98	59	39	61	83
2nd " . . .	82	60	22	67	101
3rd " . . .	108	73	35	68	94
4th " . . .	104	67	37	72	80
1956: 1st " . . .	99	76	23	66	75
2nd " . . .	86	72	14	67	77
3rd " . . .	97	73	24	69	70
4th " . . .	93	65	28	74	73

* Figures published by the Building Societies Association and relating to over 200 societies representing more than 90% of the total assets of the movement; the statistics include those of the Halifax Society, which left the Association at September 30, 1956.

building-society credit had to be rationed, for the societies, as always, were reluctant to raise their mortgage rates. They are conscious of what they feel to be quasi-moral obligations to existing borrowers; they believe that frequent changes in lending or borrowing rates are detrimental to the long-term interests of the movement; and they are aware that most borrowers who have the option convert an increased interest charge into longer

periods of repayment, a development that contrasts with the short-term nature of their liabilities.

It was not until August 1955 therefore that both lending and borrowing rates were increased; but the net inflow of funds still tended to fall as a result of the attraction of higher yields available in the gilt-edged market, an increase in the rate of interest on Defence Bonds, the high rates being offered by hire-purchase finance houses and subsequently by the local authorities, and the return on funds used for business investment itself. The pressure of withdrawals was increased by the rise in Bank rate in March 1956 and the improved terms offered on National Savings Certificates and Defence Bonds in July and August. The unwillingness of the building-society movement to increase its rates resulted in a fall in new mortgages of nearly one-fifth in 1956, with the demand for advances in excess of what could be supplied at current rates. By October 1956 the whole movement was at last obliged to raise its rates by a further $\frac{1}{2}$ %.

Thus private house-building contracted as a result of monetary policy, but the restriction did not, as we might have been led to expect, take the form of a reduction in demand due to a rise in interest rates. Throughout this period credit to would-be house purchasers had to be rationed because of the shortage of finance; although the preference of the societies in these conditions for loans to be used for the acquisition of *new* houses must have softened the deflationary effect of financial stringency.

HIRE-PURCHASE FINANCE

This was yet another field in which the ability of borrowers to draw on short-term deposit money blunted credit restriction. By and large, the reduction in bank advances to the hire-purchase finance houses after the summer of 1955 did not seem to be the operative factor in curtailing hire-purchase operations. Where a diminution in hire-purchase business occurred, it was the result of a fall in demand due to the restriction of hire-purchase terms rather than to a contraction in the supply of finance. Rates of interest charged to hire-purchase transactions were increased, but apparently with more effect on the supply of than on the demand for funds. The flow of funds to the finance houses after the restriction of bank credit was supplemented by money drawn from two sources. First, after the Chancellor's directive to the banks in July 1955 a large number of small hire-purchase finance houses were set up with issued capital below the £50,000 limit at which the consent of the Treasury became necessary, a channel that was subsequently blocked when this limit was reduced to £10,000 in April 1956. Secondly, the finance houses were able to obtain short-term deposits by public advertisement at rates of up to 7% and above, depending on the standing of the house concerned. These rates, like the deposit rates offered by local authorities, are sensitive to changes in the state of the money market, even though the link is indirect. Hire-purchase finance provides

yet another example of a situation in which the supply of funds is more interest-elastic than the demand for them.

SOME CONCLUSIONS

In taking as given the investment plans of the private sector this review of the effect of monetary policy on the capital market is rather like "Hamlet" with the Prince prevented from taking the stage at all. But it does indicate that if monetary policy fails to achieve its traditional object of causing fears as to the profitability of existing investment plans it is bound to be severely handicapped from the start because of the ease with which, in certain conditions, funds can be obtained for investment even if the banking system is cajoled into curtailing deposits in general and advances in particular. The supply of finance from cash balances in time of boom may be considerably more interest-elastic¹ even to would-be spenders as a whole than the demand for funds for investment, and a policy that is content to restrict only a small part of the total potential supply of funds can be criticised for being out of touch with the realities of the financial mechanism.

During the period under review, it is true, special factors may have been at work: the company sector was perhaps more liquid than it is likely to be in the future; the strength of the equity boom in 1955 still owed something to the breakdown of dividend restraint and was given new force by an expansionist Budget and a Conservative electoral victory; and business investment plans themselves may have been more closely "bunched" than will usually be the case even in future cyclical upswings. But in a world in which full employment at all times is known to be the paramount aim of economic policy, considerably greater attention will have to be given to the techniques of restricting the supply of funds than in the distant past, when both borrowers and lenders could interpret a rise in Bank rate as a clear warning of business losses. The apparent failure of the authorities in 1955-56 to devote much attention to the supply of finance outside the banking system suggests another topic for discussion by the Radcliffe Committee on the working of the monetary system; it also indicates the possible utility of what is known as the "flow of funds" statistical analysis, if supplemented by a "map" of cash balances held in the various sectors of the economy.

The tactics followed by the authorities in regard to the finance of investment by the company sector during this period may be said to have consisted of a direct attack on bank advances accompanied by measures aimed at constricting the supply line of credit in the rear, in the form of the control over new capital issues. This policy can be seen to have been deficient in three respects. First, companies as a whole were comfortably liquid. Secondly, this liquidity could be transferred to where it was most needed

¹ Using the term to include the response of investors to a small rise in the yield on Ordinary Shares.

through the channel of trade credit, without coming under fire from monetary measures. Thirdly, the "long stop" of capital-issues control seems to have been based on the same misconception underlying official policy towards investment plans that was present in early post-war years, namely that the distinction between so-called "essential" and "non-essential" projects is an adequate criterion for the limitation of investment to available resources. In a period of inflation like that of 1955 there is an excess of even "essential" projects over what the current level of saving can bear, so that the control of new issues is bound to be inadequate as well as arbitrary.

The success of the local authorities in avoiding the cost of high long-term interest rates by borrowing "short" raises new questions regarding the pattern of rates and the relationship between spenders and lenders. That certain important financial institutions, such as insurance companies and pension funds, have a bias against lending on short-term when long-term interest rates are high provides no assurance that sensitive borrowers will not be able to obtain short-term loans at acceptable rates in amounts sufficient to escape the burden of high interest charges on long-term borrowing. If the economy is sufficiently liquid the offer of only moderately high rates on short-term money will tempt cash out of hoards held in the form of bank deposits on which the rate of interest is set at a relatively low level by inter-bank agreement with official approval. The effect of income tax in magnifying the grossed-up redemption yields on short-term bonds carrying relatively low coupon rates means that the effective gross return to surtax payers may be considerably in excess of the cost of short-term loans incurred by borrowers, opening up another channel through which idle balances may be brought into use.

Finally, to cut off the supply of funds from idle balances in conditions in which a rise in interest rates would otherwise have the effect of making their owners more ready to part with them, but with no appreciable effect on investment, requires either open-market operations designed to mop up cash balances on a grand scale or a policy that so succeeds in influencing expectations that the fear of yet higher rates of interest induces investors to hold on to their idle balances. In practice, there may be no clear distinction between these alternatives, for the latter will require open-market sales for the policy to carry conviction, while measures aimed specifically at mopping up liquidity will probably alter investors' expectations. Either approach, once a boom has entered the stage in which there is a long queue for capital goods, will require the acceptance by the authorities of high long-term rates of interest, and from one point of view the limitation of monetary policy in 1955-56 was the reluctance of the authorities to risk a decisive increase in interest rates, but this is a subject in itself.

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THE IMPACT OF THE CREDIT SQUEEZE ON SMALL AND MEDIUM-SIZED MANUFACTURING FIRMS

WHEN one looks back on the changes over the past generation in academic opinion about the role of the rate of interest one cannot but be struck both by the rapid rise in the early 1930s—mainly under Keynes' influence—of the view that the rate of interest is, or can be, the chief regulator of internal economic activity, and the equally rapid collapse of the same view in the second half of the same decade. It is clear that Keynes' early emphasis on the importance of the rate of interest as a regulator was essentially a rearguard action against the crude Quantity Theory: he was searching for a rational theory of Bank Rate policy with which one could trace the successive repercussions of a rise or fall in the rate, and hence form an intelligent judgment of the appropriateness of such changes in particular economic circumstances. He claimed to have found the key in the relation between the rate of interest and the level of investment, especially—in contrast to Hawtrey—investment in fixed capital. But scarcely had he consolidated his theoretical position on this issue when he was afflicted by serious doubts of the efficacy of interest-rate policy alone as a means of regulating the economy. These doubts arose from two other parts of his analysis: first, the possibility that liquidity-preference might become absolute at some low, but positive, rate of interest; secondly, the wide and uncontrollable fluctuations in business expectations. So his views came full circle, and he concluded, even in 1935, that "the duty of ordering the current volume of investment cannot safely be left in private hands."¹

It is not difficult to see why economists in the late 1930s became disillusioned with the power of the rate of interest as a regulator. Bank Rate had been brought down to 2% in 1932, and yet the system appeared to show no reaction. The depression dragged on, and even in the "boom" of 1937 the economy never came within striking distance of full employment. When, therefore, an article appeared in 1938 in the first issue of *Oxford Economic Papers* reporting, on the basis of an inquiry by the Oxford Economists' Research Group, that business-men were relatively indifferent to changes in the rate of interest, its impact was less startling than might otherwise have been expected.² Yet it may be counted as somewhat remarkable that most discussions of the efficacy of interest-rate policy from that time to this, not only in Britain but even in the United States, make

¹ *The General Theory*, p. 320.

² J. E. Meade and P. W. S. Andrews, "Summary of Replies to Questions on Effects of Interest Rates," *Oxford Economic Papers*, October 1938. See also H. D. Henderson, "The Significance of the Rate of Interest," *ibid.* Both articles are reprinted in T. Wilson and P. W. S. Andrews (ed.), *Oxford Studies in the Price Mechanism*, 1951.

reference to the Oxford economists' inquiry and to the answers given by the thirty-seven business-men interviewed by them.¹ By what a small grain of fact was it possible apparently to kill a theory to which so much intensive thought had been devoted!

But it was not monetary policy as such that was killed. The revivals of monetary policy in recent years, and the reappearance of some discussion about its theoretical significance, are a sign that the previous collapse of confidence in monetary techniques was closely linked with the depressive conditions of the 1930s and the growing conviction at that time that the main, if not the only, problem of economic policy in the future was going to be how to *sustain* demand. In the 1950s, however, we are all acutely aware that the problem of curbing demand can be just as great, at least within the limits of a high level of employment, as the earlier problem of stimulating demand. It is in this context that monetary policy has been brought forward again as a possible weapon of control; and it is clear that the findings of the pre-war Oxford inquiry into the attitudes of business men to changes in interest rates and the availability of finance are no longer strictly relevant to a situation in which interest rates are being *raised* not depressed, and money conditions are being made *stringent*, not easy.

The question of the power of monetary policy to restrain demand, and of its *modus operandi*, is now at least as important as the earlier question of its ability to stimulate investment. Many of the old issues need to be reconsidered within the new framework. How far, for example, do high interest rates affect either holdings of stocks or decisions to embark on fixed investment? How far does the raising of Bank Rate work on the cost side of investment decisions, excluding the least profitable projects but permitting the continuation of the more profitable? Or does it rather work through a shock to business confidence and a fear of worse measures to come as the majority of economists seem now to believe? If that is the case there are many possible implications: for example, that raising Bank Rate will discourage not the projects which were previously on the margin of profitability but those that are most susceptible to changes in business confidence. Or again, if Bank Rate works mainly through its effect on expectations rather than through its effect on costs, it may be less easy to reverse the policy, at least when expectations have once been deflated.

Other questions which cannot be neglected are, for example: Does monetary restriction work mainly through the price of loans or their availability? If it is mainly the latter, then it is conceivable that the desired degree of restraint can largely be achieved by credit rationing without a rise in interest rates, thus avoiding the embarrassment to the Government and to the foreign balance which such a rise entails. Again, it is important to

¹ It is true that a subsequent postal investigation, in which 309 firms gave usable answers served to confirm the original findings. P. W. S. Andrews, "A Further Inquiry into the Effects of Rates of Interest," *Oxford Economic Papers*, February 1940.

know whether a policy of monetary stringency has, as has often been asserted, a relatively greater impact on small businesses than on large ones.

It is evident that it is the re-emergence of questions such as these, as well as the largely technical problems of the structure of the credit system, which have prompted the appointment of the Radcliffe Committee with the responsibility "to inquire into the working of the monetary and credit system and to make recommendations." And it is a fortunate coincidence that, just at the time when these matters are coming up for reappraisal, it is possible to offer some relevant empirical evidence on the effects of recent changes in monetary policy on the investment decisions of manufacturing businesses.

In the spring of 1956 the Oxford Institute of Statistics was on the point of putting into the field a large-scale inquiry amongst small and medium-sized manufacturing businesses. The inquiry was directed partly to assessing the degree of competition facing such firms and its influence on their marketing policies, rates of growth and other matters. It was also designed to discover the sources and uses of funds of small and medium-sized firms and what sort of financial difficulties they may encounter in their efforts to expand. It was, therefore, a very simple, and a very natural, development of this side of the questionnaire to ask about the effects of the recent changes in monetary policy which, together with the allied measures, are popularly known as the "Credit Squeeze." Several highly interesting questions on this topic were put to all the firms covered by the inquiry. In the present article I shall give the principal findings from these questions and comment on their significance for monetary theory.¹

THE SAMPLE OF FIRMS

The list of firms to be approached in this inquiry was drawn from the list of establishments kept by the Ministry of Labour for the purpose of its monthly inquiries into changes in employment in manufacturing industries.² This list does not cover establishments employing 10 or fewer persons on the date of registration, and this survey is therefore limited to firms with more than that number of employees.³ At the other extreme, since it was intended to be a survey of small and medium-sized firms, no interviews were taken with firms employing 500 or more persons, and public com-

¹ The survey, the purpose and findings of which will be published in full elsewhere, was financed by a grant made under the Conditional Aid scheme for the use of counterpart funds derived from United States economic aid. In the planning and execution of the survey I have had the assistance of Dr. J. A. Bates and Mr. M. J. Stewart.

² The drawing of the sample and the fieldwork for this survey were done by the Social Survey, which, being itself a government organisation, was given access to the Ministry of Labour's confidential list of establishments. The names and addresses of the firms interviewed were erased from the questionnaires before being passed to the Institute of Statistics for analysis.

³ Except for a few firms whose number of employees had declined since the registration date.

panies quoted on the Stock Exchange were also excluded.¹ For various reasons it was decided not to attempt interviews with firms in certain industries. First, there were two industries—"Furniture and Upholstery" and "Chains, Nails, Screws and Miscellaneous Forgings"—in which a special subsidiary investigation was being made at the same time; secondly, some industries classified as manufacturing in the official lists are primarily engaged in repair work or are closely associated with retailing;² thirdly, some industries are almost entirely dominated by large firms.³

Apart from these specific exclusions, a number of industries were under-represented in the sample, or not represented at all, because they are highly localised. For reasons of cost it was necessary to limit the fieldwork to the following ten main industrial areas: London and Middlesex; Bristol; Birmingham; Nottingham; Leicester; Liverpool and Birkenhead; Manchester, Bolton and Oldham; Sheffield; Leeds and Bradford; and Glasgow. Of the 56,500 manufacturing establishments employing 11 or more in Great Britain there are probably between a fifth and a quarter in these main areas. A very wide variety of industries is to be found in these areas; but there are some which do not occur at all, *e.g.* Potteries and Carpets, and others are not adequately represented. It may be, moreover, that firms operating in heavily industrialised areas are not entirely representative of all firms. These are qualifications which need to be borne in mind; but they are probably not of great importance for the questions which are to be discussed below.

A large number of addresses of establishments was drawn from the Ministry of Labour's records by a process of systematic sampling within the ten areas identified above.⁴ After various specific exclusions—of particular industries, sizes of establishment and public companies—the list contained 1,765 addresses, distributed over the areas roughly in proportion to the number of establishments in the region (or regions) of which the area forms part. This list was issued to interviewers, who then discovered certain further reasons for making exclusions. There were 32 addresses which yielded no firm of any kind, because the business had moved or was closed down; 141 addresses proved to be branch establishments; 39 were subsidiary companies which considered themselves unable to answer the

¹ Partly because their accounts are publicly available and have been analysed by the National Institute of Economic & Social Research; but also because most quoted public companies employ more than 500 persons anyway.

² Industries excluded on these grounds were: Motor Repairers and Garages, Repairs of Boots and Shoes, Bread and Flour Confectionery, Milk Products, Brewing and Malting and Shop and Office Fitting.

³ Industries excluded for this reason were: Shipbuilding and Ship Repairing, Grain Milling, Sugar and Glucose, Printing and Publishing of Newspapers and Periodicals, Production and Printing of Cinematograph Films.

⁴ In London there was a further limitation of the area covered to the districts north of the river; and in Middlesex interviews were made only in five boroughs and two urban districts.

questions on their own account;¹ and 11 firms turned out to be quoted public companies which, by an oversight, had not been excluded earlier. All the remaining 1,542 firms were asked for an interview; and 955 of them (62%) gave complete, or almost complete, answers to our questions. Of these, 79 cases were later excluded from the analysis for various reasons: most of these exclusions were on the ground that less than 25% of the firm's sales were accounted for by its own products; a few others were rejected because they were non-profit-making enterprises or because they employed 500 or more persons. Thus in the final sample there were 876 firms.

The fieldwork of the survey was carried out by experienced interviewers belonging to the staff of the Social Survey, who had been given a very full and careful briefing. Interviewing began about the middle of April 1956 and was completed, for all but a few firms, by the end of June 1956. A week or so before the interviewer's call each firm received a letter from the Acting-Director of the Institute of Statistics explaining the purpose of the inquiry and asking for the firm's co-operation. The interviewer tried to make contact with the owner, senior partner or managing director of each firm and to arrange an appointment. In a few cases interviews were made with another official of a company, such as the secretary, if he seemed to be the most appropriate person to see. All the questions were asked with reference to the activities and policies of the firm named in the address list, including any branch establishments, but excluding any subsidiary or associated companies.

THE VALIDITY OF THE SAMPLE

In any sample inquiry the question arises whether the results can be taken as being truly representative of the population from which the sample is drawn. It has already been indicated that this sample may not be strictly representative of all British manufacturing firms—even within the size range of 11–499 employees—on account of the restriction of interviewing to ten main areas. But while this may be a defect from the point of view of the distribution of firms by industry within the sample, there do not seem to be any strong *a priori* reasons for believing that firms situated outside the ten main areas sampled are significantly different from those situated in these areas. It is possible that more of the newer and more progressive firms are to be found in smaller towns or in country districts; on the other hand, it is equally possible that a good many of the firms in these areas are very old and conservative in outlook. My judgment is that, on the issues to be discussed below, there is unlikely to be any significant bias from this source.

Next there is the problem of the response rate. Here we have slightly more data to go on; but in the final analysis the issue remains largely a

¹ Subsidiary companies were not automatically excluded from the sample, but evidently some subsidiary companies are, for practical purposes, the equivalent of branches.

matter of personal judgment. It is my impression, from experience of a number of surveys of economic behaviour, that the propensity to co-operate in surveys is not so strongly associated with other characteristics, such as size, age, intelligence and the like, as is sometimes suggested. In financial surveys of households there is some difficulty in getting hold of a sufficient proportion of the very rich, and especially of those living mainly on property income, and there are also problems in contacting young adults and the very old. In a survey of businesses, however, these factors are unlikely to be relevant: in fact, it is conceivable that larger firms might be more willing to co-operate than smaller ones. It is possible that there may be some association between the progressiveness of outlook of the management of a firm and its willingness to assist in a survey of this sort. On the other hand, it may be that the most progressive firms are also the busiest, and the least able to devote time to the interview. When all is said, there do not seem to be any convincing grounds for expecting biases in response.

This view can be tested to some degree by comparing the response rate of firms within different areas, industries and size groups—on each of which some information is available for the non-respondents as well as for the respondents. Tests of this kind have been made and show no significant variation by area, industry or size-group. An example of the information available is given in Table I, where it will be seen that six of the ten response

TABLE I
Response Rates by Areas

Area.	Interviews attempted.	Successful interviews.	Response rate, %.	Sample used in analysis.
London and Middlesex	417	252	60	231
Bristol	113	69	61	64
Birmingham	169	92	54	86
Nottingham	119	86	72	82
Leicester	121	69	57	66
Liverpool and Birkenhead	109	67	61	60
Manchester, Bolton and Oldham	120	82	68	76
Sheffield	106	67	63	57
Leeds and Bradford	114	73	64	67
Glasgow	154	98	64	87
TOTAL	1,542	955	62	876

rates lie within the range of 60–64%, two more are within 57–68% and only two lie outside this range. A distribution of this type could be obtained by chance in more than four out of five samples drawn at random, even if the propensity to respond was the same in each area.¹ It seems, therefore, that there is some justification for regarding the sample of firms used in this analysis as being broadly representative of all British manufacturing firms within the size limits of 11–499 employees.

¹ The variation in response rate by industry was even less than the variation by area.

THE CONTEXT OF THE INQUIRY

Before we consider the actual questions put to business-men, and their answers, it is necessary to recall the economic and political circumstances preceding this inquiry, which form the context within which the interview took place. It is one of the distinctive features of this survey, by comparison with the pre-war inquiry by the Oxford Economists' Research Group, that whereas they were obliged to put questions of a very general form such as, "Is the rate at which you can borrow from the bank an important consideration to you?" or "Have you ever increased your stocks of raw materials on account of a fall in Bank Rate?" we were able to put questions specifically related to recent experience. We could ask, for example, "Have you been asked by your bank to reduce your overdraft during the past twelve months?" and "Has the Credit Squeeze of the past twelve months caused you to order less capital equipment than you had originally intended?" It is, therefore, very important that, in interpreting the answers given to our questions, we should have clearly in mind the events occurring in 1955 and early 1956, and that we should form a judgment of what business-men were likely to understand by the phrase "Credit Squeeze."

It is often said that the Credit Squeeze (here given capital letters because it was a specific historic event) began in July 1955, when the Chancellor called upon the banks to make "a positive and significant reduction in their advances over the next few months." But the July measures were preceded by other dramatic attempts to slow down or reduce the volume of bank lending; and the July measures themselves included other features besides the appeal to the banks. It is probable, therefore, that by the spring of 1956 the Credit Squeeze was associated in retrospect in most people's minds with the whole series of measures starting with the raising of Bank Rate in January 1955. I shall assume that when we asked business-men in the spring of 1956 about their reactions to the Credit Squeeze they were thinking not simply of the direct squeezing of bank advances but of the whole complex of measures taken before, during and after July 1955 which were clearly and specifically directed towards the general aim of reducing the inflationary pressure and stopping the loss of gold.

The first measure was the raising of Bank Rate in January 1955 from 3 to 3½%. This modest increase was followed within a month by a further jump to 4½%. At the same time restrictions on hire-purchase trading, which had been relaxed in the previous July, were reimposed. The April budget was comparatively optimistic and was followed by a general election; but in July the gold and dollar reserves fell by £48 million. On July 25 the Chancellor announced a series of new measures to tighten credit and reduce spending. The most dramatic, from the point of view of credit policy, was his request for a "positive and significant" reduction in bank advances.

But the other measures were at least as important economically. The initial cash deposit on goods bought on hire-purchase was raised, for a wide variety of goods, from 15 to 33½%. At the same time the Government announced its intention to cut back its own capital expenditure and the expenditure of local authorities and nationalised industry, and it appealed to private industry to do likewise.

Further restrictive measures were taken in the emergency budget of October 1955, when purchase tax and distributed profits tax were raised, further cuts were made in public capital expenditure and the local authorities were put under pressure to borrow in the open market. Finally, in February 1956 Bank Rate jumped to a "crisis" level of 5½%, more cuts in public capital expenditure were announced, the investment allowances granted under the 1954 budget were cancelled, subsidies were reduced and hire-purchase restrictions were vigorously tightened, and extended beyond the consumer-goods field so as to cover a wide range of industrial capital goods.

Throughout the period from January 1955 to the spring of 1956 interest rates were rising in line with the changes in Bank Rate, although short-term rates rose more sharply than long-term rates. In addition, from the middle of 1955 the banks began to carry out the Chancellor's request to reduce their advances. From August 1954 to August 1955 bank advances had increased by £281 million: in the succeeding year they fell by £213 million. Apart from the direct financial impact of these measures—which made it increasingly difficult and expensive for firms to raise loans—the hire-purchase restrictions and the cuts in public expenditure had the effect of reducing the pressure of demand in both the consumption and capital-goods sectors, and the alarming statements and urgent appeals of government spokesmen created a vague feeling of uncertainty. This, then, was the situation when our interviewers rang the telephones (in the first instance) of the businessmen included in our sample.

THE FINDINGS OF THE SURVEY

Of the group of questions relating to the effects of the Credit Squeeze the first, both in order of asking and—to some extent—in order of logic, was a simple factual one. It was desired to establish how many firms—and which type of firm—had actually been asked by their bankers to reduce their overdrafts. In approaching this subject we had already asked all firms in the sample whether they had had an overdraft at the bank at any time since 1950. For obvious reasons, those firms which had not had an overdraft at any time in the previous five to six years were not asked anything further about the effect of the Credit Squeeze on the size of their overdraft. It would also have been useful if we had separated off the firms which had had overdraft facilities at any time during the preceding twelve months, and, perhaps, amongst them those which had actually been overdrawn in that period. As it was, we asked all firms which had had an overdraft at any

time since 1950 the following question: "Have you been asked by your bank to reduce your overdraft during the past twelve months?" This question is quite suitable for sorting out the firms which had been asked to reduce their overdraft, but it fails to identify clearly the firms which were "at risk," in the sense of actually having an overdraft at the beginning of the Credit Squeeze period.

The answers to both these questions are summarised by industry in Table II. The first remarkable fact which they reveal is that nearly half

TABLE II
Bank Requests to Reduce Overdrafts, Analysed by Industry

Industry.*	Overdrawn at any time since 1950?			Total.	Asked to reduce overdraft in previous twelve months?	
	Yes.	No.	N.A.		Yes.	N.A.
Number of firms						
III. Bricks, Concrete, Glass, etc.	14	10	—	24	8	2
IV. Chemicals	12	15	—	27	2	—
V. Metal Manufacture	11	10	1	22	5	2
VI. Engineering	88	74	4	166	39	6
VII. Vehicles	18	10	3	31	7	—
VIII. Other Metal Products	66	67	5	138	24	4
IX. Precision Instruments, etc.	15	7	1	23	5	1
X. Textiles	55	37	1	93	22	3
XI. Leather Goods and Fur	4	2	1	7	3	—
XII. Clothing and Footwear	103	64	1	168	55	4
XIII. Food and Drink	17	13	1	31	7	3
XIV. Wood Products	14	14	1	29	5	—
XV. Paper and Printing	41	39	5	85	10	6
XVI. Miscellaneous	17	12	3	32	3	2
TOTAL III-XVI	475	374	27	876	195	33
Percentages †						
VI. Engineering	53	45	2	100	23	4
VIII. Other Metal Products	48	49	4	100	17	3
X. Textiles	59	40	1	100	24	3
XII. Clothing and Footwear	61	38	1	100	33	2
XV. Paper and Printing	48	46	6	100	12	7
TOTAL III-XVI	54	43	3	100	22	4

* The industries are grouped in accordance with the Standard Industrial Classification into Industrial Orders, to which the Roman numerals correspond.

† Percentages are given only for those industries which are represented by more than 50 firms in the sample.

the firms in the sample had not had an overdraft at the bank at any time in the preceding five to six years. The implication of this seems to be that there is a very large number of small and medium-sized firms which never borrow from the bank. This finding is confirmed by the comments made by some of the business-men interviewed. The second interesting result which

emerges is that only about a fifth to a quarter of small and medium-sized manufacturers had been asked by their bankers to reduce their overdrafts during the period of the Credit Squeeze. We do not know, for reasons explained above, how many firms had overdrafts which they could have been asked to reduce; but it seems probable that the number of firms "at risk" was about twice the number of firms which were actually asked to reduce their overdrafts.

Although there is a good deal of variation between the proportion of firms in the different industries which said they had had an overdraft in the previous five to six years, this variation is not statistically significant. The variation in the proportion of firms which said they had been asked to reduce their overdraft is somewhat greater, and two industries appear to differ significantly from the average. In Clothing and Footwear a rather large proportion of firms said they had been asked to reduce their overdrafts: in Paper and Printing a rather small proportion. It is not easy to think of a clear reason for these differences. It might be thought that it was something to do with size of firm; but both these industries are distributed by size within the sample in much the same way as all industries combined. If anything, the Paper and Printing firms are more concentrated in the lower-size ranges than the Clothing and Footwear firms; but the difference is not significant. Moreover, as the next paragraph makes clear, there is no evidence that bankers discriminated either in favour of or against smaller firms—within our size limits—in their requests for cuts in overdrafts. It would scarcely be plausible to assume that bankers discriminated against Clothing and in favour of Printing on the grounds of priority for industries mainly engaged in export business. I am therefore inclined to the view that the differences exhibited by the sample results for these two industries are the result of a sampling fluctuation which, although an infrequent occurrence, must occur from time to time.

Variations between firms of different size—in terms of number of employees—are shown in Table III. This table is probably more interesting than the preceding one, because it enables us to check whether the banks were either more or less lenient with smaller firms than with larger ones. It should be noted, first, that there is a fairly consistent tendency for the proportion of firms which had had an overdraft in the previous five to six years to be associated with the size of firm. The differences are not great, but they are appreciable; and if we were able to cover the firms beyond our size limits they might well be even more striking. There must be very few of the large public companies which do not run an overdraft at some time in any five-to-six-year period. It seems safe to assume that, on the average, the larger the firm, the more often it resorts to the bank as a source of temporary finance.

When we turn to consider what proportion of firms in each size group had been asked to reduce their overdrafts we find that this proportion *also*

tends to increase with the size of firm. So far as can be seen, the banks asked roughly the same proportion of firms with overdrafts in each size group to make a reduction. We cannot be certain about this, because we do not know which firms had an overdraft outstanding in, say, August 1955 when, presumably, the banks responded to the Chancellor's request. But the

TABLE III
Bank Requests to Reduce Overdrafts, Analysed by Size of Firm

Number of employees.*	Overdrawn at any time since 1950?			Total.	Asked to reduce overdraft in previous twelve months?	
	Yes.	No.	N.A.		Yes.	N.A.
Number of firms						
10-19 †	71	76	4	151	33	3
20-29	72	75	7	154	26	5
30-39	73	48	5	126	32	7
40-49	47	37	2	86	20	4
50-74	77	45	3	125	30	7
75-99	30	22	2	54	14	1
100-199	62	47	2	111	23	4
200 and over	39	17	1	57	16	1
N.A.	4	7	1	12	1	1
TOTAL	475	374	27	876	195	33
Percentages						
10-19 †	47	50	3	100	22	2
20-29	47	49	5	100	17	3
30-39	58	38	4	100	25	6
40-49	55	43	2	100	23	5
50-74	62	36	2	100	24	6
75-99	56	41	4	100	26	2
100-199	56	42	2	100	21	4
200 and over	68	30	2	100	28	2
TOTAL	54	43	3	100	22	4

* The average number of employees during the year 1955, each part-time worker being counted as equivalent to half a full-time employee.

† Includes 4 firms with less than 10 employees.

trend is such as to make it seem likely that the banks were not biased either for or against small firms in their endeavours to apply the Chancellor's policy. One may well wonder, indeed, on what grounds firms were selected for approach by the banks. In a debate in the House of Commons on the application of the Chancellor's request to small businesses the Economic Secretary to the Treasury said that it was "quite deliberately being left to the banks to decide what steps they must take to make that policy effective." The firms which were asked to reduce their overdrafts appear, in fact, to be so randomly distributed that one is tempted to believe either that they were

randomly selected by the banks or—more plausibly—that some of the banks asked all their customers to reduce their overdrafts, while others asked none.¹

So much for the direct requests to reduce overdrafts. They represent the Credit Squeeze in a narrow meaning of the phrase. But, as I have indicated above, I do not think that we can assume that this is the sense in which it is popularly understood. It seems more reasonable to believe that the Credit Squeeze signified to business-men the whole series of measures, starting with the rise in Bank Rate in January 1955, and including hire-purchase controls and the planned cuts in government expenditure, which went under that name in the Press and in current discussion. We wanted to ask business-men about the influence of the Credit Squeeze as a whole on their investment decisions; and this we did. But we also wanted to try to identify which particular aspects of the Credit Squeeze, or of its repercussions, were most influential in making business-men change their decisions. Hence, after first asking about the influence on investment decisions of the Credit Squeeze in general, we proceeded to ask two questions designed to elucidate the manner in which the Credit Squeeze affected each firm—in other words, to throw some light on the *modus operandi* of the Credit Squeeze.

In this part of the inquiry there were four questions. First, we asked every firm in the sample the two following:

- (1) "Has the credit squeeze of the past twelve months caused you to order less capital equipment than you had originally intended?"
- (2) "Has it caused you to reduce your stock of purchased materials or parts?"

In a broad sense these two questions may be thought of as testing the Keynes hypothesis and the Hawtrey hypothesis respectively. If any firm answered yes to *either* of these questions, it was then asked:

- (3) "Is that mainly because the credit squeeze has made it more difficult for you to raise finance or because you are worried about its effects on your customers?"

The reason for asking this question will be discussed below; at this stage it is only necessary to note that it serves to separate off clearly those firms which had revised their investment decisions mainly because of difficulty in raising finance. This group of firms were then asked the fourth question:

- (4) "Is that mainly because of the *higher cost* due to the increased interest rate or because of the *difficulty in raising* loans?"

The economic significance of this question will be patent to all.

In answer to the first question: 197 firms said that the Credit Squeeze had caused them to order less capital equipment than they had originally

¹ I am told that there is a widespread belief in the City that this is what happened.

intended; 662 firms said they had not ordered less; and 17 firms gave no answer (mainly because they had "dropped out" of the interview by this time). In answer to the second question: 220 firms said that the Credit Squeeze had caused them to reduce their stock of purchased materials or parts; 635 firms said not; and 21 firms gave no answer. If we ignore the "no answers," we can say that 23% of small and medium-sized manufacturing firms had revised their fixed capital plans and 26% had cut their stocks of materials and parts. About half the firms in each of these groups (113 firms in all) had reacted to the Credit Squeeze in *both* ways, while 84 firms which had reacted by ordering less equipment had not cut their stocks, and 107 firms which had cut their stocks had not revised their orders for equipment. Hence there was a total of 304 firms which had reacted in one way or other to the Credit Squeeze, that is, about 35% of the firms in the sample, excluding those which failed to answer these questions.

An analysis by industry of the answers to the first question—on orders for capital equipment—shows no significant differences between major industries in the proportion of firms revising their fixed investment decisions; but one or two of the smaller industries—notably Chemicals, Wood Products and Miscellaneous—contain an unusually small proportion of firms whose fixed investment plans had been reduced. With these exceptions it seems that the impact of the Credit Squeeze on fixed-investment decisions was fairly randomly distributed over the whole range of industries.

The pattern of answers to the second question—on stock holdings—is very similar. Amongst the major industries only Engineering seems to deviate slightly from the general pattern, in that it contains a smaller than average proportion of firms which said they had reduced their stocks. Amongst the minor industries Chemicals is again conspicuous for the small number of its firms which had cut their investment—in this case in stocks—as a result of the Credit Squeeze. Perhaps it is no coincidence that Chemicals and Engineering, which are the two most strongly booming industries of the present period, should be less willing to cut their stocks than other industries.

An important discovery made in the pilot testing stage of this survey was that the influence of the Credit Squeeze on business decisions was not always through the direct impact of shortage of credit or the higher cost of loans on the business as borrower. Quite often, when we talked to business-men about the effects of the Credit Squeeze, we found that the operative factor in their minds was not the problem of raising loans as such, but the possibility that the various restrictive measures forming part of the Credit Squeeze would cause a fall in the demand for their products. In other words, it was not the direct effects of the Credit Squeeze that were worrying them so much as the indirect effects, through its influence on their customers. Hence, when we framed the questionnaire for this inquiry, we followed up the questions about the effects of the Credit Squeeze on investment decisions

by putting a question—(3) above—which was specifically designed to sort out the firms which had reacted to the direct financial influence of the Credit Squeeze from those which had reacted to its more general effects on demand.

The answers to this question turned out to be extraordinarily interesting. Of the 304 firms which were asked the question, no less than 141 said that their main reason for cutting their fixed-investment plans, or their stocks, was that they were worried about the effect of the Credit Squeeze on their customers. Only 131 firms attributed their reactions to the Credit Squeeze mainly to the difficulty of raising finance. In addition, 20 firms said that both influences were equally important and 13 firms gave no answer. The main thing about these figures which, I think, will strike most readers is the difference between what business-men think of as the Credit Squeeze and what economists think of in the same context. We economists are inclined to be too literal: by a Credit Squeeze we mean a reduction in credit and a rise in its price. Hence we think primarily in terms of the availability of finance and of the cost of loans. (At an earlier stage most economists even overlooked the availability aspect and thought only of the cost.) But to the business-man the Credit Squeeze means not only more difficulty with credit but also more difficulty with sales; and the sales aspect may be at least as important to him as the credit aspect.

It is impossible to say, on the basis of this inquiry alone, how much of this sales aspect of reactions to the Credit Squeeze was caused by an actual fall in sales and how much by an expected fall in sales. Nor can we conclude that the actual, or expected, fall in sales was due primarily to the purely monetary measures, such as the rise in Bank Rate and the squeezing of bank advances. It is certain that some part of this decline in demand expectations was caused by the non-monetary measures, such as the hire-purchase controls, the revision of government investment plans and the rise in purchase tax. Nevertheless, the results of this inquiry do serve to emphasise a point which has often been made before but not always fully understood, that investment decisions are at least as sensitive to demand conditions as to credit conditions, and that a measure which may appear on its face to be purely a piece of credit policy may be regarded by the individual business-man rather as a signal that demand conditions are altering and that he should adjust his investment plans accordingly.

There do not seem to be any significant differences between industries in the relative emphasis given by firms to the two alternative aspects of the Credit Squeeze—the financial effect and the sales effect—but there is some evidence of differences in emphasis between firms of different sizes. This point is of particular interest, and must therefore be considered in some detail.

It should be recalled, first, that in our consideration of the policy pursued by the banks in relation to overdrafts we found no significant tendency for

smaller firms to be treated any worse—or any better—than larger firms. Further, when the answers of firms to the questions about reactions to the Credit Squeeze are analysed by size of firm there is no sign that the proportion of smaller firms reacting to the Credit Squeeze is any different from the proportion of larger firms. This can be seen from the first column of Table IV. But when the answers to the questions about the reasons for reacting to the Credit Squeeze are analysed by size of firm an interesting difference emerges. Amongst firms employing less than 75 persons there is an almost uniform pattern of answers: approximately one in six at all levels had reacted mainly because of the direct financial effect of the Credit Squeeze and one in seven mainly because of the sales effect. On the other hand, amongst firms employing 75 or more persons only about one in ten said they had reacted mainly because of financial difficulties against about one in five which stressed the sales problem. The figures are summarised in the second and third columns of Table IV.

TABLE IV
Impact of the Credit Squeeze on Smaller and Larger Firms

Number of employees.	Reacting to Credit Squeeze.	Mainly because of difficulty with finance.	Mainly worried about effect on customers.	All firms.
Number of firms				
10-74	222	106	92	642
75 and over	80	24	47	222
N.A.	2	1	1	12
TOTAL	304	131	140	876
Percentages				
10-74	35	17	14	100
75 and over	36	11	21	100
TOTAL	35	15	16	100

Note: In this table the figures do not add up horizontally. The relation between the columns will be clear from the text.

It seems, therefore, that, while the Credit Squeeze as a whole may not have been discriminatory in its impact on firms of different sizes, this is largely an accidental result of two compensating differences. More of the smaller firms restricted their investment plans or stockholdings because of financial difficulties, while more of the larger firms reacted in one or other of these ways because of worries about sales to customers. The variation in the direct financial impact of monetary restriction as between small and large firms is a phenomenon which has often been predicted (but without much evidence to support the belief); but the opposite variation in the sales effect is unexpected and rather surprising. It is possible that the explanation

lies in the fact that larger firms are more alive to changes in the market situation than smaller firms, and hence adjust their investment plans more readily when market prospects fluctuate. If that be so, we must conclude that the existence of a larger proportion of larger firms cutting their investment plans because of a fear that the Credit Squeeze will affect their customers is a symptom, not of any relative weakness in the position of the larger firms in this respect, but of greater alacrity on their part and hence of their probable success in the competitive struggle.

We turn, finally, to the last of our questions, namely, that in which the firms which had said that they were worried about raising finance were asked to distinguish between the influence of the cost of loans and of the availability of loans. This question focuses attention on the old issue—now virtually a dead issue—of the effect on investment of changes in the rate of interest as such. But despite the lack of current controversy on this issue, it may be that many people—and not least those who decide from time to time to vary Bank Rate—will be interested in the results of our questioning on this point. It will be recalled that there were 131 firms which had said they had cut their investment plans or stockholdings mainly because of the difficulty of raising finance; and that another 20 firms had said that this consideration was of equal importance with the other consideration. It was these 151 firms which were then asked to distinguish between the influence on them of cost and availability of finance. The result was as follows: emphasising the higher cost of loans, 36 firms; emphasising the difficulty in raising loans, 109 firms; giving equal emphasis to both factors, 6 firms.

SUMMARY AND CONCLUSIONS

From a survey made in April–June 1956 covering 876 small and medium-sized manufacturing firms (in the size range 10–499 employees) it appears that only about three out of every five firms had had an overdraft at the bank in the preceding five to six years; and less than a quarter of all firms had been asked by their bank to reduce their overdraft during the preceding twelve months, for most of which time the Credit Squeeze had been in full operation.

When the firms were asked about the influence of the Credit Squeeze (in the broad sense) on their investment decisions, nearly a quarter said that they had ordered less capital equipment than they had originally intended and just over a quarter said that they had reduced their stocks of purchased materials and parts. Altogether, more than a third of firms said that they had reacted in one or other of these ways.

Of the 304 firms which said they had cut their investment orders or stocks in response to the Credit Squeeze, only half had done so mainly because of greater difficulty in raising finance, the other half having reacted mainly because of worries about the effect of the Credit Squeeze on their customers.

Of the 151 firms which had reacted mainly or equally because of greater difficulty with finance, only 42 firms said that this was mainly or equally a question of the higher cost of loans, the remaining 109 firms saying that it was mainly a question of difficulty in raising loans. Thus, out of some 860 firms which gave answers in this part of the interview there were only 42—less than 5%—which seem to have modified their investment decisions primarily as a result of the increased burden of the higher rates of interest.

In general, neither the bankers' requests for reduction of overdrafts nor the Credit Squeeze in its wider sense seem to have affected a greater proportion of the smaller firms than of the larger ones; but rather more of the smaller firms were worried about the direct financial side of the Squeeze, more of the larger firms being mainly concerned about the sales aspect. The latter reaction, however, may be not so much a sign that a firm is in difficulties as that it is quick to respond to changes in the market situation.

The practical lesson of this investigation seems to be that changes in Bank Rate—within the limits of normal monetary policy—influence the investment decisions of manufacturers principally through their effect on sales expectations and the availability of finance. The influence of the higher cost of loans is small or even negligible. It follows that it is hardly realistic to describe Bank Rate as a "delicate instrument" capable of ready adjustment to ensure any desired amount of inflation or deflation. Rather it is an uncertain and potentially heavy-handed method of blunting incentives and cutting off the supply of finance to those businesses which depend mainly on outside finance for their operation or expansion.

In an economy which is working within very narrow margins we need to use a variety of controls and levers to secure the best results. If we desire to restrict—or to stimulate—private investment in industry we can probably achieve our aims more safely by means of measures directed specifically at sales expectations and availability of finance than by more general measures such as the raising—or lowering—of Bank Rate. Sales expectations can, for example, be influenced very powerfully by changes in taxation and in hire-purchase regulations, as well as by direct variations in government spending. Availability of finance is largely a question not of bank finance but of ploughed-back profits, and here the authorities have already developed a most potent weapon in the shape of investment allowances. I would therefore suggest that it would be more advantageous for our future economic stability and growth if attention were concentrated on how to develop and improve these newer fiscal and consumer credit controls than to continue to rely on the hazardous and complicated, though superficially attractive, weapon of Bank Rate.

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CAPITAL EXPORTS AND GROWTH¹

1. THE purpose of this article is to discuss the *modus operandi* of capital exports in giving rise to growth, in the light of Keynesian theory.²

In particular, I propose to question a view which appears to be widely held, namely, that the volume of capital exports, past and present, is a good measure of the assistance provided by lending countries to development in borrowing countries. This notion is itself based on the idea that capital imports represent a measure of the extent to which the volume of resources available for capital formation in borrowing countries is being augmented by drawing on foreign resources. I shall argue that this view is, in general, untenable, at any rate in its application to private-enterprise economies.

In doing so, I will invoke the concept of *excess borrowing*. This I define as imports of capital which arise otherwise than in connection with a need to finance such supplies of goods and services from abroad as are, in a given state of tastes, techniques and available resources, and of a given amount and composition of output and growth, both indispensable and unrequitable.

In what follows I shall use the terms "capital exports" and "foreign investments" interchangeably. The balance of payments on current account, including all gifts, whether private or official, plus net exports of gold is equal to capital exports. By growth I shall mean increases of output.

2. I believe that the importance of capital exports in giving rise to growth in the past has tended to be much exaggerated.³ In any case, its *modus operandi* in this respect requires reconsideration.

In his *Imperialism, the Highest Stage of Capitalism* Lenin wrote: "The export of capital affects the development of capitalism in those countries to which it is exported, tremendously accelerating it."⁴

In a review in the *Manchester Guardian*, of Cairncross' book on *Home and*

¹ This paper was first presented in a seminar arranged by Mr. T. Balogh at Balliol College, Oxford. Subsequently a number of colleagues were kind enough to offer helpful comments and criticisms of the original version of the paper. On this score I am particularly indebted to Sir Donald MacDougall, Mrs. Joan Robinson, Mr. Paul Streeten and Mr. John Black.

² It has been recognised by some writers that the theory of international capital movements has, in some respects, still not been brought into line with other branches of the subject which have been modified in the light of Keynesian theory. See, e.g., N. S. Buchanan, "International Investment," Chapter 8 of *A Survey of Contemporary Economics*, Vol. II. (ed. Haley), p. 307; H. W. Arndt, "A Suggestion for Simplifying the Theory of International Capital Movements," *Economia Internazionale*, Vol. VII, No. 3, *passim*.

³ Kuznets' paper in the National Bureau of Economic Research volume on *Capital Formation and Economic Growth: International Differences in Capital Formation and Financing*, was brought to my notice in this connection after the present paper was substantially completed. The factual material amassed by Kuznets should be studied in conjunction with the references to statistics which are contained in my text. However, Kuznets' theoretical approach seems insufficiently modern in spirit (cf. *loc. cit.*, pp. 35 n. and 44-5) as is pointed out by E. Domar in his "Comment," *ibid.*, p. 110.

⁴ V. I. Lenin, *Imperialism*, Little Lenin Library, Vol. 15, p. 59.

Foreign Investment, 1870-1913, Professor Ashton wrote that, in the nineteenth century: "British capital created foreign railways, turned prairies into corn-fields, and redistributed populations in far parts of the earth."

In a recent article, Professor Nurkse writes of the "wonders worked" by foreign investment in the nineteenth century.¹

There can be no question about the very great importance of the contribution made to development by the movement to developing countries of entrepreneurs, civil servants, of skilled and unskilled workmen, and, not least, of ideas. Great Britain, in particular, undoubtedly made great contributions to growth abroad in this manner during the nineteenth century. These movements represented exports of knowledge, of enterprise, of labour, and, indeed, of national capital in a broad sense of the word. Moreover, an examination of the nature and extent of possible interconnections between these factor-movements and capital exports would have to be undertaken in a full analysis of the relationship of capital exports to growth. However, these topics are beyond the scope of the present article which is concerned only with the export of capital.

The leading industrial powers of the contemporary world are the United States, Russia, Great Britain, France, Germany and Japan. Only one of them, the United States, has availed itself of net imports of capital for long on a significant scale. The reliance of Russia on herself in her economic development is well known. This country did rely on the Dutch, to some extent, for long-term loans during the early stages of the Industrial Revolution in the eighteenth century, but it appears that we mostly lent short what we borrowed long.² Western Europe in general financed its own development.³ In Japan there was no foreign borrowing until development was well under way. It was initiated and financed at home throughout the difficult early stages, and subsequent borrowing was connected with the Russo-Japanese war.⁴

So far as the United States is concerned, the question which arises is how far the nineteenth-century growth of her foreign indebtedness was a reflection of the underdeveloped state of her banking system and capital market, rather than of her need for unrequited foreign supplies.

The net stock of foreign indebtedness of the United States rose from \$200 million in 1843 to \$3,700 million in 1914. But the net long-term borrowing of the United States, to the tune of \$3 billion between 1850 and 1914, was throughout either matched or exceeded by net payments of interest and dividends amounting, in total, to \$5.8 billion over the period.

¹ See *ECONOMIC JOURNAL*, December 1954, p. 744.

² Cf. A. H. Imlah, "British Balance of Payments and Exports of Capital 1816-1913," *The Economic History Review*, Second Series, Vol. V, Nos. 1, 2 and 3, 1952-53, pp. 226-7; and T. S. Ashton, *The Industrial Revolution 1760-1830*, The Home University Library, pp. 107-8.

³ Cf. N. S. Buchanan and H. S. Ellis, *Approaches to Economic Development*, p. 426.

⁴ *Ibid.*, p. 189, and W. W. Lockwood, *The Economic Development of Japan*, pp. 253-4.

The same sort of thing was true over the period between 1820 and 1850, while between 1790 and 1820 the United States appears to have been a net current lender.¹

In other words, the United States balance on visible and invisible trading account ² plus her net exports of gold, tended persistently to show a growing surplus. This growing surplus enabled the United States to finance private gifts abroad of \$3.3 billion between 1874 and 1914, as well as paying interest on a growing volume of long-term foreign indebtedness. The large growth of United States long-term indebtedness was thus not accompanied by a real transfer of goods and services into the United States, taking one year with another.³ While the growth of total net United States foreign indebtedness implies that over any given period her surplus on the visible and invisible trading account, plus gold exports, did not suffice to match her growing interest obligations and gifts to the rest of the world, without fresh borrowing, or sales of old securities, the lack of any sustained real transfer into the United States does suggest the question of how far all this borrowing was really necessary?

In the circumstances of the nineteenth century, the extent of foreign borrowing for new investment was governed by comparative interest rates ruling in the different capital markets, for different individual loans, and there was none of the modern sophisticated attention to the capacity of individual countries to carry out investment programmes of varying volumes without recourse to borrowing abroad. Hence, it is perfectly possible that the United States should have indulged in excess borrowing in the sense that her growing indebtedness may have been very largely a reflection of the underdeveloped state of her banking system and of her capital market, rather than of her inability to match her current domestic investment by current saving. Her foreign borrowing on long-term would then have tended to be matched either by short-term lending abroad on the part of the banking system or by gold imports, and a continued tendency to do this over the years could set up a secular tendency for her net interest obligations to foreign countries to rise. We do know that the United States absorbed gold on a sizeable scale between 1820 and 1850 and again between 1896 and 1914, although she was herself an important producer. Thus, United States reliance on foreign borrowing in the nineteenth century may well have reflected nothing much more than a costly process of satisfying her preference for liquidity.

¹ Cf. C. J. Bullock, J. H. Williams and R. S. Tucker, "The Balance of Trade of the United States," *The Review of Economic Statistics*, 1919, pp. 215 *et seq.*; U.S. Department of Commerce, *Survey of Current Business*, July 1954, p. 14; and U.S. Department of Commerce, *Historical Statistics of the United States, 1789-1945*, pp. 237 and 242-3.

² I.e., the current-account balance excluding net interest and gifts.

³ Over shorter periods than the intervals of several decades for which the balance-of-payments estimates are available there were undoubtedly several occasions during which the United States did run deficits on visible and invisible trading account. But, as will be explained presently, this does not really affect the argument.

There is little in this picture, if it is correct, which suggests a massive reinforcement by the savings of the Old World of the real resources available in the New.

Other cases similar to that of the United States in a very different setting are those provided by Burma, Indonesia, the Gold Coast and Nigeria, where Mr. Myint has been unable to find evidence of a real transfer occurring in the course of these countries' development and increasing foreign indebtedness in the nineteenth century.¹

It must be stressed that an absence of deficits on visible and invisible trading account over any given period of time during which total foreign indebtedness is increasing is not, in itself, necessarily evidence of the presence of excess borrowing, although it is suggestive of it.

There would be no excess borrowing, even though there is no deficit in the visible and invisible trading account, when the situation is such that a reduction of borrowing from abroad would entail a larger diminution in domestic growth than in interest liabilities to foreigners, say because it involves a need to cut down on indispensable imports. Thus only detailed examination of the circumstances can provide evidence of excess borrowing. But the absence, historically, of real transfers in borrowing countries over longish periods of time, marked by an accelerated pace of growth and by increasing foreign indebtedness, does give rise to a suspicion of the presence of excess borrowing.

This suspicion will be stronger, if it is impossible to observe a real transfer even "initially," i.e., at the very beginning of a country's entry on a career of borrowing. However, even this is not conclusive evidence of the presence of excess borrowing, partly because the available balance-of-payments figures may conceal a real deficit over part of the year, and partly because investment income paid to foreigners may include an element of necessary and indispensable remuneration for entrepreneurial services rendered, in the shape of profits. Indeed, foreign entrepreneurship in backward countries may have "demonstration effects" which (unlike those stressed by Professor Nurkse) may act as a catalyst for the growth of domestic enterprise and of output. These last considerations are the more likely to be of importance, the higher is the ratio of equity investment income in total foreign investment payments and the higher the ratio of foreign to total investment. On both scores there is a stronger *prima facie* reason for suspecting the presence of excess borrowing in the United States case than in the cases of the various more backward countries examined by Mr. Myint.

Conversely, a deficit on visible and invisible trading account is not evidence of the absence of excess borrowing. For excess borrowing occurs, whether or not a country runs a real deficit, to the extent that the situation in the borrowing country is such that a reduction of liquidity preference on

¹ See H. Myint, "The Gains from International Trade and the Backward Countries", *The Review of Economic Studies*, Vol. XXII, No. 2, p. 138.

he part of the Banks or the public, associated with larger domestic and maller foreign placements of securities, would not itself affect the course of production and trade in a manner adverse for growth.¹

Thus, during the period 1900-13 when her imports of capital rose to a rescendo, Canada ran a large deficit on visible and invisible trading accounts. But at least one commentator on "Capital Importation," writing in the mid-thirties, felt it appropriate to discuss the course of events during 1900-13 in very similar terms to those I have just used in relation to the United States. He wrote:

"Capital development was necessary . . . and in a new country, like Canada, it was a *tradition* that capital should come in from abroad. . . . The bulk of the foreign borrowing remained for a time as a foreign asset of the Banking system. . . . There is an element of truth in the idea that, given a determination to develop our country, and given a willingness on the part of the Banking system to impart the initial impulse by rather free lending policies, it is possible that, with our domestic gold production, there was no particular reason in 1900-13 why we ourselves could not have financed our development without recourse to British investors. Under pressure of necessity, we developed a domestic Bond market and financed heavy war expenditure in a way somewhat analogous to what I have in mind." ²

Any analysis along such lines is in some danger of turning into a historical anachronism. There are what Mrs. Robinson calls "rules of the game."³ What is respectable, and therefore possible, changes through time, and is different in peace and in war. There may well, therefore, be an important sense in which any excess borrowings in the nineteenth century, and later, may be regarded as having been necessary in some sense. Moreover, given the "rules of the game," variations in the desire of British and other investors to lend abroad may have had an important causal role to play in growth, in providing finance which enabled investment to proceed. Conversely, finance could at times be a bottleneck. But there is nothing to be gained from thinking that nineteenth-century exports represented real resource transfers essential for the growth of production in developing countries if in fact they were nothing of the sort.

3. In trying to decide whether or not a given rate of long-term borrowing from abroad represents excess borrowing in some sense, it is not sufficient to follow the course of borrowing and of mounting interest charges in relation to short-term capital and gold movements. It is also necessary

¹ Mr. Myint's discussion of what I have called excess borrowing is confined to the consideration of a course of events in which no real transfer occurs, but this is an unnecessary restriction, cf. H. Myint, *op. cit.*, p. 138.

² Cf. J. C. Elliot, *The Importation of Capital into Canada—its Effect and the Possibilities of its Control* Pt. III, Chapter III of *The Canadian Economy and its Problems* (ed. H. A. Innis and A. F. W. Plumptre), Toronto, 1934, pp. 224, 228 and 242-3.

³ Cf. Joan Robinson, *The Accumulation of Capital*, p. 4.

to take a view about the extent to which imports of goods and services into the borrowing country could be replaced without a fall in its real domestic consumption or investment. This is obviously a possibility when there are unemployed resources at home or when domestic productivity is unnecessarily low.¹ Also, any borrowing or sale of old assets to foreigners which occurs in a situation in which the exports of the borrowing (or asset-liquidating) country are depressed below capacity in volume or in aggregate value because the rest of the world has lapsed into unemployment, also represents excess borrowing to the extent of the shortfall of exports below their full employment value. It is only when excess borrowing in all of the above senses is zero that imports of capital are unambiguously of equivalent assistance to growth in developing countries.

The possibility, in practice, of eliminating excess borrowing by import replacement may be limited by the rules of the game in this case also. Indeed, there may be a danger of penalties, like retaliation, being attached to breaches of the rules. But this is not inevitable, because some players may believe the rules to be so beneficent that they continue to follow them in the face of breaches of them by others.

Where excess borrowing results from a shortfall of exports due to lapse from full employment abroad, it may be impossible to take any domestic action which will eliminate the need for borrowing if growth is to continue. But borrowing associated with such a course of events would still fall within the scope of the definition proposed at the beginning of this paper, since the imports of capital corresponding to it would not be unrequitable. Foreign savings would be drawn on, in this case, not because domestic capacity to save was insufficient to support the actual rate of domestic investment but only because actual domestic saving was being depressed below capacity by foreign failure to maintain full employment.

4. There has been, I believe, a tendency to think, at least of nineteenth-century capital exports, and probably also of later capital exports as well, as if excess borrowings in all of the above senses had been zero throughout, as that the £4,000 million of British assets accumulated in the course of the nineteenth century, for example, have been regarded as a *minimum* measure (which does not allow for real structures remaining after defaults) of the additional real capital formation resulting abroad from the activities of British investors.

This view is a hangover from classical theory. The classical habit of regarding sustained deficits and surpluses in balances of payments as sufficient evidence in themselves that equivalent real transfers accelerating growth in deficit countries are taking place is valid only in regard to current deficits of socialist countries. In *those* countries the assumption of Say's law is valid, and, in addition, there is no occasion to overborrow for reasons connected with liquidity preference. Hence, in transactions between socialists

¹ An interesting example from Indian history is referred to by Mr. Myint, *op. cit.*, p. 140, n. 2.

countries, all surpluses represent output foregone, at the expense of consumption or investment, and, in peace-time at least, all deficits are likely to represent contributions to growth and to capital formation. This is because socialist borrowing countries, like capitalist borrowers, have to pay interest charges on their debts. Consequently, even if the commodities transferred in connection with a loan agreement among socialist countries are in the form of consumption goods, we may reasonably assume that this contributes to capital-formation. For the fact that it has been found desirable to arrange for a loan in this form may itself be taken as evidence that, if the loan had not been possible to arrange, then an abatement of domestic investment would have commended itself to the borrowing countries' authorities.

5. The classical view cannot, as we have seen, be applied to deficits of private-enterprise economies. Looking at the matter from the point of view of the lending countries in the nineteenth century, Imlah's statistics show that Great Britain made no sustained real transfer on a significant scale on visible and invisible trading account after 1825. At that date her stock of foreign assets is put at less than £100 million.¹ The subsequent growth of this stock to £4,000 million in 1913 resulted from a *partial* reinvestment of interest and profits due to Britain, and show the power of compound interest. Keynes was, as usually, on the right track when he calculated that taking Drake's treasure at compound interest, it would accumulate to something close to £4,000 million by 1913.

The position of the other major nineteenth-century lending countries was similar. The United Nations pamphlet on International Capital Movements during the inter-war period points out that during the forty-year period between 1874 and 1914—which was the heyday of foreign investment—when the long-term investments of the three chief lenders, the United Kingdom, France and Germany, rose from \$6,000 million to \$33,000 million—the total of the estimated capital exports from these three countries roughly equalled their aggregate income from the investments. The average annual income was about 5%. Aggregate international investments tended to double every twelve or thirteen years.² As these three countries accounted for about three-quarters of all outstanding international investments at the outbreak of the First World War, it is clear that the United States experience of receiving no real transfer, and running up increasing debts to finance increasing interest payments, was the average experience, and not an exception.

One's suspicions of excess borrowing which are aroused by these figures are strengthened when one looks for signs of excess borrowing in the two other senses which I have distinguished. What stands out in this connection is that although the rate at which a country like Britain was acquiring

¹ Cf. A. H. Imlah, *op. cit.*, pp. 234 *et seq.*

² United Nations, Department of Economic Affairs, *International Capital Movements during the Inter-war Period*, 1949, p. 1.

foreign assets from abroad did tend to fluctuate directly with the trade cycle—being, as a rule, higher during world booms than during world slumps—it nevertheless generally remained positive in slumps. In some periods of falling world activity British capital exports actually rose.¹ There is, of course, no reason why this should not have happened, say, when British imports fell more than exports. A country, like an individual, can acquire securities from abroad without causing additional capital formation to take place abroad. What seems clear from these figures without elaborate further research is that capital exports associated with falling export and import values and volumes all round connote a situation in which debtor countries taken together are borrowing or selling off securities to cover deficits, which are not developmental ones. In other words, these borrowings or sales of securities are at least partly “excess” in the sense that they would diminish or disappear, *without* causing a fall in output in the borrowing country, if activity were higher outside the borrowing country, or if, the rules of the game permitting, the borrowing country cut its imports, replacing them from additional home production.

6. So much for the relationship between capital exports and growth in debtor countries during the nineteenth century. What about the effect of capital exports on growth in the creditor countries? It is an odd fact that while mistaken classical and Marxist views about capital exports affording a measure of the amount of growth caused in borrowing countries by the action of investors in lending countries have, on the whole, continued to survive, at least in relation to nineteenth-century experience, the effect of capital exports on growth in the lending country has, for some time now, been usually regarded in a more sophisticated manner. This may reflect the ascendancy of Keynes over the Classics, or of Rosa Luxembourg over Lenin. In any case, Mr. Cairncross informs us that Fullarton was an early nineteenth-century exponent of the new-fangled view that, *pace* the classics, rather than having more capital investment at home, we might have had less or none at all if less had been invested abroad.² However, it can hardly be said that a clear consensus of opinion exists in relation to this matter.

An ultra-new-fangled view has been put forward by Mr. Kurt Martin. He suggested that if—as we saw tended to be the case in the nineteenth-century lending countries—the balance of payments on current account rises through time for *no other* reason than that net interest receipts are relent, then, the balance of payments on visible and invisible trade account being given, there is no tendency for the increasing current account surplus to raise output, employment or prices in the lending country.³ This pro-

¹ *E.g.*, in 1883–86.

² Cf. A. K. Cairncross, *Home and Foreign Investment 1870–1913*, p. 232 n.

³ Cf. K. Martin, “Capital Movements, the Terms of Trade and the Balance of Payments,” *Bulletin of the Oxford University Institute of Statistics*, 1949, pp. 363–4.

position is correct if, and only if, it is also the case that the marginal propensity to save of the owners of foreign investments equals unity. Mr. Martin does not fail to specify this condition, but he assumes what he has to show in relation to the British historical case. For even if, in fact, rising surpluses arising from increasing interest-income were fully re-lent each year, this would not in itself be evidence that the marginal propensity to save is unity. In a perfect capital market a combination of a positive marginal propensity to consume home goods with a zero marginal propensity to import would itself tend to produce the rate of foreign lending required to match the growing surplus on income account, if with a time lag,¹ while the desire to lend abroad may itself shift in such a way as to provide the required rate of lending without any time lag. And, in fact, net interest receipts were not fully re-lent.

However, the marginal propensity to consume home goods out of rising interest income on foreign securities may well have been low in Victorian conditions, both absolutely and relatively to the marginal propensity to consume of all income recipients. As the balance on visible and invisible trade account tended to be zero or negative in Great Britain over the most part of the nineteenth century, we may agree with Mr. Martin to the extent of saying that Britain's capital exports probably did not exert a powerful stimulus to growth in this country, at any rate in a direct manner.

This is most definitely *not* to say that *foreign transactions* did not exert a powerful stimulus of this kind. Indeed, I believe that the repercussions of Britain's decision, in the mid-nineteenth century, to experiment with Free Trade were the essence of the growth associated with the secular boom of the nineteenth century in Europe and overseas. This, however, did not depend on *balances* of payments, but on the effects of Free Trade in causing shifts in the marginal efficiency of capital, the effects of which on investment, in their turn, reacted on volumes of trade, in a way which set up tendencies for cumulative expansion in the peculiar geo-political circumstances of that time.² It is only to the extent that these developments would have been hampered, given the rules of the game, by alternative methods of financing foreign growth in the nineteenth century, that British Foreign Investment can be said to have done much for growth in this country at that time.

7. Little need be said about the inter-war period, when there was comparatively little growth, and it is rather obvious that capital exports had little to do with what growth there was. The main borrower was Germany. She maintained a long-term rate of interest of 8-10%, had an army of unemployed and generally pursued respectable economic policies. She was provided with enough long- and short-term loans to pay reparations, to meet the gap in her foreign exchange income caused by the loss of her confiscated

¹ Cf. Joan Robinson, *Essays in the Theory of Employment* (2nd ed.), pp. 149-50.

² For a suggested explanation of the secular boom of the nineteenth century along these lines see my contribution to *Economics*, Odhams New Educational Library, Chapter VIII.

or sunk Merchant Navy and of her foreign assets, and to rebuild some gold reserves. That borrowing abroad was not essential for growth in Germany was demonstrated by the Nazi economy under Hitler. That it was not essential in a very great many other countries either, whether they were developed or underdeveloped, was clearly shown by experience in the two World Wars. For example, in the First World War the United States, which had been the largest single borrower before the War, found it possible to increase her production immensely during the War, even though she had ceased to borrow. Indeed, her production increased sufficiently to provide her with current account surpluses sufficient to enable her to repatriate her outstanding debt, and to become a leading creditor nation.

In the Second World War a number of underdeveloped countries were able to increase their domestic output at a rate which compared favourably both with their own rates of growth in the inter-war period and with rates of growth in industrial countries.¹ This, even though most of them had been borrowers in the inter-war period and had ceased to borrow during the War, and in many cases had reduced or more than eliminated their debtor positions, and had been cut off from normal import supplies of raw materials and capital goods. For example, in India real National Income was estimated by Rao to have increased by 19% in the four years between 1939 and 1943, and industrial output by 60%. At the same time India's sterling debt of almost £300 million in 1939 was transformed into a net credit position of just over £1,000 million by 1945.²

8. Some very queer and confusing things are being said about the relationship between capital exports and growth in the recent post-war years. It is pointed out that capital exports have been small since the Second World War. We are told by the United Nations that the outflow of private long-term capital from advanced industrialised countries has, in recent years, been running at a rate of only $\frac{1}{2}$ of the outflow in the 1920s.³ Calculations are made by Professor Paish which show that Great Britain's recent rate of capital export of about £60 million per annum compares with £800 million in 1913 at present prices. Professor Paish also draws attention to the fact that G.N.P. has increased by 70% in this country since 1913, the inference seeming to be that an equivalent increase in our capital exports, to £1,360

¹ Cf. United Nations, Department of Economic and Social Affairs, *Processes and Problems of Industrialization in Under-developed Countries*, Appendix A, pp. 127 *et. seq.*

² Cf. A. R. Prest, *War Economies of Primary Producing Countries*, pp. 38, 55. Both the increases in production and the changes in net sterling debt were very largely the result of British military expenditures within India itself. There was thus no significant increase in the Indian surplus on goods and services moving over her frontier. The military payments to India may thus be regarded as having balance-of-payments effects somewhat analogous to those of gifts. Even if the increase in the Indian ownership of sterling balances is disregarded for these reasons, there remains the fact that considerable increases in Indian production were achieved, without incurring deficits on visible and invisible trade account during these years. Cf. A. R. Prest, *op. cit.*, p. 58.

³ United Nations, Department of Economic Affairs, *The International Flow of Private Capital 1946-1952*, p. 10.

million per annum, would not necessarily be extraordinary.¹ Professor Nurkse calculates that if the United States capital exports were on the same scale in relation to G.N.P. as was the British in the late nineteenth century and early twentieth century, she would be investing abroad at an annual rate between \$12 and 20 billion, according to the precise period chosen for Britain,² rather than at the present rate of the United States own capital export, which is only in the neighbourhood of \$1,500 million, and is, moreover, exceeded by the net interest income of the United States, as well as being matched by an equal volume of Foreign Investment in the United States.

Now these facts and others of the same kind are taken up by writers ranging from Professor Paish to Mr. Harold Wilson,³ as so much incontrovertible evidence to the effect that the advanced industrial countries in general, and we in Britain in particular, are doing less than we have been in the past, and also less than we should be doing, to help growth along in the rest of the world—and particularly in underdeveloped countries.

This line of argument appears to be a perfect example of a *non sequitur*, for several reasons. First, and most obviously, the figures I have given of capital exports exclude all grants and aid, which appear on the debit side of the current account, and do not appear as foreign investment. United States grants, other than military aid, have run at around \$2 billion in recent years, and were, of course, much higher still in 1948–51.

Secondly, I have argued that, in private enterprise economies, the fact that capital exports are taking place cannot be interpreted as evidence that growth is being assisted in the borrowing countries. When what I have called excess borrowing is taking place, a decline in borrowing may increase the rate of growth in the erstwhile borrowing countries. A great deal of borrowing in the past may well have been of this excess borrowing type. Hence, the fact that foreign investment has declined cannot create a presumption that this entails a decline in the amount of assistance to growth being given by the advanced countries.

When we examine the changes which have been associated with the decline of the rate of capital exports of advanced countries, we find a number of these to be of such a kind that they entail a reduction in *excess borrowing* and at the same time, an increase in the rate of growth of output in erstwhile borrowing countries, including the underdeveloped countries.

Excess borrowing has probably been reduced in respect of each of the three ways in which it can arise, whether our comparison is made with reference to the 1920s or to the nineteenth century.

First, the two World Wars have been financed in such a way that a redistribution of *international* claims to wealth away from the advanced

¹ Professor F. W. Paish, "Britain's Foreign Investments: The Post-war Record," *Lloyds Bank Review*, July 1956, pp. 23–4.

² Cf. R. Nurkse, *op. cit.*, p. 745.

³ Cf. Harold Wilson, M.P., *The War on World Poverty*, pp. 86, 94.

industrial countries, and in favour of the less-developed and poorer countries has taken place. This is obvious in the case of Great Britain. I believe it may also be true of the United States, as of the time of *cessation of hostilities* in the Second World War.

This has meant a reduction of the need for borrowing to meet interest payments which loomed so large in the nineteenth-century picture of capital exports. To the extent that this has been the cause of reductions in capital exports, it has entailed a clear gain to the erstwhile borrowing countries. It helps rather than hinders their growth. Underdeveloped countries in particular often dislike the idea of getting indebted to advanced countries. This is precisely what they were enabled to do less of by the effect of war-time redistributions of wealth on their foreign-exchange commitments. Moreover, the extent to which *fresh* excess borrowing is occurring at the present time has probably been much diminished by the increase in sophistication in regard to banking, finance and foreign-currency budgeting which has taken place in a great many underdeveloped and other borrowing countries. I conclude that, on this score, declines of capital exports since both the nineteenth century and the 1920s have benefited the borrowing countries.

Next, it seems clear that excess borrowing on account of unduly high propensities to import has diminished. The rules of the game have been modified, if not on paper, then in practice. Independent borrowing countries, especially in underdeveloped areas, practise selective systems of import control on a large scale. The proportion of the imports of borrowing countries which could be replaced from home sources without reducing real consumption (or the rate of growth) has undoubtedly fallen.

Any decline of capital exports on this score since the 1920s or the nineteenth century must, by definition, also have helped growth in borrowing countries.

Thirdly, owing to the high levels of activity which have obtained in advanced countries since the War, excess borrowings due to shortfalls of exports resulting from less than full employment in the world at large have certainly been less than in the 1920s, and may also have been less than on the average of the late nineteenth century. Any declines of capital exports on this score have also helped growth in borrowing countries.

I have no wish to argue that the foregoing factors necessarily account for the whole decline of capital exports since 1913. It may well be that the inducement to invest outside the advanced industrial countries of the present day is less than was the corresponding inducement in nineteenth-century conditions. This is Professor Nurkse's theme in his 1954 *ECONOMIC JOURNAL* article. The question of the extent to which this may be true cannot, I think, be discussed without raising fundamental and unsettled problems of growth theory.

But to the extent that it really is true, the advanced industrial countries cannot be blamed for it.

9. It is quite possible that the advanced countries have never done more than they are doing now, to help growth in the rest of the world. It must be stressed that this suggestion relates to the amount of *actual* assistance being given to *actual* growth. It is made without prejudice to the wider, and very important question of how far potential growth in underdeveloped countries may be frustrated by mistaken advice pressed concerning the rules of the game they should follow. It seems impossible to discuss this question satisfactorily in the present state of the theory of economic development.

Increases in the sterling balances held by our colonies have sometimes been interpreted as providing evidence of the contrary, at least in relation to the areas concerned. It has been suggested that growth and capital accumulation in the colonial areas is hampered (while at the same time it is assisted in Great Britain) by these apparently perverse movements of capital. It can be seen from reasoning analogous to the above that neither of these things need be true. In colonial, as in other private-enterprise economies, it is easy to imagine circumstances in which their running current-account surpluses would assist their growth and development, while running import-surpluses could hamper it. It is necessary to show that colonial lending to Great Britain is "excess lending," before it can be criticised. Excess lending could be said to exist only to the extent that sterling balances in excess of minimum requirements were held in London while at the same time desirable and practicable investment (or consumption) projects were (for some inadequate reason) prevented from going forward in the colonies. In the nature of the case, the existence of such a situation cannot be demonstrated by reference to the size of the balances alone. But it is quite possible that some colonies do in fact suffer from both excess lending, and excess borrowing, simultaneously.¹

It also follows from the foregoing that it is not appropriate to define our targets for assisting development in the Commonwealth, and elsewhere, in terms of a *surplus* of, say, £300 million or any other amount of this kind. The attainment of this target, as announced by Mr. Butler, was to serve to reduce our debts and increase our reserves as well as to assist development abroad. A target in the form of a balance is meaningful in the context of aiming at the first two of these objectives, but not in relation to the third—except in our dealings with socialist economies. Most of the countries we would wish to assist would not be helped by cuts in our imports from them, or by expanding those of our exports to them which compete with their domestic industries.

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¹ See the cogent point made in this connection by Mr. A. D. Hazlewood in his article "The Economics of Colonial Monetary Arrangements," published in *Social and Economic Studies*, Institute of Social and Economic Research, University College of the West Indies, Vol. III, No. 34, p. 312.

AN INVESTIGATION INTO SOME ALLEGED CONTRADICTIONS IN WELFARE ECONOMICS¹

PROFESSOR HOGBEN, in the first chapter of his vastly entertaining book, *Mathematics for the Million*, tells of the mathematician Euler, who, before the court of Catherine the Great, challenged Diderot with the declaration, " $\frac{a+b^n}{n} = x$, donc Dieu existe—répondez!" Innocent of the language of mathematics, Diderot lost his nerve and left the court in mortification.

When Arrow's *Social Choice and Individual Values* first appeared in 1951 some of us, I fancy, must have felt, like Diderot, that we were being rather grossly imposed upon. Here was a parade of unfamiliar symbolism having all the earmarks of high rigour and thoroughness. And it followed—or so we were told by well-meaning colleagues—that welfare economics had ceased to exist. Any endeavour to construct a satisfactory social-welfare function was apparently doomed to dissolve into contradiction, an impression which seems to have persisted despite occasional attacks on Arrow's thesis.² This paper may be regarded as an endeavour to correct this impression and in particular to vindicate the New Welfare Economics by demonstrating that the alleged contradictions arise, in the last resort, from the acceptance by Arrow of propositions to which welfare economists have usually taken exception.³

We should be quite clear in our minds that Arrow's critique is not of the ordinary variety, and it may be useful to emphasize this by a brief review of the more familiar objections to an economic theory of welfare prior to fastening our attention on the relevant parts of Arrow's argument.

¹ I am indebted to S. A. Ozga of The London School of Economics for help in making this paper much more readable than it would otherwise have been.

² Some of these attacks have taken the form of modifying his conditions in order to admit interpersonal comparisons of utility. See for example, J. C. Weldon, "On the Problem of Social Welfare Functions," *Canadian Journal of Economics & Political Science*, 1952; Murray Kemp and A. Asimakopulos, "A Note on Social Welfare Functions and Cardinal Utility," *Canadian Journal of Economics & Political Science*, 1952; Clifford Hildreth, "Alternative Conditions for Social Orderings," *Econometrica*, 1953. Others have pursued a more philosophical approach; for example, I. M. D. Little, "Social Choice and Individual Values," *Journal of Political Economy*, 1952; Jerome Rothenberg, "Conditions for a Social Welfare Function," *Journal of Political Economy*, 1953; James M. Buchanan, "Social Choice, Democracy and Free Markets," *Journal of Political Economy*, 1954. Both types of paper, however, appear to have accepted the purely technical arguments which are being questioned here.

³ Arrow, it may be recalled, set himself the following problem: given the order in which each individual ranks all alternative social states, is there any rule by which we can formulate an ordering of these social states by society which satisfies apparently reasonable conditions. Chief among these conditions are: (i) positive association of social and individual values; (ii) independence of irrelevant alternatives (that is to say, if one alternative is removed from the environment the ranking of the remaining alternatives must not be affected); and (iii) the social-welfare function is not to be imposed either by custom or the individual. See Chapter III, *op. cit.*

I

The New Welfare Economics has always been exceptionally vulnerable to the attacks of those who continue to regard it as a body of doctrine to which policy decisions may be referred. If it is accepted, rather, as an attempt to construct a logical scaffolding, itself as free as possible from value judgments, but so fashioned that it can accommodate itself to various systems of values, some of these attacks are seen to have been misdirected. True, to make a start, the scaffolding had to be raised on some ethical foundation and, in the event, the one chosen was that which could fairly claim a wide consensus—that a situation in which one individual was better off and no individual was worse off was an improvement in welfare for the community. This, and no more, was to form the base of the New Welfare Economics. The vital question of distribution was to be left open to be determined by value judgments which might vary over time and in different place, and as between individuals at a particular time and place, while headway could be made in the logic by the device of hypothetical compensation.

If it is further acknowledged that the subject is still in its infancy we may take a more lenient view of its more obvious shortcomings. For instance, neither the existence of uncertainty nor of the interdependence of individual welfares has been integrated into the body of welfare economics, though we may look to the efforts of the future to achieve these desiderata. Other limitations, such as the inevitable change of tastes and of population over time, seem at present to be intrinsic and inescapable.¹

All this and perhaps more must be frankly acknowledged. And it is to be hoped that the acknowledgment will act as a stimulus rather than as a curb to further developments in welfare theory. Nothing in Arrow's thesis, however, reveals new and unsuspected difficulties for the New Welfare Economics. So far as I can see, no implicitly contradictory assumptions have come to light; no error in logic has been uncovered.

There are, notwithstanding, essential parts of Arrow's essay which seem on a first reading to divulge inherent contradictions in welfare economics. In particular, I am thinking of his Chapter IV on "The Compensation Principle" and his Chapter V on "The General Possibility Theorem," which impel him to the negative conclusion that the only satisfactory (non-contradictory) methods of passing from individual to social choice are imposed or dictatorial.² An examination of the arguments of these two chapters immediately follows.

¹ Nevertheless, it is consoling to believe that in certain fields of investigation where changes in tastes and interdependent welfares have limited relevance, the theory has some applicability. Indeed, it would be shameful if it were otherwise, since a great deal of applied welfare economics is written into recommendations and reports, both national and international, which apparently carries weight under the guise of economic expertise.

² *Op. cit.*, p. 59.

II

After an extensive discussion of the Compensation Principle in his Chapter IV, Arrow takes issue with it. "We shall show by means of an example," he says,¹ "that Scitovsky indifference is not transitive and hence that the Scitovsky compensation principle is not a social welfare function satisfying Condition 1."²

Now Scitovsky illustrates the possibility of the compensation principle yielding apparently contradictory results with the aid of community indifference curves which have the property that the rates of substitution between pairs of goods are the same for each individual.³ This property is not made explicit in Arrow's Table,⁴ and since there is nothing to inform us to the contrary, I assume that the rate of substitution of commodity one for commodity two differs in any situation for the two individuals.⁵ Nevertheless, we can quite easily translate the intent of Arrow's argument into the language of Scitovsky without any injustice to the former.

The three curves in the diagram are community indifference curves. The intersection of I_1 and I_2 reveals that some individuals on I_2 are better off and others are worse off than on I_1 . We define a community indifference curve I'_2 as comparable with I_2 if the combination of goods at any point along the curve I'_2 is so distributed that either (i) each individual is as well or better off than he is on I_2 or (ii) each individual is no better off or is worse off than he is on I_2 . Thus a comparable curve I'_2 passing through x (not shown in the diagram) will be at all points to the right and above I_2 . On the compensation principle, then, x is preferred to y .

We can now construct a curve I'_1 (not shown in the diagram) passing through y and comparable with I_1 . Since at all points this will be above and to the right of I_1 , y is preferred to x on the compensation principle. If x is preferred to y and y is preferred to x , then, says Arrow, if we used the

¹ *Op. cit.*, p. 44.

² His Condition 1 states that the social-welfare function is defined for every admissible pair of individual orderings (*op. cit.*, p. 24).

³ T. de Scitovsky, "A Reconsideration of the Theory of Tariffs," *Review of Economic Studies*, Volume 9, 1942.

⁴ *Op. cit.*, p. 44.

⁵ If I am right, then the sort of contradiction which Arrow discusses can be demonstrated with the familiar box diagram, in which the quantities of commodities one and two are to be divided between two individuals. It can arise only when the distributions being compared exclude those represented by the contract curve. For, on the Compensation Principle, any distribution represented by a point on the contract curve is unambiguously potentially superior to any point off the contract curve inasmuch as by moving along the contract curve—by a redistribution of the product between the two individuals while maintaining at any point the same rate of substitution for each—both individuals can be made better off than they would be at any point which is not on the contract curve.

The more significant case, as seen by Scitovsky, arises when this exchange optimum between the individuals already obtains (by definition of his community indifference curves). The contradiction then manifests itself in the choice by the community of different bundles of goods.

Scitovsky convention we must say the community is indifferent as between x and y .

The same argument may now be used to demonstrate that the community is indifferent as between y and z .

If x is indifferent with y , and y indifferent with z , transitivity entails that x and z are indifferent. Yet it is clear from the diagram, z being to the north-east of x , that z is unambiguously (potentially) superior to x : each individual in situation z could have more of each good than he has in situation x . Since the community cannot at the same time be indifferent as between x and z and prefer z to x , we are led into contradiction by accepting Scitovsky's indifference as transitive.

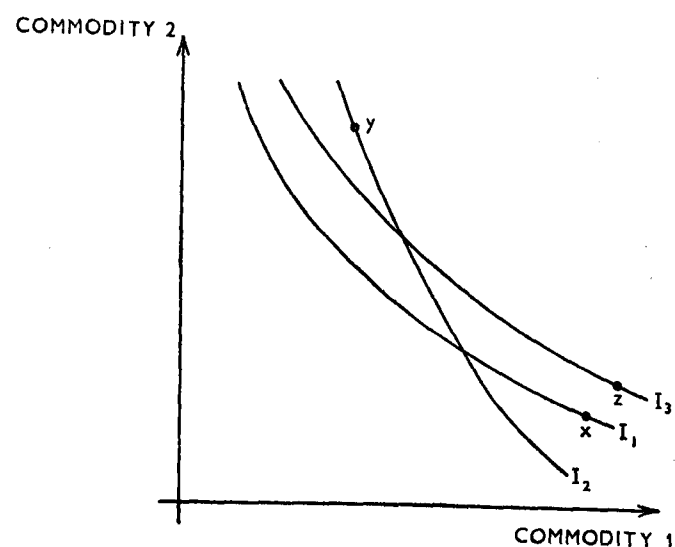


FIG. 1

This result should hardly surprise us. If you begin with a contradiction, open or hidden, and call it by another name, say "indifference," by appropriate inferences you will arrive at a contradictory conclusion. All that Arrow succeeds in demonstrating, then, is that if you call a contradiction by another name its contradictory character remains.

Of course, he may point out that Scitovsky himself appended the term "indifference" to this paradoxical situation. But if he did so,¹ then he

¹ To quote Scitovsky, *loc. cit.*, pp. 94-5, "If [the community indifference curves through two given situations] intersect, . . . according to our convention we must regard the two situations as equally good."

It does appear that Scitovsky is regarding I and II as equally desirable in circumstances where there appears to be a contradiction. But it may be doubted whether he would have agreed to remain indifferent between them with a view to forming a welfare function. So far as I know, no welfare propositions have been advanced which makes use of this notion of indifference as a transitive relation. In this instance at least it seems that Arrow has been attacking a straw man.

had no right to. And in an impartial re-appraisal of welfare propositions Arrow was not obliged to follow his malpractice.

Nonetheless, the nature of the apparent contradiction first pointed out by Scitovsky¹ can be made intelligible. Let I and II in Fig. 2 be alternative product aggregates facing a community of two individuals, II containing a little more of X and a little less of Y than I . If the rectangle indicated by OI is regarded as the familiar box diagram, ORI are points on the contract curve for the two individuals, with R denoting the existing division between them of the product I . In a like manner, $OSII$ are three

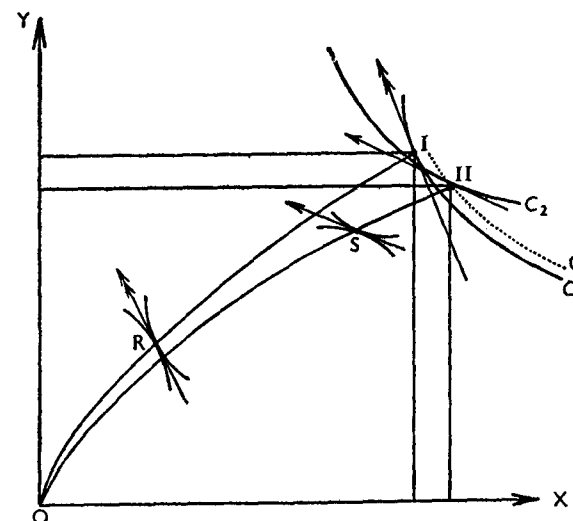


FIG. 2

points on the II contract curve with S as the resulting division of II between the individuals whenever II is reached.

The community indifference curve C_1 , representing a proper summation² of the two individual indifference curves touching at R , passes through I at an angle parallel to that of their mutual tangency at R , which means that the distribution at R uniquely determines the rate of substitution for each individual in the community. In Fig. 2 the angle at which C_1 passes through I is steep—suggesting a high marginal valuation of X relative to Y —so that C_1 will almost certainly pass below II . If, as in Fig. 2, it does so we may construct C'_1 comparable with and above C_1 to pass through the point II . On our definition of comparability C'_1 is a community indifference curve along which one or both of the individuals are better

¹ "A Note on Welfare Propositions in Economics," *Review of Economic Studies*, Vol. 9, 1941.

² For a simple geometrical derivation of community indifference curves from individual indifference curves, see part iv of my paper, "The Principle of Compensation Reconsidered," *Journal of Political Economy*, 1952.

off, neither being worse off. Hence a movement to II is a potential improvement in that with the product II the community as a whole can be made better off.

In a strictly analogous fashion, beginning now with the II product and its accompanying distribution at S , we generate a community indifference curve C_2 to summarise the individual indifference curves which touch at S . C_2 passes through II at an angle parallel to that of the mutual tangency at S , an angle less steep than that at which C_1 passes through I in order to suggest a high marginal valuation of Y relative to X . C_2 therefore passes below I , the implication being that for the new relative valuations of X and Y the community as a whole could be made better off with the I product. Once we recognise the connection between distribution and relative product prices the apparent paradox transpires to be a by-product of a very familiar phenomenon.

We can, of course, always obtain a non-contradictable result by accepting a particular distribution of welfare as more worthy of consideration than any other. If we take this course, however, we are introducing an additional and, possibly, much less widely acceptable value judgment into the theory. If, on the other hand, we continue to restrict ourselves to potential improvements only, we are required to demonstrate that for all conceivable distributions of welfare II appears superior to I . Only if we can show this satisfactorily can we say that II is unambiguously superior to I . If we cannot show this satisfactorily we are not compelled to say anything. We are permitted to be modest and to say that on the basis of our criterion nothing may be inferred about the relative desirability of the two situations.

If we agree to say nothing when the application of hypothetical compensation criteria issues in an apparent contradiction the example above resolves itself in the following fashion: on the basis of hypothetical compensation neither x and y are comparable situations nor are y and z . Only x and z are comparable, since for all conceivable distributions—for all comparable pairs of community indifference curves passing through x and z — z will be unambiguously potentially superior to x .

III

In considering Arrow's Possibility Theorem we begin with a perusal of his prior Consequence 3, for it is at this point that the "contradiction" is, so to speak, fed into the machine to emerge again as a contradictory conclusion in the theorem.

In its simplest form Consequence 3 states¹ that if the two individuals comprising society have exactly opposing interests in the choice between

¹ *Op. cit.*, p. 50.

two given alternatives, then society will be indifferent between the alternatives. In Arrow's notation, if xP_1y and yP_2x , then xIy .¹

His proof of this consequence proceeds by a *reductio ad absurdum*. That is, he supposes the consequence is false so that we must conclude either xPy or yPx , but not xIy . Arrow goes on to show that the adoption of either xPy or yPx lead to propositions which are unacceptable.²

Following the proof of Consequence 3 comes the simple Possibility Theorem.³ Individual 1 has the ordering x, y, z while individual 2 has the ordering z, x, y .

Since for both individuals x is preferred to y , then

$$xPy \quad \dots \dots \dots (1)$$

Further, since yP_1z and zP_2y , then (from Consequence 3)

$$yIz \quad \dots \dots \dots (2)$$

From (1) and (2) it follows that

$$xPz \quad \dots \dots \dots (3)$$

But xP_1z and zP_2x and therefore (from Consequence 3)

$$xIz \quad \dots \dots \dots (4)$$

Obviously (3) and (4) are not compatible. Arrow concludes from this that the assumption that there is a social-welfare function compatible with his reasonable conditions has led to a contradiction.

The first thing to take issue with here is, again, the notion of indifference emerging from Consequence 3. From Arrow's proof showing that x cannot be collectively preferred to y , nor y collectively preferred to x , the conclusion that x and y are treated indifferently by society follows only if we are constrained to order the two alternatives for society in one of three ways: xPy , yPx , or xIy .

¹ The argument can occasionally be abbreviated by following Arrow's use of symbols. $x, y, z, \dots$ are alternative social states (more particularly in the arguments which follow, alternative collections of goods). xPy means x is preferred to y , xIy means x "is indifferent to" y , and xRy means x is indifferent or preferred to y — R being sometimes referred to as a "weak ordering."

The subscripts refer to the individual; hence, xP_1y and yP_2x is to be translated: individual 1 prefers x to y and individual 2 prefers y to x . The absence of a subscript indicates the preference of society as a whole. Thus xIy means that society as a whole is indifferent as between the alternatives x and y .

² The proof of this consequence (*op. cit.*, p. 50) in brief takes the following form. Given that the ordering of the first individual is x, y, z , and that of the second individual is y, z, x , we have xP_1y and yP_2x , and therefore, by supposition, xPy . Since, in addition, both individuals prefer y to z , it follows that xPz . Hence it follows that when xP_1z and zP_2x , xPz .

Now by changing the given orderings of the two individuals so as to make use of a preceding deduction of this kind, Arrow derives a series of such deductions or propositions, all of which make it apparent that society's preferences coincide exactly with those of the first individual. Consequently, on Arrow's definition (p. 30), the first individual is a dictator. But this is prohibited by his Condition 5, which states that the social-welfare function is not to be dictatorial. In an analogous fashion, by initially supposing that yPx when xP_1y and yP_2x , the second individual is made to appear a dictator.

Hence, if in these circumstances neither xPy nor yPx is admissible, then, according to Arrow, Consequence 3 is proved.

³ *Op. cit.*, p. 51.

In fact, in his Axiom 1¹ Arrow lays it down that one of these three relationships must exist between any two alternatives. Axiom 1 states that for all x and y , either xRy or yRx ; i.e., either x is preferred to y or indifferent to y , or y is preferred to x (or indifferent to x). No welfare economist would deny the application of this axiom to the *individual*. But most of us, I think, would not agree to have the axiom apply to the *community* on the grounds that there may arise occasions when, say, the application of the method of hypothetical compensation does not yield an unambiguous result independent of the distribution of welfare among the individuals. For, as we have pointed out, the relative valuations of the goods themselves depend on this distribution. The traditional response to such a situation, Scitovsky notwithstanding, is to remain uncommitted—the method has its limitations. If this much is granted, we should surely remain uncommitted to any social ordering when the interests of the individuals are opposed to one another.

Secondly, if, for argument's sake, we agreed to say xIy whenever xP_1y and yP_2x , we must not go farther than that. We cannot agree, that is, to conferring upon this sort of "indifference" the status of a transitive relation, any more than we could in the Scitovsky contradiction which we discussed in Part II. Again, however, we should part company with Arrow for all his ordering relations, whether individual or social, are declared to be transitive in Axiom II, which states² that for all x, y and z , xRy and yRz imply xRz . This is acceptable enough for the individual. It is acceptable for society only if we substitute for R the symbol R_i ; i.e., if for each individual i , xR_iy and yR_iz , then xR_iz .³ This is essentially the cautious ethic at the base of the New Welfare Economics and rules out any transitive xIy other than that for each individual i , xI_iy .

In the absence of this stringent condition we can treat xIy as a transitive relation when xP_1y and yP_2x only if we accept the possibility of interpersonal comparisons of individual welfare⁴ and if, also, a certain consistency con-

¹ *Op. cit.*, p. 13.

² *Op. cit.*, p. 13.

³ Pretty much the same idea is expressed in Bergson's *Fundamental Value Proposition of Individual Preferences*, which states that as between two alternatives between which all but one individual are indifferent the community will prefer one above the other or be indifferent as between the two according as that one individual prefers one over the other or is indifferent as between the two. See A. Bergson, "A Reformulation of Certain Aspects of Welfare Economics," *Quarterly Journal of Economics*, February 1938.

⁴ Though he explicitly rejects measurable utility and interpersonal comparisons in his search for a satisfactory social-welfare function (*op. cit.*, pp. 9–11), Arrow later on (*op. cit.*, pp. 78–80) investigates the method of majority decisions. With some limitations (single peaked preferences; the number of individuals is odd) he finds that this method satisfies his conditions. But the method of majority decision—even where limited so as to avoid the possibility of contradiction—surely entails interpersonal comparisons. If one thousand individuals vote for x rather than y and one thousand and one individuals vote for y rather than x , the majority decision in favour of y implies yPx only if: (i) we aim to maximise utility, and (ii) the choice of any individual has equal utility with that of any other.

dition is fulfilled, a condition violated by Arrow's example. The condition for interpersonal comparisons to be consistent can be illustrated as follows. If individual 1 prefers y to z and individual 2 prefers z to y , we may legitimately conclude yIz : (i) if we seek to maximise the sum of the individual utilities, and (ii) if the difference in utility between having y and having z is the same (though opposite in sign) for the two individuals. This difference in utility between y and z , exactly equal for the two individuals, may be denoted by U_{yz} . Similarly, if individual 1 prefers x to z and individual 2 prefers z to x , we may infer xIz : (i) if we aim to maximise the sum of the individual utilities, and (ii) if the difference in utility between having x and having z is the same (though opposite in sign) for the two individuals. This difference in utility is denoted by U_{xz} .

Since these two utility differences are for each individual the same, for both of them U_{yz} is greater than, equal to or less than U_{xz} (ignoring the signs). Any ordering of the three alternatives x, y and z by each individual must not contradict this consistency condition. For example, the condition would be violated if for one individual U_{yz} were greater than U_{xz} and for the other individual U_{yz} were less than or equal to U_{xz} , and any inference of social indifference between the alternatives from the opposed interests of the two individuals is illegitimate and must lead to a contradiction.

Now in the proof of Arrow's Possibility Theorem individual 1 has the ordering x, y, z , which implies U_{xz} is greater than U_{yz} . If we are to infer from the two individual orderings that xIz and yIz , then this condition— U_{xz} greater than U_{yz} —must also hold for the ordering of individual 2, which means that as the first individual prefers y to z and x to y the other individual must prefer z to y and y to x . The only possible ordering for individual 2 is therefore z, y, x . From these two individual orderings no contradiction would arise. Using Arrow's Consequence 3, it would follow from them: (i) that yIz , and (ii) that xIz , whence xIy . And xIy also follows direct from these individual orderings.

Arrow, however, does not use the ordering z, y, x for the second individual, but instead uses an ordering z, x, y . Therefore, while for the first individual U_{xz} is greater than U_{yz} , for the second individual U_{xz} is smaller than U_{yz} . Consequently, xIz and yIz may not be inferred from these orderings without contradiction—the contradiction which emerges in the conclusion of the possibility theorem.

Of course, Arrow would not have us make interpersonal comparisons of welfare in deriving a social-welfare function. But if its use is implied in this concept of social indifference—and it should be implied if "social indifference" is to be regarded as a transitive relation when the individual orderings differ—it would be an unwarranted criticism of any welfare theory which does admit interpersonal comparisons that its use necessarily leads to contradictions.

IV

Arrow interprets his Possibility Theorem as stating :

*"If we exclude the possibility of interpersonal comparisons of utility, then the only methods of passing from individual tastes to social preferences which will be satisfactory and which will be defined for a wide range of sets of individual orderings are either imposed or dictatorial."*¹

In view of the arguments presented in this paper this conclusion no longer appears to be tenable. If we wish to derive a social ordering having the usual properties of rationality ascribed to individual orderings, only a "weak" unanimity of individual orderings can serve us without inconsistency. We shall say—and this, of course, is the ethical base of the New Welfare Economics— xPy if and only if xR_iy for all i , and xPy for at least one individual. There is, then, to be no question of applying to society as a whole propositions such as Arrow's Axiom I which are acceptable only for the individual unless we admit into our theory of welfare interpersonal comparisons.

If, on the other hand, we prefer to advance the logic of welfare propositions while remaining neutral in the matter of distribution, and therefore have recourse to the device of hypothetical compensation, we must recognise a serious limitation: the possibility of apparent contradiction arising when we base a comparison of two situations on alternative distributions of welfare. Indeed, as already pointed out, it is only when for all conceivable distributions of welfare one situation appears consistently superior to the other may we say that it is potentially superior for society as a whole.

Thus whenever the employment of the device of hypothetical compensation yields contradictory results, or whenever the community is (evenly) divided in its choice, we must not be lured into attaching to either circumstance the notion of "indifference," certainly not a transitive "indifference." If we grant this limitation, accepting as valid only unambiguous potential improvements in the community's welfare, we may continue our investigations into the logic of the subject along the path pioneered by Kaldor, Hicks, Scitovsky, Samuelson and others.

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¹ *Op. cit.*, p. 59. Italics in the original.

THE MICRO-FOUNDATIONS OF AGGREGATE DEMAND AND SUPPLY

THIS article attempts to construct an aggregate supply function without reference to what Keynes "really" meant. Unlike recent contributions to the *Economic Journal*,¹ it foregoes the attempt to link the concept, in detail and with supporting references, to Keynes. While discretion replaces valour, it remains beyond dispute that the very discussion must acknowledge the *General Theory* as the source and inspiration.

I should like to elaborate the concept of aggregate supply as consisting of a schedule of money proceeds linked to employment, listed as case (iii)-(a) by Professor Robertson in his scheme of possible relationships.² Also, the concomitant concept of aggregate demand running in money rather than real terms, which has tended to become obscured in the concentration upon supply functions, can then be delineated,³ while for both functions it is possible to do more to reveal their micro-economic foundations than has been the case in the series of papers. Although the objective here is primarily a concern with fundamentals, at another place I have applied the ideas toward the formulation of a determinate theory of money wages.⁴ Interestingly, on the interpretation of aggregate demand and supply to be offered, the concept of "forced savings," which seems to have been hidden in the shadows since Keynes wrote, can be restored quite naturally into the scheme of things as a valid and commonplace phenomenon, and not just operative after full employment obtains.

To facilitate the inquiry the following assumptions are made: (1) the labour force is a homogeneous class; (2) the stock of equipment is constant; (3) factor prices, particularly the money wage-rate, are given; (4) the production functions or labour-productivity relations for each product are known; (5) each firm is fully integrated; (6) each firm operates in a purely competitive setting and is animated by motives of profit maximisation. These assumptions are not uncommon in macro-economics.

¹ F. J. De Jong, "Supply Functions in Keynesian Economics," *Economic Journal*, March 1954; "Comment and Rejoinder," by R. G. Hawtrey and De Jong, December 1954; "Comments," by Sir Dennis Robertson and H. G. Johnson, and "Rejoinder," by De Jong, September 1955; "A Further Note," by Hawtrey, "Two Comments," by Sir Dennis, and "A Third Rejoinder," by De Jong, September 1956.

² Robertson, September 1955, p. 475.

³ Almost paradoxically, most of the discussion was concerned with the construction of the aggregate supply function, which is, I think, intuitively clearer than that of aggregate demand for the reason that it is possible to draw independent simultaneous supply curves for each industry and impossible to draw simultaneous demand curves, for each of the latter require, as a precondition, a knowledge of ruling prices in other industries.

⁴ "A Macroeconomic Approach to the Theory of Wages," *American Economic Review*, December 1956.

I. AGGREGATE SUPPLY

In Fig. 1 (a) amounts of employment are measured horizontally and sums of money appear vertically. The Z -function, as drawn and lettered Z' , relates employment (N) to proceeds (Z) and represents aggregate supply or aggregate proceeds; it associates amounts of N to expected Z -sums in the sense that each expected proceeds level generates a particular amount of employment. Symbolically, $N = N(Z)$, with the inverse function $Z = Z(N)$.

Suppositions identical to those embodied in Z are at the bottom of the industry supply curve, which connects output and (expected or hypothetical) market price rather than industry proceeds, containing the latter totals implicitly. Whereas the industry supply curve is confined to a single commodity while the Z -function encompasses the global product mass, still the one proposition correctly extended necessarily embraces the other. At the level of individual industries each Z -sum is equivalent to the multiple of supply price times the associated output quantity, summated over all

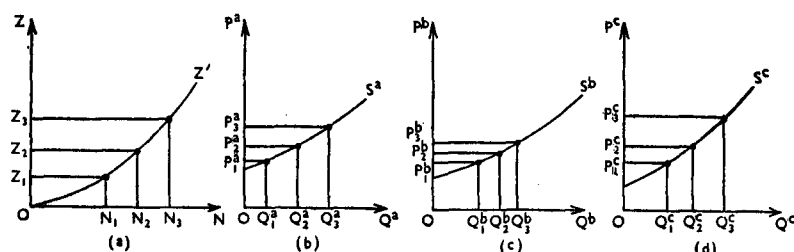


FIG. 1

industries and related to the amount of employment implicit in the particular output totals. In principle, Z will be a unique function if the industry supply curves are determinate and if the distribution of proceeds, for each expected aggregate volume of proceeds, is determinate.

Diagrammatically, the proceeds function Z' appears in Fig. 1 (a), while supply curves for industries A, B and C, as illustrative of all industries, are drawn in Figs. 1 (b), (c), (d) respectively. When aggregate proceeds of Z_1 are expected, in the light of the estimated configuration of demand the output will be distributed among industries in amounts Q_1^a , Q_1^b and Q_1^c . With proceeds expected to be Z_2 , the corresponding outputs will be Q_2^a , Q_2^b , Q_2^c , etc. Expected proceeds in each industry, when Z_1 is expected in the economy, would equal $P_1^a Q_1^a$, $P_1^b Q_1^b$ and $P_1^c Q_1^c$, and totalling Z_1 of course.¹ Thus over n -industries, when proceeds are expected to be Z_r , we have $Z_r = \sum_{i=1}^n P_i^r Q_i^r$.

¹ Thus the same profit sums which are embodied in the respective supply curves are embedded in the Z -function. If the analysis is interpreted as "short-period," then the implicit profits are "short-period" residual sums rather than "normal" profits. This, the former, is the interpretation given by Sir Dennis. Cf. "Comment," September 1955, p. 474; also De Jong, *ibid.* 1954, pp. 17-18.

Each output volume entails a precise volume of employment within the individual firms comprising the industry, determined by the given factor productivities and the ruling factor prices. Thus the total employment N_r accompanying proceeds Z_r is determined through the following (inverse) productivity equations:

$$N_r^a = f(Q_r^a), N_r^b = f(Q_r^b), \dots, N_r^n = f(Q_r^n) \quad (1)$$

$$N_r = \sum_{i=1}^n N_r^i \quad (2)$$

Actually, each point on Z is tantamount to the premise of constant gross income; what is presumed, then, is that at each income level, in the light of cost and expected demand phenomena, the configuration of output is determinate and that thereby the volume of employment can be ascertained. Movement along Z involves varying income phenomena and an accompanying employment displacement, with output changes being implicit. It appears that the chief characteristic of the Z -function is that greater employment awaits an expectation of greater proceeds: the functional connection is positive in nature. Furthermore, when the anticipated proceeds are zero, employment will be nil, so that, in diagrammatic terms, the Z -function will emanate from the zero origin.

Some further aspects of Z ought also be noted. On a simple distributive scheme each level of Z -proceeds, either in anticipation or after realisation, may be conceived to be allocated as follows:¹

$$Z = wN + F + R \quad (3)$$

where w denotes the given wage-rate, F , the volume of fixed payments (assumed invariant in the light of the fixity of the stock of equipment and the short-period nature of the analysis) and R , the residual, a catch-all category termed "profits," though it can obviously be decomposed into depreciation allowances, indirect taxes, variable interest charges, etc., as well as profits-proper. It follows that moving along Z , when money wages are constant and employment increases, then:

$$\frac{\Delta Z}{\Delta N} = w + \frac{\Delta R}{\Delta N} \quad (4)$$

According to (4), the increment of expected proceeds, when employment rises by one unit, will be divided between the wage payment and the profit increment. Formula (4), which expresses the slope of Z , may be referred

¹ I have developed these ideas at more length in "An Alternative Approach to the Theory of Distribution," which I hope to have published in the near future.

to as the *aggregate marginal proceeds or supply price*, for it reveals the necessary increment in proceeds to induce an expansion of employment by one unit.¹

Equation (3) leads to some further diagrammatic decomposition of the Z -function. For example, the wage-bill ($W = wN$) accompanying each (N, Z) level can be shown by a curve such as W in Fig. 2. With the money wage constant, then the slope of W is equal to the going money wage.

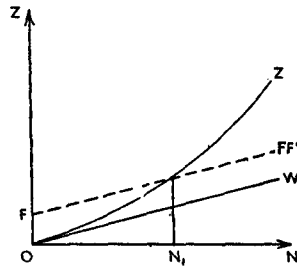


FIG. 2

Firms are also committed to making certain fixed payments (F) over short periods of time. These are generally comprised of contractual salaries, rents and interest charges on indebtedness previously incurred. These payments are shown in Fig. 2 by the dashed line FF' , which is drawn to exceed W by the absolute sum of the fixed charges: the $(Z-F)$ difference denotes

¹ It is possible to derive this relation in a way which puts greater stress upon productivity phenomena. For example, the necessary increment in aggregate proceeds required to accommodate an increment in employment in industry- i would be given by:

$$\frac{\partial Z_i}{\partial Q_i} \frac{\partial Q_i}{\partial N_i} = \frac{\partial (P_i Q_i)}{\partial Q_i} \frac{\partial Q_i}{\partial N_i} = P_i \frac{\partial Q_i}{\partial N_i} + Q_i \frac{\partial P_i}{\partial Q_i} \frac{\partial Q_i}{\partial N_i} \quad (5)$$

This follows inasmuch as at the industry level $Z_i = P_i Q_i$. Taking industry- i as participating in a general employment expansion, a term such as $\partial N_i / \partial N$, representing a weighting factor, must also appear in (5). Over the entire economy we can write:

$$\frac{dZ}{dN} = \sum_{i=1}^n \left(P_i \frac{\partial Q_i}{\partial N_i} + Q_i \frac{\partial P_i}{\partial Q_i} \frac{\partial Q_i}{\partial N_i} \right) \frac{dN_i}{dN} \quad (6)$$

The formula bears an obvious family resemblance to the marginal-revenue concept, or better, to the marginal cost as seen by the buyer under monopsony, inasmuch as the second term is positive. By slight transformations, multiplying the first term on the right by Q_i/Q_i and N_i/N_i , and the second term by P_i/P_i , and remembering that $P_i(dQ_i/dN_i) = w$, the relation can be written in terms of the elasticity of supply [$E_{si} = (P_i/Q_i)(dQ_i/dP_i)$] and the elasticity of productivity [$E_{pi} = (N_i dQ_i/Q_i dN_i)$], thus:

$$\frac{dZ}{dN} = \sum_{i=1}^n \left(E_{pi} \frac{Z_i}{N_i} + \frac{w}{E_{si}} \right) \frac{dN_i}{dN} \quad (7)$$

Formula (7) is the form of the aggregate marginal supply price pertinent under pure competition; a term would have to be added under monopoly to reflect the degree of monopoly power. The increment in proceeds required by entrepreneurs to validate the production advance is dependent positively on the elasticity of productivity and on the reciprocal of the elasticity of supply. An $E_{pi} = 1$ is likely to mean an infinite E_{si} , so that the ΔZ magnitude is restrained. With diminishing returns, $E_{pi} < 1$, so that the E_{si} value figures more prominently in the result. As $E_{pi} \rightarrow 0$, then $E_{si} \rightarrow \infty$, so that ΔZ mounts sharply to infinite values. In each particular firm and industry the values of E_{pi} and E_{si} are weighted by the importance of their employment expansion to the total employment movement (dN_i/dN). Elasticities in large firms are thus likely to dominate the final result.

"profits." Until employment ON_1 rules, losses abound, in sum equal to the excess of the FF' values over the Z -magnitudes. Ordinarily, therefore, output positions below ON_1 can be neglected for these are veritable wholesale bankruptcy areas; output and employment can settle in this range only temporarily, viewing the economy as a whole, before impelling a write-off and scaling-down of fixed claims.

An elasticity for Z , written E_z , can be defined in the usual way. From (3) and (4), with money wages constant, it can be shown to equal:

$$E_z = \frac{Z}{N} \frac{dN}{dZ} = \frac{w + (F + R)/N}{w + dR/dN} > 1 \quad (8)$$

Hence if dR/dN , which denotes the marginal rate of profits in the case of an expansion of N with w constant, is greater than the average rate of fixed income and profits per unit of employment, then $E_z < 1$. This ought to be the typical pattern after fixed incomes become unimportant relative to the volume of employment.¹

Graphically E_z can be measured in the same way as the elasticity of supply; a tangent emanating from (positive) values on the vertical axis to a point on Z would denote an $E_z > 1$, while vectors from the (positive) horizontal axis would convey inelastic points. Where the tangent to the curve ran through the origin E_z would be exactly unity. Elastic values would imply that a 1% rise in proceeds fostered a rise in employment in excess of 1%; this is what we might expect only if increasing returns prevailed generally over industry. With decreasing marginal products the elasticity will generally be below unity, while with constant returns it would be exactly unity. A zero elasticity, signifying a vertical Z -slope, would suggest perfectly inelastic supply with employment and output unresponsive to a proceeds augmentation. If E_z falls constantly as employment expands, the inference is of continuous diminishing returns phenomena.² A linear Z -

¹ If an attempt to measure E_z directly in terms of productivity is made, complications arise. Consider the case of $E_z = 1$. Then, at the industry level, $Z = PQ$ and $dZ = PdQ + QdP$. So:

$$\frac{Q}{N} = \frac{dQ}{dN} + \frac{QdP}{PdQ dN} \quad (9)$$

Q/N is, of course, the average product of labour and dQ/dN is the marginal product. Thus even in the simple case where $E_z = 1$, either the second term on the right can be zero, with marginal and average product equal, or it can be negative with the marginal product of labor being greater than the average product. The last relation can be eliminated by virtue of the competitive hypothesis, but it indicates an element of murkiness for the cases of $E_z \geq 1$.

Writing A for average product of labour, M for marginal product and E_s for the elasticity of supply, then (9) becomes:

$$A = M \left(1 + \frac{1}{E_s} \right) \quad (10)$$

Clearly, A can equal M if $E_s = \infty$ or if $M > A$ and $E_s < 0$, as with falling supply price. For $E_s = \infty$, supply price will be constant.

² In this case, $\frac{d^2 N}{dZ^2} < 0$.

function, remembering that Z must stem from the origin, would suggest constant marginal products.

II. AGGREGATE DEMAND

We now consider the concept of aggregate demand (D) for use in conjunction with the aggregate supply function. Despite the copious writings on the consumption function (D_c) there is little that is immediately useful for our purposes, inasmuch as we have chosen to work in money terms with price-level changes being an essential ingredient of D_c at each (N, Z) position. Practically all writings on the consumption function have been conducted in real terms, to the neglect of price changes.

It will facilitate understanding if first we outline the concept of the aggregate demand price, involving a study of the micro-economic functions of D_c .

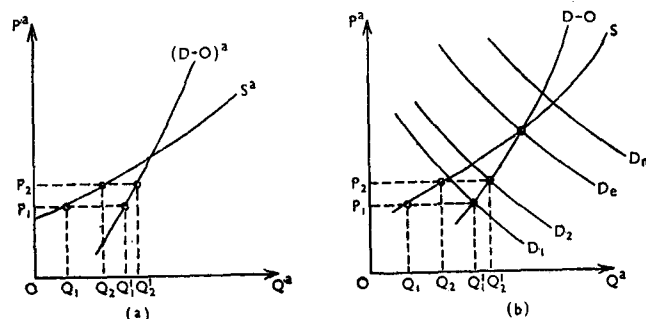


FIG. 3

and investment (D_i) and government demand (D_g), comprising aggregate demand (D) in a closed economy.

In Fig. 3 (a), the ordinary supply curve for industry A is drawn and lettered S^a . At price P_1 the supply quantity is Q_1 , so that the aggregate supply price required by industry A to produce Q_1 and hire labour in amount N_1 is $Z_1 = P_1 Q_1$. At P_2 , $Z_2 = P_2 Q_2$, etc. Although the supply curve for A alone is drawn, the same expectation of proceeds that evoked Q_1^a in A must be conceived to impel output of Q_1^b in B, Q_1^c in C, . . . etc.

At the supply price P_1 , however, the demand quantity may be Q_1' : thus the aggregate intended demand outlay at P_1 is $D_1 = P_1 Q_1'$. The latter sum will be the *intended*¹ outlay, therefore, when employment is N_1 in A, even though the *expected* or *required* proceeds for A is Z_1 . Likewise, at P_2 , $D_2 = P_2 Q_2'$. In this way the appropriate *demand-outlay* function for industry A, based on rising output in A and associated outputs in B, C, . . . , together with rising factor income payments through the economy, can be derived. Connecting the desired demand-quantities at the respective industry supply prices yields the continuous $D-O$ curve. From the latter,

¹ Or the *actual* outlay when employment is N_1 if inventory disinvestment occurs.

at each supply price, and implicit (N, Z) point, the appropriate aggregate demand price—the D -points—can be obtained. Over the entire economy, given the expected proceeds and the associated employment and outputs, and selecting the supply prices as (virtually) ruling in the market, the accompanying aggregate demand outlay that would evolve at the self-same supply prices can then be ascertained.

Essentially, the $D-O$ curve is extracted from a family of Marshallian-industry demand curves, each drawn on the assumption of constant money income. As output, employment and aggregate factor incomes vary, say when production expands from Q_1 to Q_2 for industry A in Fig. 3 (a), the industry demand curve moves up from D_1 to D_2 in Fig. 3 (b), so that the particular demand quantity at price P_2 is found on D_2 , rather than on D_1 . In so far as $D-O$ is steeper than S , an ultimate equilibrium is possible; this will be considered shortly. We examine now the factors governing the $D-O$ curves in individual industries and, by extension, over the entire economy. From what has been said it should be apparent, however, that embedded in each point on the aggregate demand function (D) will be the same prices that are found in Z at corresponding N -points. It is the excess or deficiency of $(D-Z)$, or aggregate excess (or deficiency) in demand quantity as against supply quantity, that motivates expansory or contractionist behaviour on the part of business firms.

Personal Income and the Consumption Function. While the equation $Z = wN + F + R$ describes the allocation of proceeds among major income categories at each employment position, when we consider consumption, inasmuch as some profits are withheld (which is inevitable, for the R -term contains depreciation allowances as well as profits-proper) and as personal income is subject to tax while some individuals receive transfer payments from government, then the personal income available for consumer purchases need not equal Z . A function of disposable personal income (Y_d), such as the following, is more pertinent for describing the factor earnings available for consumption outlay:

$$Y_d = wN + F + kR + (T_t - T_x) \quad (11)$$

The T_x -term denotes the reduction of personal incomes through the progressive income-tax structure,¹ while T_t is meant to represent all transfer incomes, such as unemployment relief, old age pensions, veterans' benefits, charitable aids, government interest payments, etc. The term k is used to signify that only a fraction of profits are actually disbursed as income. Through the presence of wN and R , $Y_d = Y_d(Z)$, where $Z = Z(N)$.

Consumption outlays (D_c) depend primarily upon the Y_d payments.

¹ Greater clarity, at the price of more detail, could be obtained by writing separate personal income-tax terms for wage-earners, rentiers and dividend recipients. With money wages constant the proportionate tax-bill of wage-earners will be constant, though the tax total will rise as N increases. Rentiers will pay a constant tax-sum while profit-recipients will pay an increasing bill at a higher tax rate.

For some individuals, however, consumption outlays exceed their personal income, which may be nil; in their case D_c is linked to dissaving out of their personal wealth or asset holdings (A). Functionally, then:¹

$$D_c = cY_d + \lambda A \quad . \quad . \quad . \quad (12)$$

where c denotes the average propensity to consume out of personal income, while λ is inserted in cognisance of dissaving phenomena. As we shall note, λA depends in part on Y_d , so that we could write $D_c = C(Y_d)$, from which we could, if we knew the form of equation, derive the marginal and average propensity to consume.

Consider first the consumption outlays of rentiers (D_c^f) drawing a fixed income (after taxes). In Fig. 4 (a) their earnings are represented by FF' .

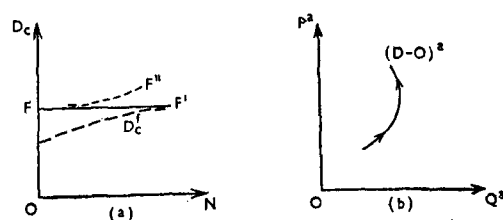


FIG. 4

As employment and proceeds mount, and prices go higher, rentier real income and real saving were likely to suffer: in an effort to maintain their real consumption, their consumption outlay presumably rises to an ultimate limit prescribed by the rigid income ceiling. A curve such as D_c^f , therefore, describes the consumption function, in money terms, of fixed-income recipients. Analytically, $D_c^f = c_f F$, where $c_f = C_f(N)$. Thus if rentiers save at a maximum one-third of their income, c_f will fluctuate between $\frac{2}{3}$ and 1. In Fig. 4 (b), taking the (virtual) rentier expenditure patterns in industry A as typical of rentier outlay over the vast array of goods, the (rentier) $D-O$ curve for industry A's output at each supply price would taper off to the left, ultimately tending to rise backward to reflect a constant outlay at the higher P^a figures.

Even if fixed payments were conceived to rise slightly, perhaps through the avoidance of bankruptcies as N rose, as shown by FF'' in Fig. 4 (a), the final results would not be vastly different.² Presence of fixed incomes, therefore, can explain why aggregate demand exceeds aggregate supply at low employment levels, but certainly not at high levels.

Consider next the transfer incomes, T_i . These are likely to be particularly large at low employment levels when relief payments are substantial, so

¹ As in the case of taxes, the D_c -function can be elaborated to contain separate c -terms for wage-earners, rentiers and profit recipients. This approach is implicit in the ensuing diagrammatic analysis.

² It is probably best to treat bonuses to salaried officials at high employment-profit positions as part of "dividends." Otherwise a variable twist rather than a fixed nature is imparted to FF' .

that T_i is likely to fall off with rising employment. The aggregate consumption outlay (D_c^t) associated with T_i will follow the same course, practically merging with T_i , as shown in Fig. 5 (a). The excess ($T_i - D_c^t$) denoting some savings, would be attributable primarily to the inclusion of interest payments on government bonds in T_i , and the occasional fact, sometimes publicised in the Press, of individuals saving even on the dole. The D_c^t function can also explain the excess of D_c over Z at low N levels, but points to a decline in D_c at high N -positions. Industry $D-O$ curves, comparable to $D-O$ in Fig. 4 (b), would thus veer back rather sharply. Hence, $D_c^t = c_t T_i$, where $c_t \approx 1$. As T_i is dependent on the income-employment level, particularly the wage-bill, then $T_i = T_i(W)$ and $dT_i/dN < 0$.

The wage bill will climb linearly to the right if the money wage is constant; this is shown by W in Fig. 5 (b). Wage-earners, as a class, will save greater absolute amounts as income grows; thus the consumption outlay of

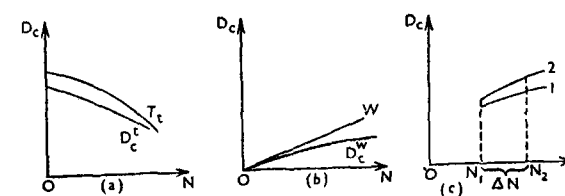


FIG. 5

this group tends to rise steadily to the right, though probably at a slightly tempered pace. The curve D_c^w would thus help explain the rise in the aggregate D_c as N advanced. Actually, D_c^w is a hybrid function involving some interdependence with D_c^t , and with the concept of dissaving (λA), which still remains to be developed. Nevertheless, as the consumption outlay of an employed individual exceeds the expenditure of the same person on relief, the rise in D_c^w will outweigh the descent in D_c^t , so that on balance the aggregate D_c will be higher.

Prices will ordinarily rise as N advances, so that those employed and receiving total wages of (wN_1) when employment is N_1 will have to expend more to maintain their real consumption pattern when employment advances to N_2 . That is, if at N_1 the virtual D_c^w sum was $P_1 Q_1'$, where P_1 denotes the price level, when employment rises to N_2 , the N_1 group will tend to spend $P_2 Q_2' > P_1 Q_1'$, where intended real intake $Q_2' \leq Q_1'$; where $Q_2' = Q_1'$ the real intended consumption of the N_1 group can be maintained through the prospective diminution of their money savings; where $Q_2' < Q_1'$ their prospective real consumption is decreased. Hence as the N_1 group strives to maintain its real consumption intake, the total D^w will be higher at N_2 than at N_1 .¹ Graphically, in Fig. 5 (c), if the consumption

¹ Thus as employment grows, the wage bill is: $W = w(N_1 + \Delta N)$, while the incremental consumption outlay of wage-earners is: $\Delta D_c^w = W\Delta c_w + c_w\Delta W$. The total D_c -outlay is thus: $D_c^w + \Delta D_c^w = c_w W + W\Delta c_w + c_w\Delta W$.

outlay of the N_1 group is taken as constant despite the price rise, then D_c^w is given by curve 1 in the range N_1 to N_2 . Allowing for added outlay by the N_1 group because of rising price-level phenomena, as well as the augmented employment and wage bill, then curve 2 is a more apt picture.

As for entrepreneurial income, according to Fig. 2 profits (R) are equal to the $(Z - F)$ gap, with losses prevailing at low employment levels. An R -function (not drawn) can thus be constructed. Still, as dividends are often paid even with current aggregate losses, inasmuch as some firms have positive profits while others, in the face of losses in period t_1 , declare dividends on the basis of t_0 earnings, the appropriate basis for D_c^r is the dividend-function (kR). As argued later, in the upper regions this is likely to be about $\frac{1}{2}$ of R . In view of the profit rise at a pace in excess of the price rise (for rentier real income and real wage income both fall as prices rise),¹ consumption outlays out of dividends are likely to keep pace with the price movement, despite the inroads of progressive personal income taxes, so that the real consumption of entrepreneurial groups remains fairly constant. This is likely to entail a D_c^r path which rises at about the same pace as Z , so that where Z curls upward to the right, the D_c^r curve is likely to do the same.

Finally, dissavings ($D_c^s = \lambda A$) are likely to be made by wage-earners and entrepreneurial groups when N is low and, by older pensioners living partly by asset decumulation. When N -rises, dishoarding by the former classes will dwindle to zero. Pensioners, however, are likely to increase their consumption outlays to maintain their real consumption, ultimately limited by their ability to decumulate. As prices continue to advance, their money outlay is likely to reach a plateau so that their real intake declines. On balance, however, aggregate dissavings are likely to diminish as employment advances.

Thus it is to D_c^w and D_c^r chiefly, and in lesser measure to D_c^s , that we must look for the positive slope of the aggregate D_c curve. Putting the component D_c parts together into a composite D_c -curve, the results appear as in Fig. 6. The widening D_c^w band is related to the narrowing D_c^s and D_c^r components: so long as wage-earners spend more in consumption when employed than when unemployed, these results seem assured.

Investment Demand. In view of the fairly extensive analysis of D_c the treatment of investment demand (D_i) can be fairly brief.

In general, there are a few main possibilities here. First, it is conceivable that aggregate money-investment outlay is budgeted in money terms and held fixed regardless of the price-level or employment position; this is shown by curve 1 in Fig. 7 (a). Alternatively, entrepreneurial plans for

¹ Money wages, it will be recalled, have been assumed constant, so that the relative income shift is against labour, as well as rentiers, as N advances to the tune of rising prices. In each firm, as output rises and prices mount, the profit increase will approach $Q\Delta P$, where Q denotes output and ΔP is the price rise accompanying the employment increment ΔN and the associated output move ΔQ .

investment may be planned in real terms so that as N advances and the price level mounts, the investment outlay manages to keep the price-pace. Curve 2 is meant to depict this case. Real investment may also be tethered to aggregate employment and output so that D_i rises even more rapidly than shown in curve 2. Or the D_i -money outlay may rise though real investment falls off, with the appropriate curve occupying a position intermediate between 1 and 2. The last result is plausible if entrepreneurs tend to defer real investment plans at high employment, envisaging the position as being at the top of the boom. For the immediate purposes on a more

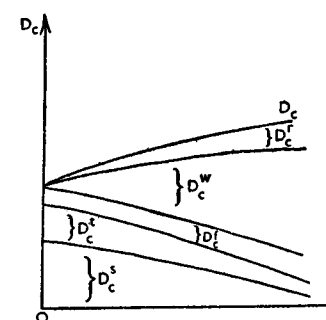


FIG. 6

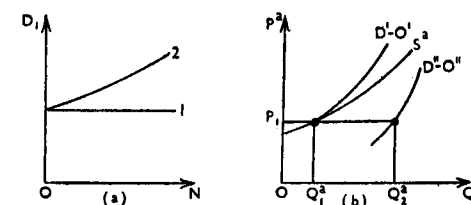


FIG. 7

formal level, this is all that needs be said. Realistically, it appears reasonable to take D_i as some rising function of N , though much will depend on the anticipations engendered by changes in N and upon the implicit monetary policy and interest-rate phenomena as prices and employment go up.

Government outlays may be analysed in a similar fashion. Most government outlays are budgeted at the start of the year and remain rather stable through the annual period, regardless of price and employment events. If the D and Z curves thus refer to the annual period, D_g could resemble the flat curve 1 in Fig. 7 (b). Where this is not the case, the appropriate modifications are fairly obvious.

Taking industry A as illustrative of all *consumer-goods* industries, in Fig. 7 (b) at an output level Q_1 in industries A, B, C . . . the aggregate intended demand-outlay by wage-earners, profit recipients and rentiers receiving

income in consumer-good industries such as A, B, C . . . is equal, say, to $\sum P_1 Q_1$, so that their net savings are zero, with all earnings devoted to consumption outlay. Thereafter, if these groups comprised the only income recipients in the community, as the output of A, B, C . . . advanced to Q_2, Q_3 . . . and concomitantly, if they endeavoured to save, then the demand-outlay forthcoming would be inadequate to sustain a growing output. This is shown by curve $D'-O'$ in the figure. Hence, it is the presence in the economy of those possessed of transfer incomes, or those dissaving and of those who receive income in investment goods industries, and from government, and who also exercise a demand for consumer-goods, who are responsible for shifting the typical $D'-O'$ curves to the right, to $D''-O''$, say, in industry A. The latter shift involves the "multiplier" concept, of income initially generated in the capital-goods industries leading to an augmented demand for the output of consumer-goods industries. Without investment and the interdependence of consumption demand and investment income, the expansion of consumer-goods industries would tend to be blocked at lower output levels by lack of effective demand.

III. THE INCOME-EMPLOYMENT EQUILIBRIUM

Having defined the D and Z functions, the next step is to illustrate the equilibrium determination. So long as $\Delta D/\Delta N < \Delta Z/\Delta N$, and with

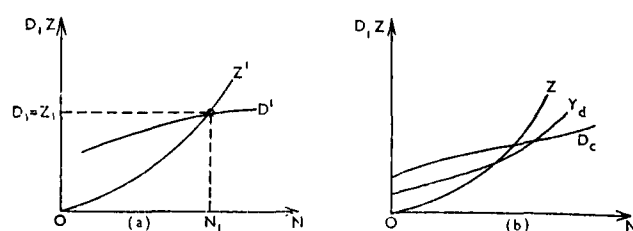


FIG. 8

$D > Z$ at low employment levels, a determinate and stable equilibrium is possible. This is shown in Fig. 8 (a). Equilibrium employment is at N_1 with proceeds Z_1 .

Why $\Delta D < \Delta Z$ as employment advances deserves analysis. First, that $\Delta D_c > 0$ seems clear; it remains to show that $\Delta D_c < \Delta Z$.

Using the earlier concept of disposable income, from (11):

$$\frac{\Delta Y_d}{\Delta N} = w + k \frac{\Delta R}{\Delta N} + R \frac{\Delta k}{\Delta R} \frac{\Delta R}{\Delta N} + \frac{\Delta}{\Delta N} (T_i - T_x). \quad (13)$$

Subtracting this from (4), then:

$$\frac{\Delta Z}{\Delta N} - \frac{\Delta Y_d}{\Delta N} = \left[\frac{\Delta R}{\Delta N} (1 - k) \right] - \left[R \frac{\Delta k}{\Delta R} \frac{\Delta R}{\Delta N} + \frac{\Delta T_i}{\Delta N} - \frac{\Delta T_x}{\Delta N} \right]. \quad (14)$$

As $k < 1$, and by United States data perhaps in the neighborhood of $\frac{1}{2}$, the first bracket on the left will be positive.¹ As N rises, the term $\Delta T_i/\Delta N$ will actually become negative, with the total transfer income falling off (see Fig. 5 (a)). Likewise, personal income taxes will mount, and on clearing the bracket on the right in (14), the term will be positive. Thus whether the rise in Z exceeds that in Y_d hinges on whether the whole second bracket is positive or negative, and thus whether k rises and whether the rise is ample to offset the first bracket plus the sum of the $\Delta T/\Delta N$ terms. Unless corporations follow dividend policies which become increasingly generous in the percentage of earnings disbursed, Δk is likely to be close to zero, so that $\Delta Z > \Delta Y_d$.²

So long as $\Delta Z > \Delta Y_d$, then if $\Delta Y_d > \Delta D_c$, it follows that $\Delta Z > \Delta D_c$, and the stability relation will be satisfied; it is possible for $\Delta D_c > \Delta Y_d$ only through the avenue of dissaving, enlarged expenditure out of wage income by wage-earners to maintain their real consumption and through enlarged rentier outlay. Yet dissaving is likely to be important only at low income levels; the surmise is that λA decreases in an employment advance. Further, $\Delta D_c/\Delta N \approx 0$ when income and employment are already high. If for wage-earners we take $c_w = 1$, so that personal savings are zero, then it must follow that $\Delta Z > \Delta D_c$. The results are assured if we allow for a decrease in c_w , and thus some personal savings, for wage-earning groups. The appropriate curves appear in Fig. 8 (b); until D_c lies below Y_d , personal savings are negative. Ultimately D_c may rise at the same pace or even faster than Y_d , though, so long as there are personal savings, it will lie below. Apart from some curious dissaving phenomena, it ought not, over an extended range, to climb faster than Z .

¹ For example, in 1955 capital consumption allowances were \$31 billion, business taxes were \$32 billion and corporate profits were \$40 billion. Taking R as equal to this sum (\$103 billion), dividends amounted to \$11 billion, so that, on this crude global basis, k equalled about $\frac{1}{10}$. In earlier years it has been somewhat higher.

² Considering tendencies towards higher corporate taxes and the withholding of earnings to protect stockholders from excessive progressive personal income taxes while permitting capital gains to be revealed in the stock market, and the penchant for internal investment financing, it is doubtful that k will rise. Actually, so long as dividends are paid continuously by large firms even when earnings are just barely adequate to cover the "normal" dividend, the k -factor may well decline as N advances. Offsets, however, appear in the form of management bonuses, which may be considered as a form of dividend shared by a select few.

According to available data for the United States, in the years 1922-1943, from 30 to 56% of net income was retained by manufacturing firms (except for 1936-37 when an undistributed profits tax was in effect). In larger firms, from 1940 to 1943 about 30% of net income was retained while in smaller firms the range was 50-64%. See S. P. Dobrovolsky, *Corporate Income Retention, 1915-43* (National Bureau of Economic Research, 1951), p. 15. According to the same study a 1% change in net income was associated with an 0.8% change in the rate of retained income (p. 25).

According to a survey of 295 large corporations, the percentage of net income retained was 44, 42, 47% respectively over the years 1953-55 (see *Federal Reserve Bulletin*, June 1956, p. 586). With a corporate profits tax of approximately 50%, and considering that for our analysis R —"profits"—contains depreciation allowances and indirect taxes, then a size of k of something just over $\frac{1}{2}$ seems not too far-fetched.

Somewhat more troublesome is the relation of $\Delta D_i/\Delta Z$. If real investment is taken as rising with N , then a non-equilibrium and explosive pattern is conceivable: there is implicit a built-in accelerator whereby enlarged investment is linked to the (virtual) employment increases. High accelerator values will, it is well known, defeat equilibrating tendencies. For many purposes the explosive model may be little more than a geometrical design, for in the economy which it portrays as bordering on hyper-inflation, despite constant money wages, monetary policy will doubtlessly intervene to choke off investment and the inflationary binge. Further, if full employment is (roughly) an unequivocal quantity, so that there are limits on N , then Z will turn stiff and vertical, so that any flatness in D_i will assure the income-equilibrium outcome. In terms of the D - O curves of Figs. 3 and 7 (b), for the non-explosive case the D - O curves will be steeper or rise at a faster pace than the industry supply curves; in the non-equilibrating case the D - O curves will be flatter than the supply curves.

IV. FORCED SAVINGS

As an interesting sidelight of the foregoing discussion, we can reconsider the concept of "forced savings" which has tended to vanish from the literature since Keynes denounced it as a "very rare . . . phenomenon." The idea itself involved the belief that real consumption had to be curtailed as prices rose; Keynes argued that until full employment was achieved, aggregate real consumption could expand with rising output and employment, so that "a forced deficiency of saving" was "the usual state of affairs." After full employment, he was willing to acknowledge, forced savings might develop if investment continued to expand.¹

On an aggregate view, Keynes' main arguments are indisputable. Yet in assessing the inevitable shifts in the distribution of income accompanying ΔN , more remains to be said on the subject. For example, focusing merely on fixed incomes, it is clear that beyond certain N -points and the associated price level, rentier real consumption must fall. Likewise, pensioners dis-saving at low employment levels may also be denied their previous consumption intake as N -advances. For both these groups "forced savings" may be a very real, and common, experience at high N -levels compared to a recent historical past when N was lower. If we allowed for the possibilities of rising money wages, even without output and employment increases, these relations would become even more patent. Similarly, for salary recipients—though bonuses generally constitute a handsome counterweight as output, employment and profits rise. Wage-earners employed at N_1 also suffer in a real income sense when employment expands to N_2 amid a price rise, so that "forced savings" may thus appear even among the wage-earning

¹ *General Theory*, p. 80.

group.¹ In so far as those comprising the labour group N_1 perform some personal saving, the main consequence of an employment rise to $N_2 > N_1$ is that the (virtual) savings positions are eroded. When $c_w = 1$, so that the N_1 group is expending its full income, a subsequent N -rise to $N_3 > N_2 > N_1$, with an ensuing price rise, may involve an actual cut in *per capita* consumption for the N_1 set. The real income relinquished by the latter—the "forced savings"—are thus released for consumption by the newly hired wage-earners ($N_3 - N_2$) and by profit recipients. As described earlier for rentiers (see Fig. 4 (b)) it is the compulsory curtailment of their consumption which, in part, ensures that the D - O curves will be steeper than the industry supply curves, rendering an ultimate equilibrium possible. Actually, in a money economy where many incomes are fixed despite a growth in N and Z , and this can be true for the "already employed" wage-earners, it is partly through the existence of "forced savings" that Keynes' view of the "law of the marginal propensity to consume," whereby the increment in aggregate real consumption fails to keep pace with the increment in output, is validated. For though some new real consumption is made by those obtaining the money-income increment, there can be a partially offsetting consumption cut-back by other income recipients whose money income is constant.

CONCLUSION

In sum, on certain not underly restrictive assumptions it has been shown that it is possible to construct an aggregate supply schedule from the particular supply schedules of individual industries, which themselves rest upon factor-price and productivity data in the component firms. Embedded in each point on the aggregate supply schedule are the supply prices (= expected market prices) for the output quantities in the particular industries among which the employed labour force is distributed.

From the self-same sums of expected proceeds and concomitant labour-hire, income is disbursed according to the $\mathcal{Y}_d$ -formula. With income in the hands of factors the question can be raised: how much of $\mathcal{Y}_d$ will be diverted to consumption outlay, given the product supply prices as (virtually) ruling and given the volume of employment? The answer to this query reveals the appropriate D_c -point to attach to the particular N position. Implicit in D_c , therefore, are exactly the same (supply) prices as are embedded in Z .

Investment demand (D_i) is constructed in a similar fashion. Investment outlay is, of course, not subject to an income restriction, as is D_c —which is contingent primarily upon $\mathcal{Y}_d$, itself a function of Z . Instead, the funds for D_i come from the usual sources: from bank lenders, from internal financing and from private non-bank hands. At each (Z, N) point the D_i magnitude

¹ Keynes suggested that through diminishing returns (and the implicit price rise) there could be "some sacrifice of real income to those who were already employed" (p. 81). But he went on to say that the idea of "forced saving" had not been extended to this case of "conditions where employment is increasing."

can, in principle, be elicited. Adding it on to the accompanying D_c magnitude, the aggregate demand point (omitting the intended government outlay) can be derived. In this way the full D -course can be constructed, embodying on its path exactly the same prices as are built into the Z -function at the corresponding employment-output positions. The equilibrium of aggregate demand and supply prevails at the intersection of the two curves, which entails an employment volume at which the expected sum of sales proceeds is exactly equal to the outlays forthcoming from consuming and investing groups.

Finally, the entire exposition has been conducted without bringing into play, either as an identity or as an equilibrium condition, the relation of savings to investment. Instead, what has been insisted on as a condition of equilibrium, in which goods are prepared for market in advance of purchase commitments, has been the equality between expected receipts (by sellers) and intended outlays (by buyers). Although this condition is sufficient to ensure the global equilibrium, in order to guarantee that the structure is also in balance, and on only a slightly less aggregative view, it is necessary that: (1) the expected receipts from consumption output equal the intended consumption outlays; (2) the expected receipts from capital-goods production equal the intended investment-goods purchases, and (3) similarly for outputs designed specifically for government purchase. Thus, just as D is split into a tripartite division, Z can likewise be carved up. Condition (2) does entail the famous equality of saving and investment. But just as it is usual to insist that income must go to such a level that the two are brought into balance, we could, with about the same neglect of other aspects of the general system, insist that income must stabilise at such a level as to accommodate an equilibrium between decisions to purchase consumption output and the expected sales value of consumption output. The focus on the balance in capital-goods markets is not always more revealing than the emphasis on the balance in consumer-goods markets; unintended investment and disinvestment can occur in either sector, through too slow or too rapid a pace of purchases. The absorption with the saving-investment tangle, as the literature of twenty years shows, has not always proved a felicitous means for portraying the forces of aggregate demand and supply in income and employment determination.

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STERLING-DOLLAR DIPLOMACY¹

THIS is the work of an American Rhodes Scholar who was prompted to it by Mr. Harrod. Mr. Gardner writes gracefully; he is not pro-American or pro-British, but mid-Atlantic, and it is a scholar's work in his search for actual events and comments. Mr. Harrod correctly describes the work as a study in the diplomatic relations between two democracies; the language of two democracies talking together is hard to learn.

It was surprising to our Allies, and particularly to the French, that when the United States and Great Britain were massively engaged in the War, their Governments, and indeed their people, should postulate the kind of world we should live in after the War. The War, so the French supposed, was a moral duty imposed on those democracies which allowed themselves to use soldiers. But it is also important to bear in mind throughout that the leaders in both countries were very much more occupied in the War than in making the plans for the post-war world that are here under discussion.

Both countries felt that measures of international co-operation would be needed after the War. But all were conscious that the United States, after fostering the League of Nations, had indeed deserted it. Their Government had been all too conscious of the failure of preparation when events at Paris moved behind the oracles of Mr. Wilson and sought the formal applications which would ensure his decrees. It was necessary to prepare for the present war and its immediate sequel. But the task was distributed between the Secretary of State, Mr. Cordell Hull, and his supporters, Mr. Sumner Welles and Dr. Pasvolsky; the Secretary of the Treasury, Mr. Morgenthau, with his chief assistant on foreign finance, Dr. White; and the Board of Economic Warfare under Professor Henry A. Wallace.

The senior of these men, in terms of Congress and of the world, was Mr. Hull. In keeping with an old tradition, Mr. Hull was a believer in a universal approach to world order as a pathway to general settlement. He was conscious that one difficulty in previous events had been the failure to bring economic facts into the plans. Nearly all the men at the top of United States affairs had been profoundly influenced by the New Deal. It looked as though Washington could apply an international new deal for world affairs. Mr. Hull felt that "there will be no need for spheres of influence, for allowances, for balance of power or any other special arrangements through which in the unhappy past the nation strove to safeguard

¹ A review of *Sterling-Dollar Diplomacy: Anglo-American Collaboration in the Reconstruction of Multilateral Trade*, by R. N. Gardner. (London: Oxford University Press, 1956. Pp. vii + 423. 42s.) It must not be assumed that all the views expressed in this article would be endorsed by Mr. Gardner.

their securities and to promote their interest." And White was not far behind, "the early post-war years would witness a degree of unity and good will in international political relationships which had never been before reached in peace time." It was expected in Washington that the "scattered world would move rapidly towards one world."

Unfortunately Mr. Hull and Dr. White differed where they began. For Mr. Hull's whole policy the world was governed by trade, and provided that trade had no special benefits or bilateralism, trade would save the world. Dr. Harry White, looking out on a rather more bleak past, said that the real trouble had been messing about with exchange rates, and all his efforts were directed towards an international body which would control exchange rates. It is true that in some ways the control of exchange rates could be automatic, but it was an element of Washington in those days to turn the United States into a universal governess.

The policy of the United States Government was based on the assumption that post-war planning should be carried on in advance, that the United States should show its policy as a member of a world organisation and that the achievement of peace would require the adoption of suitable policies in the economic field. The President had two of the chief colleagues of his Government thinking entirely differently about the economic problems which should be solved as part of the war solution. He himself, like our own Prime Minister, was much more deeply immersed in the War. This fact had two consequences. Mr. Hull's policy did not necessarily carry with it American industrial support, which for many years had been completely protectionist. It is quite true that they disliked discrimination, particularly if it was within the British Empire, as much as Mr. Hull. But there was no sense of decisive action or of wide public appeal, as subsequently followed when Marshall Aid was announced.

The Treasury's position was even more difficult. Mr. Morgenthau had declared that he wanted "money swept out of New York and the whole monetary system transferred to Washington where it would be free from particular anxieties." Now to the extent which Dr. White's proposals had any meaning, they were intelligible only in New York; for there, if anywhere in the United States, a dollar could be sold. Thus there was unwillingness on the part of United States industry to accept Mr. Hull, and a complete failure of anybody to understand Dr. White.

In the United Kingdom the situation was not very different. The Prime Minister was sternly pre-occupied with the War. England at the outbreak of war, had been only just recovering from its heavy unemployment crisis, and as Preference was believed to have played a part in our recovery, nobody was likely to see the easy scrapping of the Preferential system within the Commonwealth for the sake of a universal idea held by Mr. Hull.

It is, moreover, not without interest, and Mr. Gardner calls attention to it, that a great deal of the work in the United Kingdom was not being done

by Parliamentary discussion through Ministers but by the private talks of the senior Civil Service; among these Lord Keynes, who came as a volunteer to the Treasury, took a natural rank. It was difficult to persuade him to get passionate about Mr. Hull's universal free trade. Indeed, some of his own special measures would have regulated trade in the interests of the economy of our own country, rather than universally. Moreover, on a technical but not unimportant point, he differed from Dr. White about the shape and constitution of the international financial measures which could be introduced. It was, for most people, a serious complication that Lord Keynes had an almost miraculous lucidity even in difficult subjects. It became impossible not to be swayed by his lucidity, especially when it was confronted by the technical stuff of the American Departments.

Thus in these relatively early stages, opinion in Parliament or in Congress, opinion in industry and opinion among economists was not discernible either in the United States or the United Kingdom. But it was in fact the United Kingdom which intervened while the United States was still neutral. The President and the Prime Minister decided to have a personal meeting early in the summer of 1941 to discuss a number of important war questions, such as Lend Lease. The President had in mind a joint statement of Anglo-American aims, believing that an authoritative declaration of the principles for which the Allies were fighting might hold out hope to the enslaved peoples of the world and have a beneficial effect on domestic opinion. But the President did not include any detailed definition of economic objectives. He wanted Anglo-American agreement of political questions such as self-determination, disarmament and freedom of the seas.

During negotiations in Washington on the Lend Lease Agreement, however, Keynes had shocked American officials by a statement about Britain's post-war economic policies. He warned them that the British Government would find itself beset by such grave economic difficulties that it would be forced to resort to bilateral arrangements and other forms of outright discrimination. As a result, the United States officials who were preparing a draft for a document for the Atlantic Conference felt compelled to discuss detailed economic policy and settle the terms. During the Conference the President dined with the Prime Minister and proposed that both countries should draft and publish a joint declaration laying down certain broad principles which should guide their policies. The Prime Minister, having no doubt anticipated the President's proposals, produced on the next day a five-point draft on which he comments, "Considering all the tales of my reactionary old-world outlook and the pain this is said to have caused the President, I am glad that it should be on record that the substance and spirit of what came to be called the Atlantic Charter was in its first draft cast in my own words."

On economic matters the Prime Minister was vague, "Fourth, they will strive to bring about a fair and equitable distribution of essential

produce, not only within their territorial boundaries but between the nations of the world." For Mr. Welles, who was working with Mr. Hull, this formulation was unacceptable. He found it reminiscent of the pious hopes expressed in a thousand and one economic conferences. He therefore spelt out a precise commitment.

"Fourth, they will strive to promote mutually advantageous economic relations between them through the elimination of any discrimination in either the United States of America or in the United Kingdom against the importation of any product originating in the other country; and they will endeavour to further the enjoyment by all peoples of access on equal terms to the markets and to the raw materials which are needed for their economic prosperity."

The Prime Minister asked whether this Clause meant that the Ottawa Agreements would have to lapse. If that were so, it would be his duty as Prime Minister to submit the text not only to his own Government but also to the Governments of the Dominions, and he added that he had little hope that it would be accepted.

At this point Mr. Hopkins, who already had shown his quick contribution to the President's decisions, suggested a compromise draft. But Mr. Welles was adamant, and declared that unless British and United States Governments could restore free and liberal trade policies they might as well throw in the sponge and realise that one of the greatest factors in creating the present tragic situation in the world was going to be permitted to continue unchecked in the post-war world. The Prime Minister commented that British experience of free trade for eighty years had arisen at a time of ever-mounting American tariffs; all we got in reciprocation were successive doses of American protection. At this, observes the Prime Minister commenting in his History, Mr. Welles looked a little taken aback.

The President was still in doubt about the significance of Hull's concepts. But as the result of a further talk between the President and the Prime Minister, a clause expressing in more affirmative terms the objectives of economic betterment and social justice: "Fifth, they desire to bring about the fullest collaboration between all nations in the economic field with the object of assuring, for all, improved labour standards, economic development and social security." Both the President and the Prime Minister had to point out that this carefully worded clause did not commit the Governments or Parliaments to any specific obligations. Mr. Roosevelt feared the domestic political repercussions of a formal association with the Allied Powers, while Mr. Churchill feared the internal controversies which might accompany specific engagements about the future of the British Empire and its trade policy.

Dr. White, who wrestled with the dollar-pool held in London and the subtleties of inter-Commonwealth trade, observed one day "that when you ask a Britisher a question, he replies in the same sense as the last damned

Britisher." For all that, one of the American commentators described the Charter as cosmic and historical, and hailed it as a significant anti-imperialist manifesto. He added that, "The British learned that when you state a moral principle, you are stuck with it, no matter how many fingers you have kept crossed at the moment." Mr. Welles exclaimed, "The age of imperialism is ended. The right of all peoples to their freedom must be recognised. The principles of the Atlantic Charter must be guaranteed to the world as a whole—in all oceans and in all continents." At the same time, one British commentator explained that the implications of our acceptance of the principle of equal access were hardly yet being taken seriously in this country.

It is not possible to criticise the text of the Atlantic Charter for its hidden meanings. The United States had not yet entered the War, they had met to reach a kind of broad understanding on resistance to Nazi aggression, and it was improper for such a document to discuss an issue like Imperial Preference. But the two Governments were still feeling for an international system of peace after the War. America had produced two alternative solutions, both designed to achieve stability of economic affairs and thus prevent war: a universal approach through multilateral trade but without discrimination and alternatively the regulation of foreign exchange through a universal system.

Parliament was not aware of these differing proposals on the part of the United States Government, and indeed both in Parliament and in industry there was a good deal of hesitation about a non-discriminatory system which would end Imperial Preference. At the same time, the regulation of foreign exchange was still a mystery to most people. We still had to learn the difference between internal and external money. When an American member of Congress said, "Why don't they raise the money from their own subjects and pay their bills?" he was regarded as having disposed of the matter. Alternatively, another member of Congress said that he would give no money to the United Kingdom so long as there were any jewels in the Royal crowns. Even in our own country a Member of Parliament who made each year a gift to some international foreign charity was angry when permission was refused. It was his own money, and he did not see why anybody should interfere with his own use of it.

But at this stage a much more important and real proposal was made by the United States. The President, having determined to take the dollar out of the War, had decided that the Americans would lend us the cost of our supplies for the War. Up to that moment, on the cash-and-carry system, we had to find dollars for everything. But the United Kingdom had already gone to the bottom of the barrel. Private holdings of dollar exchange were taken by the Exchange Control, and when it became publicly necessary to satisfy Congress, who still thought that we were both rich and clever, that everything had been scraped up, we were compelled to sell

important United Kingdom interests in the United States, such as the Viscose Corporation, at breakdown prices.

The power to lend public funds was lodged in Congress, and the President therefore had to find some benefit which could be recognised in return for the gift of Lend Lease. But the temporary Civil Servants who were helping the United States Government were staunch. They found the opportunity for discussion on Lend Lease to stipulate once more their own conception of the post-war reconstruction of multilateral trade. In the discussion on the terms of Lend Lease we were supplied with virtually the same text as Mr. Welles had tried to work through the Atlantic Conference. Once again it appeared that the United Kingdom would have to forswear the Imperial Preference, but it said nothing about the essential counterpart of American policy, the substantial lowering of tariffs and the avoidance of a serious post-war depression through a proper creditor position. It is important in retrospect to realise that, both in the United States and in the United Kingdom, the belief was held that very soon after the end of the War a heavy international depression would set in, which might mangle the internal efforts of the Governments concerned.

One of the main reasons for the United Kingdom hesitation about Mr. Welles' proposal was the difficulty of the balance-of-payments problem which would face Britain in the post-war transition period. It was quite plain that Congress, already driven rather far by the President's proposals on Lend Lease, would be very unlikely to agree on the earlier debts of the United Kingdom for munitions and food being cancelled. On the other hand, the Prime Minister objected to the use of a Lend Lease Agreement for the discussion of Preferences. It would certainly be held that the Government had agreed to give away important Empire ties or sold them in exchange for goods which Britain needed to wage the War.

Mr. Hull pressed the President to demand a speedy affirmation by Britain on the Article 7 Draft. This infelicitous intervention came at a time of the serious British reversals culminating in the fall of Singapore. The President, however, confirmed that he had no wish to use Lend Lease as a trading weapon over the principle of Imperial Preference. But, despite the President's confirmation, Congress had to be satisfied that the gift of money for Lend Lease was in return for some adequate recompense by the United Kingdom on commercial and financial policy. Once again there was a complete failure to understand the general significance of the text of the Agreement. In between the official discussions there was some understanding that both Governments would seek to make economic expansion a goal of post-war policy, and in his report to Congress the President forecast a progressive development of agreements in the field of commercial policy of money and finance, international investment and reconstruction.

The next stage was the first effort of the officials of both countries to bring forward specific plans which would develop the post-war consequences

which the President thought should follow on Lend Lease. After the discussion on the Mutual Aid Agreement the position changed at Washington. There was always a struggle between the Treasury and the State Department. On this occasion, the State Department dropped back on its universal multilateral approach without Preferences, and Dr. White moved forward. It is probably true that the financial side needed attention before the commercial side. Moreover, in the strange discussions which were taking place between officials in the United Kingdom, Lord Keynes seemed rather remotely concerned with multilateral trade approaches; he still had in mind the idea of a planned economy which might require regularisation of imports. Moreover, he had in fact drafted a document. He had two principles in mind: one, a scheme which would deal with the position shortly after the War and probably through rates of exchange; and the other, a larger scheme which might help the real recovery of the countries who had been subjected to the damage of the War.

It is important that neither in the United States nor in Lord Keynes' mind was there a clear conception of what had happened as a result of the War. Damage to buildings could be seen, but damage to food supplies was not so visible. Moreover, a large part of capital investment in the belligerent countries had been hopelessly worn down by the strain. Keynes thought that very large sums, and principally from the United States, would be required, but he had not seen that virtually the larger part of the world would want almost everything from bread to machinery from the States; that while the United Kingdom was slow in the export of coal, fuel would be bought for dollars. "If I had United Kingdom coal," said Mr. Bevin, "I would make a foreign policy."

Keynes had produced a document, with his usual crystal style, on the Clearing Union, which was to be an Agency for the post-war conduct of international finance, and to be open to all of the United and Associated Nations. He had in mind that the Union was to provide total overdraft facilities of at least \$26 billion. The Americans pointed out that if all the other nations used all their overdraft facilities and the United States was in credit with them all, the net result would be that the Americans would have provided as much as \$23 billion of short-term accommodation.

Keynes had in mind that this large international credit should be created on credit terms by establishing it and debiting or crediting members in a statement of account called Bancor. The Americans found it impossible to think of a credit which was not put up in cash, their idea was \$8.8 billion, of which \$1.73 billion would come from the United States, and most of them had a strong dislike for Bancor, which they regarded as a tasteless aberration on the part of Keynes.

Keynes also had in mind that the officials would be international officials, owing their allegiance only to the organisation to which they belonged. Moreover, the Union would be like an ordinary Bank; provided that the

member was in credit he could draw as he pleased. Neither of these ideas were adopted by the Americans. White was a dogmatic and purposeful personality; he also had the governess behaviour which was rather deep in the American officials. If any country came into the Stabilisation Fund, as he planned it, it might get help, but subject only to the Fund being satisfied with its economy. This doctrine was practically impossible in England. We had made up our mind to find our way through our own difficulties in our own manner, and we would not be stopped by the Americans. Later, as the organisation of the actual Fund came into being, it was evident that the executive members were not to be old-time international officials, but national officials owing an obligation to the country which appointed them, and would be whole-time Directors who for many hours would discuss economic trends. And they were to be very well paid.

It was also characteristic both of Washington and London that the ideas about the Bank were postponed. Some of the financiers in New York and some of the best of the American economists had hoped that the Bank would be created first and that the Fund, which was dealing in short-term liabilities, might come secondary. But Keynes and White had their way. Dr. White was told that his Stabilisation Fund assumed the solution of all the world's major post-war economic problems. It was only if those problems were solved that minor difficulties would arise on exchange rates.

The United States Treasury were influenced by the fact that after the previous war wild currency fluctuations, speculative capital movements and bank failures had created the disordered world in which the Second World War was inevitable. Moreover, in the hands of Nazi Germany, exchange control and exchange discrimination became the tools of military aggression. But the United States Treasury also had in mind that the Government had an important duty for the direction of economic life. Mr. Morgenthau's objective as Secretary of the Treasury was "to move the financial centre of the world from London and Wall Street to the United States Treasury. And to create a new concept between nations in international finance." He wanted to drive the usurious money-lenders from the temple of international finance and to replace them with instrumentalities of sovereign government. But already political power was shifting somewhat from the unrepentant New Dealers, and the more ambitious aspects of the monetary fund were gradually eliminated.

By contrast, the Clearing Union was technical and non-political. It was in fact impersonal. No member States had to engage their own resources as such to the support of other particular States or any of the international projects or policies adopted. They had only to agree in general that if they found themselves with surplus resources which for the time being they did not themselves wish to employ, these resources might go into the general pool and be put to work on approved purposes. We have here a genuine organ of truly international government.

But despite the strength of the impersonality of the Union, it was these items which damaged American support. It was significant in Washington that it was dealing with short-term liabilities. Neither its scheme of operation nor its finances were such as to make its facilities available in normal times. It was not a scheme for dealing with the reconstruction problem. One of the difficulties of the reconstruction problem which disturbed the Americans was the sterling balances held in London. These balances reflected Britain's large deficit in current war-time trade and its considerable war-time expenditure for the defence of its Empire. A satisfactory method of dealing with the inter-allied war debts was one of the major tasks of the transition period.

It was thought that White's Stabilisation Fund might deal with sterling balances, but this meant involving the Fund in the reconstruction problem rather than in short-term stabilisation. It was thought that the Fund working with the help of the Bank would be able to manage. The capital stock of the Bank was \$10 billion. That is a small sum now, but it was more impressive in terms of the existing price level. Moreover, the Bank, with its broad powers to issue notes and securities, could make available sums many times larger than its subscribed capital. Moreover, the Stabilisation Fund acquired powers which in the end were reconstructive. It was only allowed to sell currency to its members under certain conditions, and one of these was that the members required the help to meet an adverse balance of payments on current account. If the country is exhausting its quota more rapidly than is warranted in the judgment of the Board of Directors, the Board may place such conditions upon additional sales of foreign exchange to that country as it deems to be in the general interest of the Fund. This part of the Fund's provisions suggested that it would be "active" rather than "passive" in its operation.

But no international monetary organisation could work if it were too grandmotherly, or if cheques drawn on it were returned as non-acceptable. Unless White and London could agree on this point the dreams of the Fund would be cut short. The Clearing Union placed emphasis on exchange-rate stability. Members were required to agree among themselves upon the initial values of their currencies in terms of Bancor; they could alter these values without permission only when faced with a persistent deficit—and then only to the extent of 5%. At the beginning each country could fix its exchange rate provisionally. The distinguished representative of France, holding that the provisional is the only thing that lasts, had to seek English interpretation to explain to Dr. White that this was not true of a provisional rate for the franc. In such a situation the franc would fall.

Thus both exchange controls and exchange-rate variations were ruled out as the typical method of restoring balance-of-payments equilibrium. To secure those ends an international organisation would have to secure deflation in the case of the debtor nations and inflation in the case of the

creditors. Members of the Fund were obliged "not to adopt any monetary banking measure promoting either serious inflation or serious deflation without the consent of a majority of member votes of the Fund." Later this draft was altered to read, "Not to adopt any monetary or general price measure or policy which, in the opinion of a majority of the member votes, would be to bring about sooner or later a serious disequilibrium in the balance of payments, if four-fifths of the member votes of the Fund submit to the country in question their disapproval of the adoption of the measure." But as the two documents came into circulation this clause had to be altered and provide only that members should give "consideration to the views of the Fund."

The Fund no longer had authority to demand internal adjustments. Moreover, the total amount of drawing rights was limited—a member could not put off internal adjustments for any great length of time. If it wished to draw any more than half of its quota in two years, or more than the full amount of its quota thereafter, it could only do that if four-fifths of the members approved and if it agreed to adopt and carry out measures recommended by the Fund designed to correct the disequilibrium in the country's balance of payments.

When Dr. White's plan was published in the United Kingdom considerable scepticism was expressed about it. The provisions for gold subscriptions and for the fixing of exchange rates in terms of gold—for the rates had to be expressed in terms of the gold content of a dollar—encouraged fears that it involved "a full return to the gold standard." The prevailing concern with domestic expansion in the United Kingdom was so strong that some commentators doubted if the Clearing Union would provide safeguards for a policy of full employment, and it was believed that no British Government could accept anything like the White proposals and remain in power beyond the first post-war election.

The Keynes plan placed the onus—it was argued in Washington—on the wrong shoulder, because while obdurate debtors were called to account, the only penalty imposed on obdurate creditors was an interest charge on credit balances exceeding the agreed quota. The United States papers reminded their readers that Lord Keynes had been an antagonist of stability of foreign-exchange rates and a champion of currency devaluation and credit expansion. The *Wall Street Journal* thought the Clearing Union was a machine for the regimentation of the world. Fundamentally there was the constitutional difficulty that Congress alone regulates the value of money, and was quite undisposed to transfer that duty to a mysterious international scheme. Moreover, a scheme of quotas in a pool which gives a debtor the right to believe that he can credit up to that amount is unsound in principle and raises hopes that cannot be realised.

It was indeed plain that neither Lord Keynes' Clearing Union nor Dr. White's Fund would be accepted by both of the two countries, and further

effort had to be made to arrive at some genuine Anglo-American understanding. In the United Kingdom interest in Bretton Woods was casual. In the United States a soap-opera was produced. It is sad that Mr. Gardner did not quote it. It had huge mythological figures of New Deal days arguing with each other, and it was alleged that it had an effect upon opinion. Mr. Gardner well records the general situation after the discussions at Bretton Woods:

"The British and American Governments had succeeded in drafting a compromise that appeared to dispose of the major issues dividing them in the financial policy field. This compromise had been embodied in the two institutions whose charters were completed at Bretton Woods—the International Monetary Fund and the International Bank for Reconstruction and Development. But the elaboration of detailed rules was by itself no guarantee of Anglo-American collaboration; the rules would work only if they reflected a genuine consensus between the two countries on the means by which multilateral payments might be achieved.

"As it turned out, the debate on the Bretton Woods agreements revealed striking differences on some of the major issues. The British appeared to regard the International Monetary Fund as an automatic source of credit; the Americans seemed to consider it as a conditional provider of financial aid. The British emphasized their freedom to maintain equilibrium by depreciation and exchange control, placing on creditor countries the main burden of adjustment; the Americans looked forward to the early achievement of free and stable exchanges, specifically rejecting the suggesting of any one-sided responsibility on the United States. Most disquieting of all, the British considered their adherence to multilateral principles contingent upon bold new measures of transitional aid; the Americans claimed that the Bretton Woods institutions would meet Britain's post-war needs and that no additional measures would be required. Without a meeting of minds on these matters, it was hard to see how the two institutions could be made to work.

"The magnitude of the difficulty may be appreciated by recapitulating the situation as it stood in mid-1945. Although the American Congress had approved the Bretton Woods plans, the British Government still held back. In the absence of adequate measures to bridge the transitional difficulties, the Bretton Woods programme was regarded with considerable scepticism in the United Kingdom."

International commercial policy did not proceed as rapidly as international financial policy. There were proposals for consideration by an international conference on trade and employment, and proposals concerning the international trade organisation. Both countries had agreed on the principle that quantitative restrictions should be prohibited, but they had also agreed that they could be used as an aid to the restoration of equilibrium in the balance of payments. The principles governing the use of the restrictions were to be agreed at a later date.

The United Kingdom Parliament and people were extremely critical even of these proposals. The United States Government was prepared to reduce some import duties, but still demanded an elimination of Imperial Preference. In the spring of 1944 a Debate in the House of Commons took place on the subject of Commonwealth Unity. At this stage not only the Government but also the Labour Party expressed themselves firmly with a policy of fostering Imperial ties and supporting the value of Imperial Preference, which had been of help to us and the Dominions.

There remained two inconvenient but minor discomforts between the two countries. The United Kingdom in 1941 had been compelled to undertake not only not to permit any export of Lend Lease goods, but also articles made with Lend Lease materials or even substantially similar articles to those received under Lend Lease. The export interests in the United States pressed the United States Government to secure the strict administration of this undertaking. At the end of the War United Kingdom exports were only one-third of their pre-war volume. It must be assumed that some part of that decline was due to the pressure under Lend Lease. Moreover, the British gold and dollar reserves had exceeded \$4 billion before the War. By the time Lend Lease was received they had been virtually exhausted. Until the last months of the War, the American Government pressed the United Kingdom to keep the reserves to a figure not greatly in excess of \$1 billion. The greater the dependence on American aid after the War, the greater the chances of gaining acceptance of American views on multilateral trade. The Prime Minister took an active part in this controversy, and in the end the United States Government accepted a reasonable increase in the reserves.

It was perhaps difficult to expect Washington to pay for what had been given to the United Kingdom before Lend Lease. But it might have been possible to maintain the principle of Lend Lease until British exports had been restored and British reserves had been strengthened. Could not the expenses of demobilisation and enemy occupation be considered as costs of the War itself? But it was plain that both Congress and indeed industrial opinion in the United States would not have this. War-time aid was one thing, post-war reconstruction and assistance was another; Congress must be given greater control of the second.

At the same time the enthusiastic years of post-war planning had encouraged a tendency to look on the world as one "in which lenders will lend and borrowers will not repay." At the end of the War the United States had achieved tremendous expansion of its industrial plant, which was far more evenly distributed than before the War. It faced a peacetime future in better economic health than ever before. If any problem clouded the situation it was that of fully employing the expanded productive resources. In the United Kingdom the situation was not so happy. About one-quarter of Britain's pre-war national wealth, £7,300 million, had been

lost in the War. £1,500 million had been destroyed physically, £700 million had been lost on shipping, £900 million on internal disinvestment and £4,200 million on external disinvestment. The deterioration in the external position arose not only from the liquidation of external investments and the increase in external liabilities but also from the worsening of the terms of trade. To compensate for these losses, physical exports would have to be increased some 50% above the pre-war level simply to enable the purchase of the pre-war level of British imports. But in fact, because of fuller employment, the need to service new indebtedness and new requirements for other, and particularly military, foreign expenditure, the necessary increase in British exports was probably nearer 75%. It would take at least three years before such an increase could be achieved. During this time the United Kingdom would face a deficit in its balance of payments of an estimated \$5 billion.

Some form of transitional assistance was obviously required to avert a fall in British standards to a point even below their war-time levels and the danger of widespread unemployment. This situation did not become fully apparent until the end of the War, though qualified opinion in both countries had regarded the structural change in the English international financial position as a major world problem, upon the solution of which the course of international relations would fundamentally depend. Neither of the institutions of Bretton Woods was capable of effectively meeting the big problem of transitional finance. A similar neglect of the transitional problem was seen in the evolution of the United Nations Relief and Rehabilitation Administration. At the beginning U.N.R.R.A. seemed likely to play a major role in reconstruction. But its functions were progressively confined when, due to the insistence of Congress, rehabilitation was defined as co-terminous with relief.

It was quite plain that the President's administration would not be willing to see Lend Lease used for assistance during reconstruction. The United Kingdom was also critical about the principle of accepting American assistance. Labour opinion took the view that American financiers had been trying to force Britain to accept a huge American loan so that they could get hundreds of millions of dollars interest which would be a first charge on British taxes. Opinion in the United States was in fact far more generous. But British opinion was sharply shocked by an incidental but necessary outcome of the administration of Lend Lease. When, as the result of the use of the atom bomb, and much sooner than had been generally expected, Japan announced its readiness to surrender, the Foreign Economic Administrator was instructed to take steps to discontinue all Lend Lease operations and to notify foreign governments receiving Lend Lease of this action. President Truman directed that all outstanding contracts for Lend Lease had been cancelled except where allied governments were willing to agree to take them over, or where it is in the interest of the United States

to complete them. This was a bomb from an unexpected quarter on the United Kingdom. But in the United States little sympathy was shown for expressions of dissatisfaction. The *New York Daily News*, says Mr. Gardner, compared the British reaction to "being mad at your rich uncle who has been giving you hand-outs, because he died."

At this stage a different approach had to be made to the American Government. Despite the disappointments he had experienced in the United States, Keynes, with a deep fund of compassion for what the people in England had endured during the War, made up his mind to approach the American Government for help which might take the form of a grant-in-aid. For such an inquiry Keynes did not need ministerial direction. He could go out and make the best story he could, if he succeeded the Government would be pleased. It was indeed in this spirit that Keynes made his adventure.

He had been warned by colleagues in Washington that American opinion had changed and that arguments on equality of sacrifice would be useless. Keynes held out the hope in London and in Washington that the American Government, seeing the realities of the British position, would agree to make \$6 billion available as a grand-in-aid, or at the very least as an interest-free loan. He had not foreseen that any financial gift would have written round it extraneous fiscal conditions. With his usual care in ascertaining the facts, Lord Keynes had produced for himself a case which sounded to his London colleagues convincing. It is important to remember that what Lord Keynes found convincing to himself might reasonably be expected to convince others.

In September 1945 he headed a British delegation to seek the settlement of Britain's Lend Lease Account and some new measure of American aid. What he said at first held by his doctrine throughout the discussion, "We are not coming to you hat in hand as suppliants. We do not want to ask anything of you which you are not satisfied is in the ultimate interest of your own country." He terminated the arguments about Lend Lease with the sentence, "We have received far too much liberality and consideration under the famous Lend Lease Act to make any complaint about its sudden cut." Rather cautiously he drew the line of the grant-in-aid. It would be easy for the United States to offer and for the United Kingdom to "put their names to a substantial loan on more or less commercial terms without either party in the transaction paying too much attention to the likelihood of being able to fulfil the obligations which they are undertaking. We are not in the mood and we believe and hope that you are not in the mood, to repeat the experience of last time's war debt."

Before a substantial number of people, say forty or fifty skilled economists in the Treasury, he outlined his case. He showed in simple terms what had happened to our economy. It is true that he also mentioned equality of sacrifice, but the Administration was far more interested in future policies

than in past performances. Comparisons about British and American war efforts stirred resentment.

There had, however, been a change in the direction of the American team. Mr. Morgenthau was no longer Secretary of the Treasury. The Chairman of the American team was Mr. Fred Vinson, a border-state Democrat with deep understanding of Congress and closely in touch with the grass roots of America. His main duty as he saw it, both to himself and the President, was to discover the popular will and translate that will into Government policy. In the autumn of 1945 the popular will was unmistakable. Disinterested with international affairs, it was concerned with the dramatic events of domestic reconversion, and voices citing the threat of inflation and the unprecedented size of the national debt, counselled against any additional foreign lending. Ex-President Herbert Hoover declared, "Europe should not ignore the fact that we are far more impoverished by this war than by the last one." The best that could be hoped for was to draw up a balance sheet to see whether anything could be spared to England after taking care of domestic needs.

There was another aspect of the popular mood which Vinson had to regard. A Labour Government operated in the United Kingdom, and might be tempted to nationalise their industries against us. Even Keynes himself was regarded as a possible exponent of Socialist experimentation, and the United States was not willing to give money to policies which did not fit with the American principles of private enterprise. Most Americans agreed that Socialism was a matter for the United Kingdom. But it was plainly put: "The question of a loan to Britain does not hinge on the political philosophy of her Cabinet. It hinges on the question of what policy that Government is likely to adopt in its commercial relations with the rest of the world."

Apart from the generally strong popular opposition to the idea of a further loan to the United Kingdom, Congress was becoming more rebellious. When Keynes spoke in the House of Lords Debate on the Loan Agreement he said, "During the whole time I was in Washington there was not a single Administration measure of the first importance that Congress did not either reject, remodel, or put on one side." But much of the American attitude on this issue must rest on Dr. White. During the discussions at Bretton Woods, Dr. White had belittled the need for a British loan, and certainly under Mr. Secretary Vinson he was not likely to change that policy.

In addition, Mr. Vinson was supported by Mr. Clayton. Despite Mr. Clayton's justified popularity with the English negotiators, he was bound by the doctrine of multilateral trade and the free economy on which his own fortune had been created. It was only if the United Kingdom committed itself formally to immediate principles of multilateral trade that Mr. Clayton would have any great interest in making a loan at all. He had been dissatisfied by the previous steps on commercial policy and by the latitude

imposed by the British in the drafting of Bretton Woods, and in his mind the request of Lord Keynes for a grant-in-aid gave the United States an opportunity to hurry matters up.

Lord Keynes, with a powerful quotation of figures, had indicated that \$6 billion would be required. The Americans thought this much too high, but estimated the balance of payments deficit for 1946-48 at \$3.3 billion. Mr. Vinson proposed \$3.5 billion and Mr. Clayton \$4 billion; the President himself split the difference by fixing \$3.75 billion. It is difficult to see why the Administration or Congress would swallow \$3.75 billion but choke over \$5 billion. Moreover, it was quite plain that a loan free of interest would be unacceptable, but the United States made a proposal for a modest charge of 2% and provided that in certain circumstances when Britain was earning an inadequate amount of foreign exchange, the interest could be waived.

But this was not the only difficulty. The United States, as Mr. Clayton had indicated, were trying to write into a Loan Agreement commercial conditions, and indeed to reintroduce the abolition of Imperial Preference. The English papers promptly said that the English were being asked to give up their tariff system, which had helped them through very bad days, in return for financial aid.

The negotiations now reached a final point on which in some respects they broke. The Americans proposed that the United Kingdom should not impose any restrictions on the use of sterling in current transactions after December 31, 1946. Lord Keynes objected to the idea of a fixed deadline, especially one only a year away. He did not believe that the anticipated rate of British recovery justified the assumption of such a burden. In the end, all that Keynes could do was get the timetable extended by a few months, to one year after the effective date of the Agreement.

The United States had throughout been critical about the growth of the sterling balances and the consequent dangers of a substantial part of the loan passing into unintended hands. At some stage in the negotiations a suggestion had been made that the existing balances should be scaled down by one-third. The main holders of the sterling balances were countries like India, Egypt and the Argentine, who would be extremely unlikely to accept a proposal of that kind, especially if it had been made not in their presence but between Great Britain and the United States.

Lord Keynes and his Delegation had gone to Washington without considering the additional terms which the Americans might wish to write into a Clause on the loan for the political as well as financial reasons previously given. The British Government was unwilling to enforce a commitment in the document on the Loan Agreement. Washington is an edgy place, and Lord Keynes, who was carrying inevitably the greater part of the burden, grew increasingly annoyed at the criticisms he received from

London. After one cable he had received he cabled: "We are negotiating in Washington repeat Washington. Fig leaves that pass muster with old ladies in Threadneedle Street wither in a harsher climate." But in fact Lord Keynes was not negotiating in Washington, repeat Washington, he was negotiating to some extent in New York, who would have something to say about the sterling-dollar values which would arise if there was a run on sterling. He was also negotiating in London. Negotiations were dragging along until the final date was ominously near. December 31 was the last date by which the United Kingdom could register the Agreement at Bretton Woods, and that date had to be borne in mind by the negotiators on the Loan Agreement. In the end, despite anxieties in London, the Agreement was endorsed.

It is perhaps worth a comment to show what happens when you expose an international currency like sterling to a fixed date by which time its convertibility on Current Account will be changed. The Chancellor of the Exchequer had said in Parliament with some surprise that, "The contrast is most remarkable between the great difficulty of the overseas position, and the relative ease of the purely domestic financial position in which things are very much better and easier than we would have had any reason to expect two years ago." But it was in fact inevitable that the overseas position would continue to dominate the Treasury's anxieties, which could not separate overseas and internal finance. Nearly everything had to be bought with dollars. The United Kingdom could not curtail her own dollar expenditure sufficiently, and the other members of the sterling area, although in time they agreed to dramatic curtailment, were not willing to do it in advance.

But for the Bretton Woods limitations of the dollar-sterling rate there would have been considerable pressure upon the rate as foreign buyers saw the slow dispersal of our Foreign Account. But when they realised that convertibility might come to an end in a few weeks, there was in the simple sense of the words, a run on the bank, and a British Delegation had to go out to point out to Mr. Snyder, who had succeeded Mr. Vinson as Secretary of the Treasury, that the dollars at the United Kingdom's disposition were rapidly running out, and that the United Kingdom would find themselves unable to face the demands of the debt for convertibility. Mr. Snyder understood perhaps rather better than Mr. Vinson, what had been happening, and what is likely to happen when there is a run on the bank, and in a friendly way he found a formula by which the British would admit their failure but would regard it as purely temporary with a hope of getting back to a more satisfactory arrangement. The British Treasury had accordingly to arrange for regular meetings of the chief holders of sterling to discuss the problems of their expenditure, and indeed the various Dominions announced their intention to live within their current dollar incomes and so avoid drawing upon their accumulated sterling balance.

In the face of this depressing event, the sponsors of non-discrimination and multilateralism could make very little progress. It was non-discrimination which created difficulties for the British Government. So also did the developing economic situation. Drastic cuts in imports which might affect the principle of non-discrimination had to be imposed. Under the International Monetary Fund the Executive had not decided that the dollar was a scarce currency, a financially improbable event in any case, therefore there could be no universal principles of non-discrimination. Mr. Snyder had to state that the Loan Agreement was flexible and that it was no part of that Agreement to fix a strait-jacket on British trade. Discrimination finally had sanction from the American Government, but it was indeed a smallish matter after the import programme of the United Kingdom in the sterling area had been drawn up. Only 2% of imports from the United States were affected.

At a time when people in England had to face a real future which was different from the future that had been promised and had to contemplate austerity and struggles for economic survival, all this was the subject of political controversy. There were in fact many statements in the newspapers that without the Loan we might have been temporarily in a worse state of austerity, but that there was some cause to doubt whether it had improved our long-term prospects for recovery. We had surrendered, it was argued, to the United States, among the terms of the Loan, an agreement on our international trade; whereas we might have found our own solution by direct action in our own way. *The Banker* finds further words for the tombstone:

“The Americans seem to entertain hopes that the retreat from such forms of multilateralism as had begun to emerge may be ended by the granting of liberal aid to Europe under the Marshall Plan. But European nations are not likely to respond. Britain's experience with convertibility will surely give rise to a resolute determination to refuse American aid which has economic strings attached.”

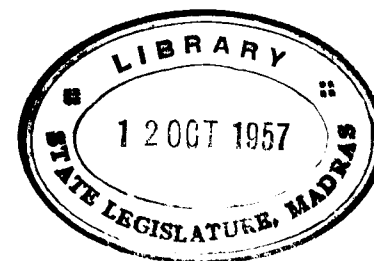
Mr. Gardner has given a remarkably fair and dispassionate account of these difficult years. He presents the arguments advanced, the political background and the conflict of personalities. But his fair account makes it difficult to draw the lessons that we should all learn. Why was it that by 1947 the economic objective of each country was frustrated? England had failed to achieve the transition from war to peace without a crisis. The United States had failed to achieve the progress towards multilateralism and the elimination of preferences upon which her statesmen set great store.

Mr. Harrod comments that this was “two democracies carrying out their diplomacy.” The movement of democracies is slow. Mr. Gardner is the rare type of an economic historian. It is not for him to decide what was wrong. The traditional diplomatic technique is out of step

with the conflict of economics. What is required is public interest on a wide scale. But Mr. Gardner has succeeded in raising debate to the level of philosophy, and daring to seek truth that begins where argument ends.

WILFRID EADY

London.



REVIEWS

The Accumulation of Capital. By JOAN ROBINSON. (London: Macmillan, 1956. Pp. xvi + 440. 28s.)

THE object of Mrs. Robinson's analysis is to clarify the consequences and the proximate causes of differences in, and changes in, the rate of capital accumulation. She recognises that the ultimate causes of accumulation are important but lie within the domain of disciplines other than economics and that the ultimate consequences extend beyond the acquisition of material wealth. She takes a detached view of the economic game, which is played according to set rules by players whose behaviour is determined by character. The task she sets herself is to comment on the game as it develops and fluctuates under the impact of changes in population and technology.

Mrs. Robinson also recognises that "an economy is an entity consisting of groups with conflicting interests held together by rules of the game" (p. 16), which are "largely concerned with the manner in which work and property are combined in production and with the rights that they give to shares in the proceeds" (p. 4). Her chief interest is in the game under the capitalist rules where "the paradoxical-seeming pursuit of profit for its own sake has led to the development of an economic system which has proved not only viable but remarkably productive of wealth" (p. 40).

The main question is a classical one: what are the conditions for the achievement of a cumulative long-term growth of wealth and what is the outcome for the relation between wages and profits? To answer this an abstract model of the economy is built to show the interactions of the relation between wages and profits, the relation of the stock of capital to the labour force, the degree of competition in the economy and the techniques of production used.

The art of model building is to concentrate on the essential aspects of the problem and to simplify in the directions in which simplification does not vitiate the argument. Mrs. Robinson works with a dynamic two-sector linear model, and in the 111 pages of Book II, without the use of mathematics or diagrams, she squeezes all the answers out of her model.

The concepts and categories of analysis are discussed in Book I, and here one is impressed by the way in which complex reality is reduced to abstraction. The chief merit of Mrs. Robinson's approach, which is so typical of English classical economics, is that while she is expounding theory, she manages to keep both feet on the ground: her simplifications are precisely those which emphasise the characteristics of our modern economy. Although intended as an introduction to the volume, Book I can also be regarded as a self-contained, concise description of the framework of our economy, useful even to those who do not wish to read further.

The model, once it is set up, gives answers automatically to a range of problems. To be more realistic, that range has to be widened, and this can be done either by making the model more complicated or by adjusting the results in each specific instance. The choice is one of convenience of calculation and of exposition. Mrs. Robinson certainly cannot be accused of having forgotten the abstractions of her model. Over one-half of the main text, Books III to VIII, is complementary to the model. Here the abstractions are removed, one at a time. Mrs. Robinson examines what happens in the short period, how far money and finance modify the working of the model, and what happens when the two-sector assumption is relaxed to allow for the rentier or for land. Finally, she sketches briefly the connection between the theory of accumulation and those of relative prices and international trade. It would be difficult to suggest that the problems covered in Books III to VIII could be more conveniently solved within the model than outside it. In particular, the two-sector assumption results in an effective description of a developed industrial economy.

There are two classes in the model—entrepreneurs and workers—and two commodities—consumption goods and investment goods. Entrepreneurs invest their whole income, while workers consume everything and save nothing. A fundamental identity follows: *ex-post* profits equal investment. Whatever entrepreneurs as a class decide to invest, determines profit. They will not, of course, invest unless they expect to obtain a satisfactory rate of profit. There is also an upper limit to investment set by the minimum level of real wages on which workers insist. Within that limit—the inflation barrier—there are lower but weaker barriers set by finance, productive capacity, monetary factors and, most frequently, the balance of payments. At each step in the growth of the economy the barriers are pushed farther out and the next step becomes possible. Within the barrier progress depends, in the first place, on the energy of the race of entrepreneurs.

But even if entrepreneurs are energetic, smooth growth of the economy is possible only if additional conditions concerning the nature of technical progress are satisfied. These Mrs. Robinson examines in successive approximations. First, she discusses the case of a fixed technique of production; next, the case of technical progress brought about by inventions when one technique succeeds another in time, but at any given time only a single technique is used; and, lastly, the choice between techniques according to wage-profit relationships, and the combination of choice between techniques and the impact of inventions. It contributes to the efficiency of exposition that, in contrast to neo-classical economics, Mrs. Robinson gives precedence to inventions over the static choice between techniques which is so much less important in an industrial economy.

Put very briefly, the minimum condition of smooth progress at the
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highest "technical" rate is an even and balanced flow of innovations, as defined by Mrs. Robinson in detail. In that event, the share of wages in the national income will be constant and real wages will rise with output. The fulfilment of the necessary conditions in the real world is unlikely, technical progress will be uneven and unbalanced, and employment and the rate of accumulation will fluctuate. What happens to wages and profits has to be worked out from the model, and no single generalisation, such as the classical (including Marxian) or neo-classical economists would have had, is possible.

Mrs. Robinson states that she arrived at her theory as a generalisation of the Keynesian theory of employment. It would be equally true to say that she brought the Keynesian apparatus of thought, as well as her reflections on competition and monopoly, and applied them to classical problems and to the testing of classical answers.

There is more than one aspect of the similarity between Mrs. Robinson's theory and the *General Theory*. First, with a master-stroke Keynes switched economic analysis into terms of *ex-post*, and hence measurable, variables. Throughout Mrs. Robinson's analysis one is given the impression that her concepts and categories are abstractions, not far removed, from statistical and accounting analogues. Second, in both theories entrepreneurial decisions are regarded as determining variables: it is investment which determines savings or profits, and not the other way round. Third, both are macro-theories, in contrast to neo-classical theories where macro-relationships were assumed to be simply the sum of micro-relationships. Keynes has pointed out the paradox of thrift, the conflict between desirable private and desirable social behaviour. Mrs. Robinson stresses the paradox of "the widow's cruse"—that whatever entrepreneurs spend, they earn—and her illuminations of paradoxical institutions, like the patent system (p. 87), suggest the remarkable unity of economic theory.

As against the approach of the mathematicians, Mrs. Robinson's technique can bring theory nearer to reality. In a mathematical model anything can happen, within the constraints set, but as Mrs. Robinson works her model certain events are more likely to happen than others. She argues, for instance, that if capital-saving innovations take place, entrepreneurs are more likely to maintain the value of capital invested than productive capacity (p. 165), but when capital-using inventions take place, some entrepreneur or another will find additional finance to maintain productive capacity (p. 168). Some of the story could perhaps have been told more simply, especially in Chapters 10 and 11 (which Mrs. Robinson admits to be difficult) by the more explicit use of linear-programming techniques, a little mathematics and numerical examples integrated with the text. In spite of claiming to be free from controversy, the difficult chapters are difficult partly because of efforts to demolish well-established fallacies—that capital is uniquely measurable and that the marginal pro-

ductivity of capital is a significant concept. The quantity of misdirected empirical research which is still being undertaken all over the world does, however, indicate that Mrs. Robinson's efforts to unteach, as well as to teach, are not superfluous.

It was Mr. Harrod who, in 1947, called for an economic theory which would be dynamic and not static, general and not partial, and which would evolve principles that would lend themselves to empirical verification. Mrs. Robinson passes the three tests. In her book dynamics is not an amplification of statics, but rather the static state is a special (and unlikely) case of the dynamic. Her analysis is general, in the sense that it is centred on the overall movements of the economy, as she simultaneously considers within the model all crucial variables. The fact that Mrs. Robinson's theory lends itself to empirical verification follows from the nature of the categories and concepts of analysis, to which it is possible to find empirical analogues. She has demonstrated that there is more than one concept of capital and that in different contexts a different concept should be used. She has also developed and defined concepts, such as neutral technical progress, which are significant for analysis and which hold out the hope of being measurable. And, more immediately, she has shown that some empirical findings can be interpreted in more than one way, bringing home the point that measurement without theory is futile.

In a recent essay, Professor Hicks distinguishes dynamic theories of two types—period analysis (such as the Lindahl theory) and stock-flow analysis (such as the Keynes theory)—and argues that the latter is more efficient for analysis and for empirical reference. The achievement of Mrs. Robinson is that she has written a full-scale text-book on what is probably the most important post-war subject by making use of an efficient dynamic theory. She of course acknowledges her debt to others, among the contemporaries especially to Harrod, Kaldor and Kalecki. It is too early to pass final judgment on a book on this scale; it will no doubt be discussed and criticised for a long time. But, at least, we have promise of further progress: it is for econometrics to take the next step.

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Financial Policy, 1939-45. By R. S. SAYERS. History of the Second World War, United Kingdom Civil Series, edited by SIR KEITH HANCOCK. (London: H.M. Stationery Office and Longmans, 1956. Pp. xi + 608. 37s. 6d.)

GENERALS are regarded as preparing for the next war by study of the last war. But the Second World War required a completeness on all parts of our life and energy and it is reasonable that Sir Keith Hancock

should be preparing the various parts of the civil economy—partly as a guide, partly as a warning. Here is a major study of finance in the last war. It is alleged that Mr. Churchill, when inviting Sir Kingsley Wood to be his Chancellor of the Exchequer, told him that he did not wish to hear the word Treasury until the end of the War. Professor Sayers repeats that it is sometimes supposed that the sole duty of finance in time of war is to keep out of the way. But he properly goes on to say that if there were any truth in this story there would be no occasion for the present book.

Professor Sayers has in fact written an exciting book. He describes the action taken by the Government, and explains why at the time the policy seemed sufficient. But with hindsight he steps back and reviews the conclusion. In no country during the War did the Government succeed in organising the whole operating life to the same extent as we did in the United Kingdom, and the importance of Professor Sayers' book is that he describes in some detail how this was done financially.

In the First World War we took matters as they were. London was the financial centre of the world. It was a 6% war, for this rate of interest was alleged to attract foreign money and to ensure savings. A distinguished banker, summoning perhaps fifty years of his experience, said that at 7% money could be fetched from the moon. A later Prime Minister, looking at the House of Commons, said that a considerable number of them had done well out of the War. The experience of 1914–18 and the financial nightmares of post-war Europe were in the minds of all, and it was evident that more heroic financial measures were necessary.

But fiscal affairs change slowly. The first Budget of 1939, which had regard to the large number of unemployed—some two million—could scarcely afford large increases in taxation, without a corresponding rise in prices, which would not be acceptable. Thus taxation ran along the familiar lines of entertainments duty and carrying out promises on medicine duties.

But in September a new Budget was introduced. Here came the first note of the new war Budgets, the need for heavy taxation to curtail civilian demands and so to release resources for the War. Sir Hubert Henderson and Sir Dennis Robertson had joined the Treasury, and were able to reflect upon economics, undisturbed by the historic distortion of Treasury memories. Income tax was raised from 5s. 6d. to 7s., in a transition to 7s. 6d., which was to follow in 1940. Reliefs were sharply cut, surtax rates were raised, and estate duty was increased. A penny a pound on sugar was hotly debated, because it left its mark on the cost of living index, and would affect old-age pensioners and children. At this stage Parliament had not realised that the necessities of war-time financial policy would have to apply to all sections of the community.

The next stage in the Budget was to take the "profit out of war." The armaments duty had been imposed in the summer of 1939, but when com-

pulsory military service was introduced in the spring of 1940 the Government felt itself obliged to take the profit out of the War by an excess profits tax to be imposed immediately after the War—60% on the excess of the profits of trade or business over a pre-war standard. At the same time the idea of a capital levy on war-time increases in personal wealth took the ground, but the opposition, especially from property owners on military service away from home, and the administrative difficulties which would have overcome the staff of Inland Revenue, led to a quiet departure, and as the War went on, and the excess profits tax was raised to 100%, and civilian life was becoming disorganised, this part of the financial policy, the capital levy, died down.

On April 23, 1940, Sir John Simon introduced the second war Budget. The phoney war was disappearing, and the size and power of the German attacks were now clearly visible. The issue now was not so much on taxation, but on the proper proportion of Government expenditure to be spent on the War. German expenditure on the War was clearly outpacing the efforts of the Government—though this was about three times the rate of revenue. It was now clear that a complete change in the finance of the War was necessary. At this moment Keynes produced his pamphlet *How to Pay for the War*. This doctrine decided the shape of the Budgets for the War. Keynes offered us an innovation, a national-income arithmetic approach. He added up the total value, at current prices, of resources becoming available for all uses during the year, and then added together the total demands—personal consumption, irreducible investments and exports, and Government expenditure.

Much of this is now a commonplace. The Budget now turns aside from the collection of revenue to meet Government expenditure; it reviews the fiscal policy of the country, and will pay regard to the level of imports which might tax the balance of payments, and to exports, and to investment. But in his first pamphlet there was a lucid freshness in his thought and style. He demanded lucidity in financial affairs. More lucidity is our first need. This is not easy. For all aspects of the economic problem are interconnected. Nothing can be settled in isolation. Every use of our resources is at the expense of an alternative use. We shall raise our output to the highest figure which our resources and our organisation permit. We shall export all we can spare. We shall import all we can afford, having regard to the shipping tonnage available, and the maximum rate at which it is prudent to use up our reserves. From the sum of our own output and imports we have to take away our exports and the requirements of war. Civilian consumption at home will be equal to what is left. It can be increased only if we diminish our war effort or if we use up our foreign reserves.

The right outcome depends on weighing one advantage against another. Is it better that the War Office should have a large reserve of uniforms in stock, or that the cloth should be exported to increase the Treasury's reserve

of foreign currency? Should our shipyards build warships or merchantmen? Should a twenty-year-old agricultural worker be left on the farm or taken into the Army? What reduction in working hours and efficiency is justified in the interests of air raid precautions?

This leads up to a fundamental proposition. There will be a certain definite amount left over for civilian consumption. The point is that its amount will depend only to a minor extent on the amount of money in the pockets of the public and on their readiness to spend it. This is a change from peace-time experience, and that is why we find it difficult to face the economic consequences of war. We have been accustomed to a level of production which is below capacity. If we have more to spend, more will be produced and there will be more to buy. In peace-time the size of the cake depends on the amount of work done. But in war-time the size of the cake is fixed. If we work harder, we can fight better. But we cannot consume more. That is the sombre fact before the man in the street, that the size of the civilian cake is fixed.

The public cannot increase its consumption by increasing its money earnings. Yet we try to increase our earnings in the belief that we can thus increase our consumption. Indeed, this is true still, for each individual can increase his share of consumption if he has more money to spend. But, since the size of the cake is now fixed and is no longer expansible, he can only do so at the expense of other people. If all alike spend more, no one benefits. Here is the chance of imposing a common rule. The wage and salary earner can consume as much as before, and in addition have money over with the bank for his future benefit and security, which would belong otherwise to the capitalist class. Without such a plan, prices will rise just enough for the money we spend to be used up by the increased cost of what there is to buy.

Unless the whole cost of the War is to be raised by taxes, which is not practically possible, part of it will be met by borrowing, which means that a deferment of money expenditure must be made by someone. Now that simple sentence meant that there should be a larger element of forced saving, by sharp increases in income tax on the mass of the people, part to be refunded at the end of the War.

It was evident that public opinion was not yet ready for such drastic changes. Even officials were reluctant; there had been some decline in response to National Savings appeals, and others thought that wage claims would be increased by high taxation. But the changes were coming. The first issue by the Government in March 1940 did not succeed. £300 million was a small effort compared with what would become necessary. The Chancellor wished to avoid taxes which might affect the cost of living index, such as duties on foodstuffs, and also to check by heavy taxation purchasing power which tended to the production of luxuries. At this time, and quietly in the revenue departments, a new scheme of taxation was

under survey, a more general tax on purchases which would collect some of the dangerous stream of purchasing power on personal goods. Among the last chances of the old taxation principles lay legislation limiting dividends and prohibiting the issue of bonus shares.

Professor Sayers regards all this as Voluntarism on Trial. *The Economist* was very angry. The Budget, as covering war expenditure, was much less than the anticipated German expenditure. It criticised the purchase tax as regressive. At this moment the Treasury seemed disposed to take a line. They criticised *The Economist* for regarding the purchase tax as regressive. The taxation of the upper and middle classes had been carried to a point where increases were difficult to make. It was essential to prevent consumption increasing further and possibly to reduce it below its present level. The classes taxed amount to about one-third of consumption, and the remaining two-thirds are covered by classes not affected by direct taxation. How could any solution be found in the form of taxation, if such taxation were not regressive? The purchase tax has subsequently been regarded as a tax on luxury or a fiscal device which would check attempts to produce for civilian purposes goods which could be produced for war, but it was in fact a tax to check consumption over a large field which had not been fully tilled.

Professor Sayers probably regards the first Budget of Sir Kingsley Wood—influenced by Lord Keynes—as the key to domestic war-time finance. From the section the Breath of Realism, down to the whole of the next chapter, the Budget as a Whole, there is wholly admirable writing, not taken academically, if the phrase be permitted, but currently, against the movements in politics and among the chief officials. This concept of the Kingsley Wood Budget as the headstone is right. After that, right down to the end of hostilities the adjustments were minor comments on the Budget of 1941.

The chapters on the Rate of Interest and Capital Issues Control are not so graphic—for in that rare world the figures do not move about with such precision. But the rest of the book, on Exchange Control and on our External Financial Position, is melancholy in effect. The Prime Minister must have been surprised that the Treasury was an essential part of the war effort. Indeed, parts of our war effort were conditioned by the skill with which the Treasury and the Bank of England had been able to manage our local affairs.

Professor Sayers has once more to tell the facts about our financial dealings with the United States. He can only conclude:

“The Americans had in effect run down the curtain when they ended Lend-Lease on the morrow of V-J Day—leaving Britain the greatest debtor in the history of the world. That they had second thoughts was to be shown a few years later, when the generosity of the

Marshall Plan outshone even that of Lend-Lease—meanwhile Britain had to face the transition from war to peace in financial conditions likely to cramp reconstruction at every turn.”

But, at an earlier stage, the War had threatened everything even more than stringent financial conditions. Professor Sayers has shown that given unity, and lucidity, financial policy won the day. This is an official history. But it has a wider range, with the important details clear to sight, and unlike many official histories, it can be read.

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WILFRID EADY

A Key to Ricardo. By OSWALD ST. CLAIR. (London: Routledge & Kegan Paul, 1957. Pp. xxvi + 364. 35s.)

MR. ST. CLAIR is a retired business-man whose interest in the classical economists was first aroused by reading John Ruskin's attack on Political Economy; and this work is the fruit of twenty years since his retirement of devotion to the study of Ricardo. His expressed aim has been “to write a book which may be found readable—even by those who have never had the time, or perhaps the wish, to make a study of Political Economy, but who would nevertheless welcome an opportunity to acquire ‘without tears’ some acquaintance with the economic problems which shook the world in Ricardo's day, and are shaking it a good deal more at the present time.” In his analysis of the main propositions of Ricardian doctrine he is painstaking, learned and discerning; the exposition is easy and lucid; and the result fulfils his modest hope “that even professional economists will find this work useful.” Professor Hutt in his Foreword justly remarks that “it is a virtue of Mr. St. Clair's treatment that he does *not* try to interpret Ricardo in the light of modern economic theory or to apply the teachings of the great economist to the modern world.” Despite its title, however, the work is not to be regarded simply as a popular exposition. The author makes it clear that he is by no means in full sympathy with the general tenor of the Ricardian approach; and after the first two chapters Mr. St. Clair's *Key* becomes as much a running critique as an exposition. He is particularly concerned to stress the role of demand against determination by cost of production, and his sympathies evidently lie with Malthus in the controversy over gluts. Much of the criticism follows lines made familiar by Samuel Bailey and by Cannan. But even when occasionally the tendency to criticise may seem to become rather captious (for example, in connection with cost at the margin governing price under diminishing returns or the “irreconcilability” of the notions that the value of money is governed by its quantity and by the cost of mining gold) the argument is freshly and cogently presented.

Mr. St. Clair's work was almost completed when the new edition of the

Works and Correspondence of David Ricardo appeared. It is hardly surprising, therefore, that the new material brought to light in this edition should have made no more than a partial imprint upon Mr. St. Clair's critique. But he has done all that was possible in the circumstances to take account of the new material, and he has been at pains to adapt all his page references to the new edition. There is a very full analytical table of contents running to fifteen pages, and at the end an index of all passages in the *Principles* quoted or referred to in the book.

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Studies in the Labour Theory of Value. By R. L. MEEK. (London: Lawrence & Wishart, 1956. Pp. 310. 30s.)

DR. MEEK states his aim clearly in his Preface. It is “to build some sort of bridge between Marxian economists and their non-Marxian colleagues so that the latter can at least be made to see what the former are trying to get at.” To this original aim others come to be added: to demonstrate Marxian economics in action by applying it to two contemporary problems, one the economic working of a socialist system and the other the economic working of a capitalist system thoroughly penetrated by monopoly. His first aim Dr. Meek has succeeded very well in achieving; about his second there can be some doubts.

The author's method is historical. He traces the evolution of the labour theory of value and, by showing how it came into existence in response to the need for solving particular problems, he presents it in a more favourable light than orthodox economists have hitherto seen it in. The book contains seven chapters: one devoted to the pre-Adamite economists; one to Adam Smith; one to Ricardo; two to Marx himself; one to “the Critique of the Marxian Labour Theory,” which is really a critique of the critique; the last, entitled “The Reapplication of the Marxian Labour Theory,” consists of three sections, one a critique of marginalism from the Marxian standpoint, one on “the Operation of the ‘Law of Value’ under Socialism,” and one on “the Operation of the ‘Law of Value’ under Monopoly Capitalism.”

Dr. Meek's discussion of the evolution of the value concept in the works of the canonists, the mercantilists and the fore-runners of the classical school is very interesting. He finds in the canonists the germs of a real-efforts cost-of-production theory of value—“the idea that remuneration should be proportionate to outlay and effort in production (provided that the remuneration was weighted according to status, and provided also that the effort was properly directed) afforded a natural basis for the definition of the just price” (p. 12). In the Mercantilists, on the other hand, he finds a leaning towards a supply-and-demand theory, often with some reference to

the common estimation of the market or a similar expression, which leads some writers to the concept of utility (not as yet *marginal* utility) as something lying behind supply and demand. Later writers, however, such as Petty, John Cary (1719), Cantillon, Joseph Harris (1757) and William Temple (1758), standing between mercantilism and the classical economists, develop the concept of "natural" or "intrinsic" value, based upon the idea of real cost. (It is curious that Meek ignores Condillac, who had arrived at a very clear concept of utility and had almost discovered marginal utility and opportunity cost, and Turgot, who expressed very clear ideas about value in his fragment *Valeurs et Monnaie* and in a footnote to his *Observations sur le Mémoire de M. Graslin*.)

Another strand in the mingled yarn of classical theory that Dr. Meek disentangles with great skill is the development of the idea of profit as a normal component of price and of the idea of a normal rate of profit. Petty had a two-factor cost-of-production theory of value: price, according to him, was made up of land and labour. Other writers followed him in this. Again, profit was recognised as a necessary remuneration for the merchant. But the idea that *all* production required the use of "stock" and that a normal rate of profit on "stock" was a necessary constituent of price emerged only with the *Wealth of Nations*, though, as Dr. Meek shows, William Temple, in his *Vindication of Commerce and the Arts* (1758), with his concept of "brokerage" comes very near indeed to the idea of profit as a universal constituent of price. Even in his *Glasgow Lectures* (on "Justice, Police, Revenue and Arms") of 1763, Adam Smith shows as yet no trace of this idea. These facts are related by Dr. Meek to the general process of economic development in society itself: until the end of the eighteenth century the division between capitalist employer and wage-earning workman had not become general. Earlier economists, and even the Smith of the *Lectures*, envisaged the organisation of production in terms of small masters owning their own tools and working for a merchant-undertaker, rather than in terms of an employer owning all the means of production and hiring wage-labour.

Dr. Meek deals thoroughly with the two versions of the labour theory of value formulated by Adam Smith, the commandable labour theory (labour as the standard of value) and the embodied labour theory (labour as the cause of value); and with Ricardo's definite choice of the latter as the true theory. On this point Dr. Meek sides with Ricardo (and Marx) as against Malthus, who (in his *Principles*) chose the former.

Dr. Meek belongs to the small (but growing?) band of academic economists who accept the labour theory of value as theoretically valid. Of course, nearly all economists at one time or another have used the labour theory as a rough approximation—in comparing large aggregates, such as wage goods and luxury goods, or home-consumed goods and export goods, they will speak of the workers spending so much of their time on the one

and so much on the other, as if the labour-times were proportional to the values. In the *General Theory* (Chapter 4) Keynes virtually adopted the labour theory of value, on the grounds that in the short run value was determined by prime cost and that, over the economy as a whole, prime cost was all wage cost. But, in all these cases, the labour theory is taken merely as a rough approximation. But there are economists, not all dogmatic Marxists, who regard it as something more, as a theory of value that is, in some way, more fundamentally true than the "demand" or "equilibrium" theories that have enjoyed a vogue during the last seventy years. Dr. Meek's argument in its favour is based upon its social significance. Since value is a social phenomenon, derived from the division of labour in society, the quantitative measure of value might be expected to be related in some way to this social process.

"If we regard society as consisting in essence of an association of separate producers who live by mutually exchanging the products of their different labours, we are likely to come to think of the exchange of these products as being in essence the exchange of *quantities of social labour*. And if we begin thinking in these terms we may well eventually conclude that the *value* of a commodity—its power of purchasing or commanding other commodities in exchange—is quality conferred upon it by virtue of the fact that a certain portion of the labour force of society has been allocated to its production" (p. 39).

Or, again—

"If we merely say that a commodity possesses value because it is a product of social labour, we have not yet arrived at a quantitative value-principle. . . . We have simply defined the *source* of the commodity's power of attracting other commodities in exchange; we have yet to explain how the *extent* to which it possesses this power is regulated or determined. . . . If we . . . regard the labour used to produce a commodity not only as the source of its value but also as constituting the very substance of its value, so that the commodity is looked upon as a sort of mass of 'congealed' or 'crystallised' attractive power, we are much nearer a solution. We may then conclude that a commodity acquires value not only because but also to the extent that it is a product of social labour. The extent of its attractive power . . . varies directly with the quantity of social labour used to produce it. In other words, we can find the *determinant* of its attractive power without seeking any further than the conditions of production of the commodity itself" (pp. 62-3).

This argument will probably fail to convince any economist brought up in the marginalist tradition. In particular, the last sentence quoted (about not seeking any farther than the conditions of production of the commodity itself) will at once stimulate a vigorous reaction: it will appear incredible that the demand side should be so completely ignored or (what comes to much the same thing) taken for granted. However, if the labour theory of value is gaining adherents, it is because the orthodox theory ignores so

completely that production and exchange involve social relations and that value should, consequently, have some social implication. In the early days of marginalism, when it was possible to believe in measurable and transferable utility, it was possible to give to value a social interpretation in terms of a sort of abstract and generalised social utility. But the marginal theorists have tried so resolutely to banish from economics any sort of social significance—first insisting on the purely private and personal nature of utility, and then expelling utility itself from economics in favour of indifference curves, or of pure equilibrium, or of revealed preference—that they have made it impossible for seekers after social significance to find any *point d'appui* in the structure of orthodox theory. If there is a revival of Marxian economics, it is largely the reaction from the view that “there is no penumbra of approbation round the Theory of Equilibrium: equilibrium is just equilibrium” and from the successive “New Welfare Economics” which have progressively stripped the concept of welfare of every element that could conceivably relate it to social reality.

The chapters on Ricardo and Marx are very good. The author has a clear insight into the essential nature of these writers' thought. He suggests, very plausibly, that the search for an invariable standard of value on which Ricardo was engaged almost at the moment of his death had always been an important element in his thinking, and had in fact determined his attachment to the labour-embodied theory of value. Dr. Meek does much to clarify the often turbid stream of Marx's thought. He ranges freely over the vast field, drawing upon Marx's early note-books (published in the *Gesamtausgabe*), *The Poverty of Philosophy*, the *German Ideology* and an early work of Engels, the *Outlines of a Critique of Political Economy* (not to be confused with Marx's better-known *Critique*), as well as the *Critique of Political Economy*, *Value, Price and Profit*, *Capital*, the *Theories of Surplus-Value* and *Wage-Labour and Capital*, in order to show the development of Marx's thought and to demonstrate the inner cohesion of many apparently discordant elements in it. These chapters are probably the most valuable in the whole book.

The chapter entitled “The Critique of the Marxian Labour Theory” might more justly be entitled “Critique of the Critique of the Labour Theory,” since it is devoted almost entirely to demolishing the objections brought against Marx by Pareto, Bernstein, Lindsay, Lange, Schlesinger and Joan Robinson. Like most long-drawn-out polemic, it tends to lose itself in matters of minor interest.

The chapters on the application of the labour theory of value are of varying value. The first, entitled “The ‘Marginal Revolution’ and its Aftermath,” emphasises the anti-Marxian motivation of the marginal theorists (especially the Continental ones) of the period 1880–1910 and makes the sound point that the expulsion of utility from the theory of value has not produced a return to the Classical emphasis on relations of production, but has rather meant a purification of theory from the last traces of

vulgar reality. The second, entitled “The Operation of the ‘Law of Value’ under Socialism,” reviews the few scattered observations made by Marx and Engels on the problem of directing the productive forces of a socialist society, and then goes on to the modern Soviet writers and, in particular, Stalin's *Economic Problems of Socialism in the U.S.S.R.* The orthodox Marxian view has always been that the Law of Value is relevant only to a society in which “commodity production” (production by individual producers for the market) is the normal form of economic organisation. Consequently, in a fully socialised economy, where production is organised by public authorities according to a social plan, “value” ceases to be a relevant category. Thus, to-day in the Soviet Union value operates only in and in relation to the co-operative and collective-farm sector. With the achievement of full socialism it will disappear. This view may satisfy a dogmatic Marxist. But anyone who has grasped the implication of the marginalist theories of value will realise that this is largely a verbal quibble. “Value” is defined by the Marxist in a special sense. Value *in this sense* may disappear, but the problems of relating the expenditure of social labour to the satisfaction of social needs will still remain. Marx and Engels were fully aware of this. Dr. Meek himself quotes a long passage from the *Anti-Dühring* in which Engels shows that he realises this, although he refuses to allow the name “value” to the relation of “the useful effects of the various articles of consumption, compared with each other and with the quantity of labour required for their production.” The real weakness of Soviet economists is that they have devoted to purely verbal exercises about “value” (in the Marxian sense) energy that should have gone into investigating this other concept, which, under whatever name is given to it, must necessarily play an important part in the economics of a socialist society.

The last section of the chapter on applications of the labour theory of value is devoted to “The Operation of the ‘Law of Value’ under Monopoly Capitalism.” Here the author is dealing with an unpromising subject, since free competition is one of the fundamental assumptions made by Marx in analysing value, both under simple commodity production and under classical capitalism. Dr. Meek suggests that monopoly capitalism may add a third layer of complexity to the Marxian scheme of value and price. This will then become: first, simple commodity production—the law of (labour) value; second, classical capitalism—the law of value, plus the law of production prices; third, monopoly capitalism—the two former, plus some new modification. What this new modification should be is nowhere specified by Dr. Meek, except that it should, in the true Marxist spirit, “explain the deviation of price from value in terms of the specific relations of production characteristic of the particular stage of historical development under consideration” (p. 297). There is no doubt that an analysis of price under monopoly and imperfect competition could be soldered on to the Marxian scheme in some such way. In fact, just as Marx incorporated the whole

post-classical cost-of-production theory into his scheme, so it would be possible to incorporate the whole of marginal utility, marginal revenue and marginal cost into the Marxian scheme—at a great cost in terms of theoretical complexity. The Ptolemaic hypothesis will work, given enough epicycles and deferents.

This book is full of interesting material, although few readers will find all parts of it of equal appeal. It is the product of a vigorous mind which, when it escapes from the strait-jacket of dogmatic Marxism, as it does particularly in the historical portion of the work, is able to throw an original and penetrating light upon problems of theory.

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On Economic Theory and Socialism. Collected Papers. By M. H. DOBB. (London: Routledge & Kegan Paul, 1955. Pp. viii + 293. 21s.)

It was once suggested that economists fall into two distinct groups: those who are frustrated mathematicians trying to force the complexity of the socio-economic process into the strait-jacket of abstract models and those who are frustrated politicians seeking to cure all and sundry economic and social ills by various *ad hoc* prescriptions more or less ingeniously designed to yield immediate benefits to capital, to labour or to both. This classification is fortunately not quite adequate. It leaves out those economists who are neither mere puzzle solvers nor special pleaders. It fails—in other words—to account for those members of the profession whose concern it is to comprehend the laws of motion of society as a whole, whose efforts are directed to the study of the attainability and the contours of a more rational, more human social and economic order.

That the author of *Political Economy and Capitalism*, of *Studies in the Development of Capitalism*, of *Soviet Economic Development since 1919* has claims to be included in this narrow group of contemporary social thinkers is obvious. The recently published volume of papers written in the course of thirty years, although less weighty and containing less original material than his major works, provides a further testimonial to Maurice Dobb's breadth of interest, scholarship and unflagging sense of social and historical relevance. Indeed, there is hardly an important issue in the science of society that is not touched upon in one or the other paper included in this selection. The ordering of the material would seem, however, to be rather unsatisfactory. Instead of being governed by the subject matter of the articles, it is apparently oriented partly by their length and partly by the nature of the audience (and publication) for which they were originally written. This disrupts the continuity of the volume and renders it unnecessarily choppy. Yet in actual fact there are three major headings under which the papers could be conveniently grouped.

The first of them is the evolution of Marxian thought, and here belong

the lectures on Marx and Lenin, the paper on historical materialism and a few minor pieces. Simple and straightforward, these lucid expositions of the most important tenets of the Marxian doctrine will be found useful even by readers well acquainted with the basic literature; they should prove invaluable to those seeking an introduction to it and are excellently suited to classroom purposes. Most gratifying is the proper distribution of accents throughout this part, in particular, the stress placed on the paramount importance of Marx's *method of analysis* rather than of any specific statement of his concerning some aspects of reality. A sentence from the early writings of Marx which Mr. Dobb cites with justified approval expresses, indeed, the basic postulate of Marxian thought, a postulate so frequently lost sight of in dogmatic attempts to twist and bend every Marxian utterance to make it fit the ever-changing conditions of the real world. For insisting on "ruthless criticism of everything that exists, ruthless in the sense that the criticism will not shrink either from its own conclusions or from conflict with the powers that be"—Marx has formulated with the utmost clarity the fundamental condition for any meaningful and successful scientific effort: the willingness and ability to assess and analyse the real world not in terms of the ideologies that it happens to evolve at any given time, but in the light of objective reason.

Another important theme of the book is the theory of modern capitalism. The issues of full employment, of class distribution of income, of the feasibility and limitations of social reform are dealt with in a number of interesting papers containing astute and subtle strictures of prevailing views and suggesting a more concrete and more realistic approach to monopoly, to wage theory and to economics of welfare.

The largest portion of the volume is devoted to socialist planning of economic growth. The articles on the problem of economic calculation in a socialist economy, in addition to containing Mr. Dobb's own well-known contributions to the subject, present an excellent summary of the extensive writings in that field. Of even larger interest at the present time are the papers discussing the allocation of resources for economic development and the criteria for investment decisions in underdeveloped countries. In conjunction with this part of the book the reader will find it useful to consult the author's most recent paper in *The Review of Economic Studies* (Vol. XXIV, No. 1).

That most of the articles referred to above have already been published does not reduce the value of the book. With a few exceptions they appeared in places neither well known nor readily accessible. Offering enough to hold the attention of readers with most divergent interests and tastes, this collection is certain to be welcomed by both professional economists and the general public.

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The Terms of Trade. A European Case Study. By C. P. KINDLEBERGER. (New York: John Wiley, and the Technology Press of the Massachusetts Institute of Technology (London: Chapman & Hall), 1956. Pp. v + 382. 72s.)

In this ambitious and comprehensive study Professor Kindleberger collects and collates the available terms-of-trade statistics of selected European countries, and tests against the evidence a number of current theories and conjectures concerning the mechanism by which the world economy adjusts to disturbances. The countries chosen for examination collectively constitute "Industrial Europe": the United Kingdom, Germany, France, Italy, the Netherlands, Belgium, Sweden, Switzerland. Thus most of those European countries which are both moderately or heavily industrialised, and of importance in world trade, are included. Obvious omissions, such as those of Austria and Czechoslovakia, are explained by the lack of consistent statistics. Whenever possible, the statistics are taken back to 1870, the dawn of the world economy as we know it (p. 13). The indexes are of variable quality, but in Chapters 1-3 and in Appendices A and B the reader will find sufficient information concerning sources and methods of construction to arrive at his own view of the reliability of any particular index.

Two types of index series are presented: an annual series, running from 1870 to 1952, for each country and for Industrial Europe as a whole; and, for certain key years, detailed series of import and export prices of merchandise classified by commodity group and geographical area. The former are called "annual indexes," the latter are called "detailed indexes." Separate annual indexes are presented for merchandise trade and for trade in merchandise and services. The annual indexes of the individual countries were converted to dollars and combined into an index for Industrial Europe, the weights used being the relative annual volume of trade measured in 1913 dollars. For the years following 1900 the merchandise terms of trade were adjusted for intra-European trade. Most of the indexes are of the current-weights, unit-values type, derived by the division of a base-weighted quantity index into value relatives. The properties of such indexes are well described in an appendix.

It is impossible in short compass to summarise all the factual results; the following two omnibus statements constitute no more than a small sample of the generalisations scattered through the book. First, the terms of trade do move substantially in the short run. Before the First World War the terms of trade moved in favour of Industrial Europe in boom times, against Industrial Europe during periods of trade depression; in the post-First World War period the relation has been reversed. The swings of the terms of trade on merchandise account have been more severe than those of the terms of trade on current account—in other words, the introduction of

service payments has a damping effect. As might have been hoped, the effect of correcting for intra-European trade was to accentuate the swings. Second, in the long run the terms of trade tended to move in favour of those countries which were developing most rapidly and against stagnant countries, regardless of the stage of development attained by the latter. The evidence does not support the claim, often made, that the terms of trade have moved steadily against primary producing countries and in favour of manufacturing countries.

The bulk of the book is devoted to the testing against the assembled data of a variety of theories concerning the mechanism of international adjustment to a single disturbance: a revision of commercial policy, an adjustment of the exchange rate, an autonomous change in the rate of foreign or domestic investment or a shift in long-run demand or supply conditions—in general, to shifts in tastes, technology or government policy. Occasionally Professor Kindleberger turns aside from his general purpose to examine the correlation between movements in two endogenous variables; Chapter 7, for example, is devoted to the relation between the terms of trade and the business cycle.

It is difficult to test hypotheses concerning the effect of variations in a single parameter against data produced by variations in several parameters. Professor Kindleberger is well aware of the pitfalls; indeed, in a disarming methodological sermon (pp. 67-72), he goes out of his way to bring them to the reader's attention. It is perhaps inevitable, then, that the results of the tests should be rather inconclusive. Concerning short-run movements of the terms of trade, for example, Professor Kindleberger concludes:

"The conclusions are on the whole negative: The impact of commercial policy on the terms of trade cannot be measured; exchange-rate changes will produce effects on the terms of trade, which will vary depending upon the size of the country, the importance of its exports and imports, and the condition of world markets, depending, that is, on the elasticities, on which generalizations good from country to country, or even for the same country from time to time, have little validity: there is little evidence to lead to the conclusion that the terms of trade are systematically determined by foreign lending, or *vice versa*, although connections between the two will be found from time to time; finally, the terms of trade play an important part in the balance of payments of some countries, such as Britain, in the business cycle, but this role is subject to change, is not certain, and may on occasion be offset by counterposed income effects. Little or no support has been found for the more refined theories concerning the terms of trade; that they regulate the direction of capital lending; that they contain the clue to the international balancing mechanism in the prewar period; that the domestic business cycle is touched off by their change. On the basis of the investigation thus far, it can only be concluded that implicit theorizing about the terms of trade has gone too far."

Nevertheless, the econometric chapters (4-12), particularly Chapter 6, on the interactions of the terms of trade and investment spending are interesting

and illuminating, and if there is absent some of the dash and vigour which we associate with Professor Kindleberger, the familiar gaiety of delivery is not completely swamped by the difficulties of the subject.

MURRAY C. KEMP

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United Kingdom Trade with Europe. By F. V. MEYER. (London: Bowes & Bowes, 1957. Pp. 197. 21s.)

THE proposals for the setting-up of a European common market inevitably raise the problem of Britain's economic relationships with her continental neighbours, on the one hand, and the remainder of the world, especially the Commonwealth and the United States, on the other. Although Dr. Meyer's book does not directly deal with the central issue, it raises many of the questions which should be answered before a rational decision on the scheme itself is reached; this study therefore makes a timely appearance.

The book is divided into two parts. The first, and in many ways the more important, section attempts to establish some simple rules with regard to the network of world trade. The author argues that Britain's large traditional deficit with the other manufacturing countries of Western Europe (which was offset with a surplus earned in regions producing primary products, particularly the Commonwealth) could continue only as long as she remained the leading industrial nation. As the United States is now in the position formerly occupied by Britain, the appropriate network of payments is for the United States to have a deficit with Western Europe, including Britain, that is to say, with countries largely producing substitutes, and a surplus with countries producing primary products (who in turn would have a surplus with Europe). The position of Britain *vis-à-vis* the rest of Europe is rather difficult to define for such a system, but Dr. Meyer holds that the British deficit, if at all existing, should certainly be smaller than it used to be.

However, the analysis on which this discussion is based is not always convincing. In particular, the author does not seem to give due recognition to some of the basic propositions of the theory of comparative costs and of the equilibrating role of relative wage levels and exchange rates. Hence the conclusions reached in the first part of the book are perhaps best regarded as working hypotheses rather than as the results of rigorous economic reasoning.

If the case for a reduced British deficit in her trade with Western Europe is accepted, post-war trade developments must be judged to have proceeded in the right direction. The question then arises to what extent changes in commercial policy, both in Britain and in the O.E.E.C. countries, were responsible for Britain's improving bilateral balance. The second part of the book is devoted to this problem.

Dr. Meyer first investigates Britain's imports from Western Europe.

By means of relating the proportions of total imports consisting of food, raw materials and manufactures respectively to the level of employment in the United Kingdom, he calculates what the O.E.E.C.'s share of total British imports in the post-war period would have been if British commercial policy had remained the same as in 1938; the difference between the O.E.E.C.'s actual and expected shares is then attributed to changes in commercial policy. These calculations point to a shift of British commercial policy in favour of the O.E.E.C. countries, resulting in additional imports from the Continent of roughly £60 million a year.

Some aspects of the author's treatment may perhaps be criticised. The influence of price movements seems to be insufficiently allowed for, and the analysis would probably also have gained if a distinction had been made between semi- and finished manufactures. Nevertheless, this still appears to be in many ways a worth-while attempt to grapple with a difficult problem, and the results are quite plausible.

Dr. Meyer then moves to the influence of continental commercial policies on British exports. With the help of an "exercise" which relates the share of total United Kingdom exports taken by single continental countries to changes in British exports and the recipient's income since 1938, he attempts to eliminate these other influences, and so to arrive at the effect of changed commercial policies.

However, although this again represents a brave and much-needed attack on a difficult question, the author's results would appear to hold only if it is assumed that a country's average propensity to import depends solely upon the preferences of its inhabitants as between home and foreign-produced goods, and that it is not influenced by other factors, such as commercial policies or price changes. Such a hypothesis is not likely to be generally correct, and therefore the conclusions reached with regard to the effect of changes in tariffs and import quotas in the various O.E.E.C. countries on British exports should be interpreted with a good deal of caution. Hence his final conclusion—that as a result of changes in commercial policies Western Europe increased her share in British imports to much the same extent as Britain enlarged her share in the imports of Western Europe—may well be incorrect.

The author would be the first to admit that his book by no means exhausts the subject. In view of the proposed creation of free trade in Western Europe, changes in commercial policies since 1938 are perhaps less important than the absolute level of protection remaining and the trade-creating and trade-diverting effects of the complete removal of tariffs and quotas. Future students of these problems will find in Dr. Meyer's work many sensible observations and stimulating suggestions, which should be of considerable help to them in the exploration of a wide and often intricate subject.

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World Economic Survey, 1955. (New York: United Nations, 1956. Pp. 201. 14s.)

THIS, the eighth annual report on world economic conditions by the United Nations Secretariat, is essentially a survey of economic developments since the War. The first half of the survey, "Economic Growth in the Post-war Decade," takes stock of the past ten years; the second half examines economic developments in 1955 and analyses the immediate outlook; two supplements contain detailed surveys of recent economic developments in Africa and the Middle East, two regions which are not within the mandate of the United Nations' regional economic commissions.

The survey of post-war history is a most useful and concise record, built up on a clear and remarkably comprehensive series of statistics. Indeed, the reader is impressed by how clearly post-war progress can be charted. There are still many gaps in statistics, but the fact that for so many countries there are now estimates of production, of national income and expenditure, of balance of payments and other economic aggregates means that surveys can now be made with a much more sure and objective foundation than was ever possible before.

The main achievements that emerge from the analysis are the rapid recovery and growth of production and living standards in Western Europe, the dramatic and, at periods, unbalanced pursuit of industrialisation and investment in Eastern Europe, and the sustained prosperity of North America. These are the main elements in the rapid post-war growth of world production. The authors point to the temporary factors—economic aid, the existence of unused capacity and the backlog of technical progress inherited from the War—that have helped industrial countries in Europe and elsewhere to make such good progress. And they point to the continuing problems of reconciling internal and external stability with growth in these countries, and to the question whether or not the dollar problem may re-emerge. But the problems of the rich countries are over-shadowed by the problems of the under-developed countries.

Whereas in the developed countries output has risen much more rapidly than population since before the War, in the under-developed countries output has barely kept pace with population. The gulf between economic conditions in the two areas has therefore widened further.

In the first post-war years the under-developed countries were helped by the foreign reserves which many of them had accumulated during the War and, still more, by the improvement in their terms of trade. But recently the demand for their exports of primary products and their terms of trade have failed to respond significantly to the rising general trend of demand and output in industrialised countries—a phenomenon for which the survey provides some tentative explanations. But while the terms of trade between manufactures and primary products have on average re-

mained comparatively stable, the prices of individual primary products, and hence the export earnings and internal incomes of individual under-developed countries, have continued to fluctuate. That has aggravated the problems of achieving steady economic development. And those problems, which embrace the whole range of social, technical and economic change, are, as the survey recognises, already great enough.

In an admirable introduction, which draws together the threads of the survey, the authors conclude that: "Significant as the post-war decade of growth has been in other respects, it cannot yet be said that the world has effectively come to grips with the problem of economic development." Tacitly, but rightly, they point to that as the problem of the next decade. Their appraisal of the problem is lucid and sobering. They recognise that the primary responsibility must rest with the under-developed countries themselves, but, with the minimum of moralising, they question whether other countries should not do more to help.

Partly owing to its longer perspective, and partly owing to the quality of the analysis and writing, this is a much more interesting and readable document than some of the earlier world economic reports. The introduction alone is a most useful statement of the world economic situation. And the survey of post-war developments, which is compressed into little more than 100 pages, should be of particular value to students who seek a short, clear history of economic developments in the post-war world.

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Hobson and Underconsumption. By E. E. NEMMERS. (Amsterdam: North-Holland Publishing Company, 1956. Pp. 152. 31s.)

As Keynes pointed out, it was Mummery, rather than Hobson, who anticipated the General Theory. It was Mummery's view that "under-employment of capital and labour in periods of bad trade" was caused by excessive saving. Hobson, heretic though he was, could not free himself from the dogma that saving is a form of spending. "Acts of saving employ, directly, just the same amount of capital and labour as if the money were spent on commodities."

To reconcile this with Mummery's insight Hobson evolved the idea of a correct ratio of saving to income which preserves equilibrium between demand and supply as the volume of output grows with capital accumulation (a notion which has a close affinity with the "warranted rate of growth"). Because of the maldistribution of income, there is a chronic tendency for saving (and saving causes investment) to exceed this ratio, with the result that productive capacity grows faster than demand. When it does so, investment falls off, but Say's Law works only one way; consumption does

not increase, and so the Keynes-Mummery situation, unemployment due to a deficiency of effective demand, is accounted for.

From our present vantage point this seems a queer mixture, but in its day it was very much in advance of the orthodox doctrines of the complacent academics (amongst whom it is amusing to see young Keynes patronising Hobson in a review in 1913).

On imperialism, on taxation and on marginal theory, also, Hobson's heretical views were penetrating, but contained enough confusion to make them easy to brush off.

His memory deserves to be celebrated as a gallant outsider who "flung himself with unflagging, but almost unavailing, ardour and courage against the ranks of orthodoxy" and as a warning against the self-satisfaction in which the ranks of orthodoxy are prone to indulge.

The present book, which smells of the Ph.D. thesis, is not worthy of its theme, either as theory or as biography. It is most interesting as an example of a recent development in economic geography—the publication of American books in Holland. Even so, it is not cheap at the price.

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My Father, Irving Fisher. By IRVING N. FISHER. (New York: Comet Press, 1956. Pp. 352. \$4.50.)

STUDENTS of economics belonging to the generation (shortly before 1914) of the present reviewer had what now seems a mercifully restricted list of prescribed reading. High up on this list came Irving Fisher's *Purchasing Power of Money*; while we were also recommended to read his *Appreciation and Interest* (1896)—rather surprisingly omitted from the "Chronological List of Principal Works of Irving Fisher" printed at the end of this volume.

The present biography, undertaken as a work of filial piety by his son, enables us to see what manner of man Irving Fisher was. In truth, he was in many ways a distinctly odd person. His enthusiasms were boundless: an inveterate food- and health-faddist, and an easy prey to the charlatans who frequent those pastures, "he was convinced that each discovery was a potential elixir of youth until it was proved to be otherwise." Schumpeter, who had a high opinion of him as a pioneer of many new and important ideas in economics, once described him as "this modern Parsifal." He was indeed always crusading about something—prohibition, world peace, simplified spelling, public health, "relaxation," physical culture and, in his own intellectual field, above all, the commodity dollar. In this last connection we are given a delightful account in his own words of an interview with Mussolini to whom he tried to "sell" the idea of a stable lira. An equally enjoyable interview is recorded with a high official of the Bank

of England, who resisted all Fisher's endeavours to persuade him to convert a £5 note into gold—this was in 1921.

To add to his other peculiarities, he was an ardent amateur inventor; but with one exception (a visible card-index system) his inventions were much more ingenious than practical.

During the 1927–29 Stock Exchange boom Irving Fisher played the market with such success that if he had sold out before the crash came he would have been in possession of a fortune of several million dollars. But he misjudged the signs of the times, held on much too long and finally lost all that he had gained and a great deal more besides. His son has furnished this book with the following motto derived from Dr. Johnson: "It is better to live rich than to die rich."

The picture which emerges from these artless pages is that of an eccentric but thoroughly likeable person, whose enthusiasms in many directions were all too apt to run away with his discretion—he would appear to have been almost totally devoid of a sense of humour, at any rate where he himself was concerned. Withal, he was a very good and sound scientific economist.

Some of his economic achievements are summed up in the following tribute sent after his death in 1947 to the President of Yale University and signed by Professor Schumpeter and eighteen other members of the Harvard Department of Economics:

"No American has contributed more to the advancement of his chosen subject than Fisher. His use of the mathematical techniques in the analysis of economic data was among the first of such applications in this country as it has remained among the best. His *Mathematical Investigations into the Theory of Prices* must, in fact, be recognised as among the best works of its time in any country.

"Fisher's *The Nature of Capital and Income* added to his international reputation, to the reputation of Yale University, and to the study of Economics in this country. Together with his masterpiece, *The Rate of Interest*, it established Fisher's position by the side of J. B. Clark and F. W. Taussig as a founder of modern economic study in the United States. That he continued in his *Making of Index Numbers* and in later works the vein of originality so characteristic of his earlier productions is a tribute to his vitality and to the environment in which he worked.

"The impulse that Fisher gave to econometric studies, both as a founder of the Econometric Society and as an eminent pioneer in the field, has already yielded a rich harvest and promises to continue to an enduring influence. The name of that great economist and great American has a secure place in the history of his subject and of his country."

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Federal Reserve Operations in the Money and Government Securities Markets. By R. R. ROOSA. (New York: Federal Reserve Bank of New York, 1956. Pp. 108.)

Mr. ROOSA has given us an admirably lucid and workman-like account of the way in which the Federal Reserve System conducts its market operations. To aid our understanding he provides a fairly full description of the institutional arrangements and practices of the United States money market. The pivotal role of the small number of "dealers" in United States government securities stands out strongly; these each take a position by quoting buying and selling prices; they may be said to combine the functions, albeit with wide differences, of our discount houses and our jobbers in the gilt-edged section of the Stock Exchange.

This book should be of the greatest value to those who strive to follow carefully the operations of the Federal Reserve. It does not tend to alter in any radical way the necessarily rather vague notions of those of us who have made a continuing study of the System but lacked practical experience of how the New York money market operates. But by filling in details it greatly enriches our understanding. Mr. Roosa stresses that there is ceaseless change and development, that his story would have been substantially different had he written his account only a few years ago and that further changes are to be expected. We must earnestly hope that he will continue to keep us up to date by revising this work from time to time.

He does not deal with the ways in which high decisions of policy are reached. He makes a useful distinction between the defensive and the dynamic aims of policy. The former are designed to obviate those strains which would automatically be generated by the day-to-day events in the monetary centre of the great American economy, were the Federal Reserve System not constantly vigilant and taking corrective measures. It exists to maintain orderly conditions, to prevent sudden bursts of inflation or sudden crises caused by the massive ebb and flow of money and of lending in that vast arena. This is, so to speak, its technical task. But in addition to that it has its dynamic policy designed to influence the course of events as determined by more fundamental economic forces, in such wise as to prevent the cumulative processes of inflation or depression gathering momentum and to maintain steady growth in the economy. The defensive and dynamic aims necessarily interact. If one considered the operations on any one day one would probably be mainly impressed by their service in correcting the technical maladjustments arising on that day; yet over a run of days the dynamic policy is all the time having a pervasive influence. He gives an excellent illustration (p. 102), showing how in the second half of 1955 technical conditions required a substantial and cumulative expansion of open-market holdings, despite the fact that the top-level directive was to be moderately restrictive, and he shows that the joint effect of this expansion and of the

technical forces at work was in fact restrictive, as required. In such ways Mr. Roosa's study should be of notable assistance to would-be interpreters of current operations.

His narrative confirms the impression that the System's handling of its highly complex problems is eminently rational and well grounded in principle. He dispels any atmosphere of mystery. All is revealed in clear outline; and it is good that it should be thus revealed. For this serves to promote confidence in the System, whose operations are of such moment not only for the United States but for the whole world. He enlivens his account by describing a typical day's work at the "trading desk" (pp. 57-63). One feels that he implies that the New York Bank must be run by supermen, if they are to digest all the information purveyed and go through all the mental processes required for judgment, prior to operations, which have to begin fairly early in the day. But one will readily excuse him for heightening his narrative at this point.

Sometimes a reviewer in this JOURNAL is asked to deal with two books in a single review. Alas, on this occasion the second book is not to hand. Why cannot the Bank of England actuate a member of its staff to give a clear and workman-like account of its operations, and blow away the atmosphere of mystery? Such a work would assuredly increase confidence in it.

The problems confronting the Federal Reserve System are complex and intricate; the multiplicity of banks and the great size of the economy must make its tasks in some ways more difficult than those of the Bank of England. But there is one point that leaps to the eye in Mr. Roosa's narrative; although he deals only with the modes of operation and does not consider the matters that govern decisions in the sphere of dynamic policy, it is clear that he could not have written as he has, were it not the case that the external balance of the United States has little influence on these decisions. Foreign holdings of dollar balances are great and growing; but the gold reserve remains so large that they still cause little anxiety to the Federal Reserve authorities and cause no deflection of domestic policy, whether defensive or dynamic, from the course which domestic conditions indicate as best. How different is the plight of the Bank of England. To all those matters dealt with by Mr. Roosa would have to be added, in the Bank of England's story, the vital interaction between dealings in the domestic markets and dealings in the foreign-exchange markets, the effect of dealings in the former on the implementation of foreign-exchange policy and the effect of dealings in foreign-exchange markets on domestic policy, whether defensive or dynamic. The Bank of England story would indeed be more complex. And even on the internal side one feels that there is less margin for mistakes in the British case, with her economy so overloaded and the danger of really harmful inflation just round the corner.

So perhaps the Bank of England has a more difficult task. *Prima facie* one would suppose that it has discharged it singularly well in recent years.

Why, then, should we not be told in a straightforward, rational manner about its methods and aims? It may fear that any information vouchsafed would necessarily oversimplify the problems, and might therefore give rise to misinterpretation. But there are competent observers well qualified to correct such misinterpretations. Mr. Roosa, too, has no doubt had to oversimplify. The Bank of England may feel that its task has been, and still is, so exceptionally difficult as to make it require the additional weapon of secrecy. But it is very doubtful if this has been an aid. It has not prevented misinterpretation. Time and again in the last three years foreign bankers' confidence in sterling has ebbed far, simply owing to this lack of comprehension of what was on foot. The Bank maintains its silence, while Ministers make statements that are not always helpful; the strength of the British position and the wisdom of British policy have been grossly underestimated—simply from lack of the relevant information, which could perfectly well have been supplied without injury. This must have made the Bank's task harder on repeated occasions.

Among the valuable functions of this excellent book may be reckoned its demonstration that a member of the staff of a great central bank can safely be entrusted with the task of giving a rational and sensible account of how it operates.

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Local Expenditure and Exchequer Grants. A Research Study for the Institute of Municipal Treasurers and Accountants. (London: Institute of Municipal Treasurers and Accountants, 1956. Pp. 352. 42s.)

LOCAL-AUTHORITY finances have always aroused considerable interest in this country, and in recent months there has been a veritable spate of publications on the subject. Following hard on the heels of the studies by the Royal Institute of Public Administration and the West Midland Group, a working party set up by the Institute of Municipal Treasurers and Accountants has now had its say. Dr. D. S. Lees acted as Chairman and was assisted by five local-authority treasurers. The result of their studies is a happy blend of well-reasoned argument and ample supporting evidence, a good deal of it previously unpublished.

The scope of this inquiry was distinctly narrower than that of the Royal Institute of Public Administration, and was confined to looking at possible improvements in the system of distributing the present Exchequer grants—rather than investigating the need for increases in other local-authority revenues. Three chapters are devoted to the Exchequer Equalisation Grant, its operation, the criticisms levelled against it and possible reforms. It is concluded that this device has been an effective means of levelling up resources and that although its effectiveness depends on uniformity of valua-

tion for rating purposes, there is as yet no vindication of the original fears that it might encourage extravagance among the recipients. Some detailed suggestions are offered for reform, but on the whole this is the least interesting part of the Report—perhaps because this territory has been explored fairly thoroughly before.

Chapters IV–VI discuss the dispersion of needs in the various local-authority areas. It is concluded that a large number of children is not an important cause of high expenditure other than in respect of education, and this can be dealt with by the education grant. Sparseness of population and declining population are causes of high local costs but not smallness of population or a large ratio of old people. Chapters XI and XII show in detail how the Education and Highway grants might be more appropriately arranged to cope with these differential needs.

The most interesting section of the Report is Chapters VII–X, which outline the working of the percentage-grant system and the possibilities of replacing it, wholly or partially, by a system of unit grants. Suggestions on these lines date back to the Minority Report of the 1901 Royal Commission on Local Taxation and have been produced on many occasions since. Dr. Lees and his colleagues argue strongly both that there is no evidence that percentage grants encourage extravagance among their recipients and that there are formidable objections in principle and in practice to unit grants. (How, for example, could such a system be used for the inauguration of new services?) Although some allowance should perhaps be made for the inevitability of a conservative approach by the operators of the existing mechanism, the case for the new (February 1957) Government proposals for replacing a number of specific grants by a general grant begins to look distinctly weak in the light of these arguments. The Opposition has been provided with plenty of ammunition when battle is joined on this subject in Parliament.

Enough has been said to indicate that there is a great deal of close argument and detailed supporting evidence, albeit on a highly specialised subject, in this Report. It will be a great day, but on present prospects a far-off one, when the whole field of British Public Finance is as well documented as the local-authority corner has now become.

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Local Government and Central Control. A West Midland Group Study. (London: Routledge & Kegan Paul, 1956. Pp. 296. 28s.)

FROM 1948, the West Midland Group investigated, “by study of conditions in the West Midland Region, the present situation of Local Government and particularly the influence of recent changes on its value and effectiveness as part of the English democratic system.” Mr. Tom Burns

prepared for the Group a series of reports dealing with the problems set out in the chapters of this book.

In the first three chapters there is a brief and clear account of the development of the local-government system, a review of Local Government Authorities, Services and Finance in the West Midland Region and the changing pattern of expenditure and finance, and a critique of central government control. It is argued that by canalising most of the Central Government "contribution through earmarked grants mostly paid as percentages of outlay on specific services and thus warranting, and calling for, itemized control over the spending policies and programmes of individual authorities" (p. 76), central government control has been increased. "Although the grant system exists in order to remedy financial need among Local Authorities, it is largely true that the wealthier an authority is and the more it can afford to spend on its services, the larger the departmental grant it obtains" (p. 71). It is implied that the "new equalization grant does not offset this."

"Accounting control of Local Government administration at the operational level is geared almost exclusively to the requirements at national policy level. Instead of a system related to the internal requirements of the administration of local services, and by which they could be adequately, economically and equitably financed, the Government has to resort to a multitude of control devices which obstruct, slow down, or halt expenditure" (p. 69).

Furthermore, with the growth of the new universal services, such as the health service and the public utilities, and their administration by departments or agencies of the central government there has grown up a "considerable alternative system of local government" (p. 76). The casualties of these tendencies, it is written, are "economical effectiveness, equity, administrative simplicity, and the implication of the majority of citizens and especially leading citizens, in local democratic government." All this could be changed, it is argued, if grants were based on appropriate standards of cost and financial accountability of local authorities to the central government made *post hoc* only (p. 80).

In Chapter 5 an attempt is made to measure (from pre-war figures) efficiency, having regard to need, result and cost. It was not thought possible, however, to account for the wide variation in standard of service reached. A statistical study of the relation between adequacy and cost and size, wealth, density and population change revealed a general lack of significant relations.

Subsequent chapters deal with the growth of regional government, its relation or lack of relation to local authorities, and the reaction of a number of local-government officials to these problems. The final chapter, on the conditions of local government, gives further attention to *indirect* central controls which safeguard interests of tax-payers while leaving local govern-

ments the opportunities of initiative and efficiency. The main suggestion is to base grants on standards of adequacy and on costs required to reach that level. There is a final peroration on the local authority as, ideally, "the organic centre of the community" and on "the need for a representative body of citizens to occupy a mediate position between the state and the individual citizen" (p. 289).

The judgment of the West Midland Group that the growth of central control at the expense of local-authority government is not a good thing is quite clear. What is not so clear is the bearing of this study on that judgment. It is argued that to measure standard cost and the appropriate adjustment to differing local conditions would make the detailed central control unnecessary, yet this study produces very little evidence that such a measure is possible. In any case the assertion that the form of grant has largely determined the extent of central control is very questionable. Certainly in this study it is asserted without much attempt at proof. The duties of the Minister as defined in the Education Act, for example, would seem to suggest that if the form of education grant were changed, so would the form of control. If there is to be a national policy on the social services (and this is still implied in the West Midlands Group's proposals about adequacy), how much room is there for any local authority to be different? Furthermore, given the place in the "new universal services" of public utilities, is it reasonable to assume that the measures proposed in this book could do much to give to the individual Authorities responsive to his needs and to his demands?

It is a pity that questions such as these were not given a closer attention.

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Population Growth and Levels of Consumption, with special reference to countries in Asia. By H. BELSHAW. Issued under the auspices of the International Secretariat of the Institute of Pacific Relations. (London: Allen & Unwin, 1956. Pp. vii + 223. 25s.)

THIS book will be useful supplementary reading to specialist students of economic development. Unfortunately its technical apparatus on the production function may discourage the general reader, while hardly making it an up-to-date monograph. Joan Robinson's *Accumulation of Capital* was no doubt too late to be mentioned, but in other respects also the theoretical approach must be regarded as pre-Keynesian. This is unfortunate. We need an adequate general book on demographic aspects of development and the relation of population growth to the rate of growth in capital and enterprise required to maintain living standards. We probably need also a thorough-going technical treatment of this aspect of development which will

not assume unlimited supplies of labour, and real wages determined by unspecified historical forces. It may, as has been suggested, be naïve to construct production functions which neglect the relation between wages and the measurement of capital. But to economists in Asia it seems worse than naïve to assume away the effects of capital supplies on the level of income per head.

In Professor Belshaw's book there is no polemic on this issue. It is a treatment by the classical Cobb-Douglas equation of the effects (particularly in Asia) of accelerated population growth. It contains many shrewd observations from practical experience; and one can readily accept its general theme: the increasing strain that population growth imposes on Asian economies and the need for applied research into the sociological and technical problems of raising agricultural and industrial output by techniques of low capital intensity.

There are some important omissions from the general population section. The dramatic increase of population growth rates to 3% per annum and more in several South-east Asian countries could have illustrated clearly the probable effects of better health services in other Asian countries. The latest Chinese census has revealed a higher rate of growth than was formerly suspected, and the Government has since modified its attitude towards birth control. Japan's legalised abortions (mentioned only in a footnote) represented a drastic reaction to critical post-war population pressures. The author finds hope in urban-rural fertility differentials, increasing velocity of communication and reduced reliance on large families for support in old age, but neglects the effect of widespread compulsory education on the cost of child-rearing (an important influence on birth control in England).

Professor Belshaw uses the Cobb-Douglas equation to focus purely descriptive discussion of the effects of increases in labour and capital, and the likelihood of economies of scale. On p. 88 the proportion of food products consumed is apparently identified with the proportion of the population engaged in agriculture, neglecting important possibilities of international trade by underdeveloped countries.

Professor Belshaw argues convincingly for small-scale investments with low capital intensity, on grounds of leadership training, employment decentralisation and diffusion of benefits. He is less secure in criticising Galenson's model (which defends high capital intensity as a generator of more re-investment) by arguing that, without rising consumption levels, there would be no scope for such increased investment. (The model is simplified by requiring reinvestment of profits in other mills, but this is not significant.) Without rising consumption levels, increased investment can, of course, occur only by raising the capital intensity of the whole economy; but to use this as an argument against capital-intensive methods is circular reasoning. Some assets corresponding to less-intensive techniques will lose value if capital intensification is too rapid for normal depreciation and

the growth of the whole economy to digest. Some selective losses may stimulate progress; too many will deter investment by high risks. If Professor Belshaw's development equations could help to solve these problems we should indeed be in his debt.

He properly emphasises the difficulty of generating savings, including the incentive problem when raising marginal above average rates of saving in underdeveloped countries; but surely he should not criticise the tendency to invest capital in trade. He describes how ill-health, poor transport and the like reduce the labour supply for any given population, and how public-health measures initially aggravate dependency; and on p. 134 reproduces a dramatic life-table comparison.

In specifying requirements for innovations, Professor Belshaw perhaps underestimates the need to adapt institutions to local factor scarcities (p. 173) and to minimise the required cultural changes (p. 176). Much research is needed, for example, into educational techniques where skill is scarce and young people numerous; and into modifying local techniques like Chinese tontines, and "Gold-coasting."

The author's convincing advocacy of community development says rather too little about ensuring that the local enterprise generated gains influence and is imitated, and that improved productivity leads to continuing investment. The treatment of international loans as supplies of foreign exchange for development neglects much pre-war wisdom (now expressed in income-elasticities of import-demands) which international lenders are slowly relearning. Perhaps one should also whisper (the United States might overhear!) that the references to opportunities for local training imply rather unreal monopolists on the spot.

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The Population of Jamaica. By G. W. ROBERTS. (London: Cambridge University Press for the Conservation Foundation, 1957. Pp. xxii + 356. 40s.)

OUR knowledge of the structure and composition of the population of tropical areas is scanty, and Mr. Roberts's detailed and careful survey of the population of Jamaica is an extremely welcome attempt to fill one of the gaps. As Vital Statistics Officer of the Colonial Development and Welfare Organisation at Barbados he had made a number of important contributions to the demography of the West Indies before a grant from the Conservation Foundation enabled him to devote himself to the preparation of this major work.

Mr. Roberts traces the growth and structure of the Jamaican population from the census and vital registration figures, and from accounts written

about the island before statistics were collected. As the original inhabitants have contributed practically nothing to population growth, immigration and the development of immigrant populations play a most important part. The bulk of the population were brought in as slaves, and after the abolition of slavery as indentured labourers; and the social factors influencing population growth can be understood only if this basic fact is borne in mind. Mr. Roberts brings together the data available on the slave period, but the principal interest of his book will centre on his discussion of population movement since the date of the first census in 1844. Unfortunately, as the last census that Mr. Roberts could take into account was that of 1943, most of the analysis has to stop at that date.

During that period the population increased from 377,000 to 1,237,000, an annual rate of increase of approximately 1.2%. The rate of natural increase would have been even higher, as there was considerable net emigration during the period 1891–1921, which in total exceeded the net immigration of the remaining period. The rate of increase quickened recently as levels of mortality began to fall after 1921. This decline was still going on between 1945 and 1952, and the author believes that its continuation will soon bring about a state of affairs in which Jamaica will experience a practically European level of mortality. However, fertility has not followed suit. The study of fertility in this area is, of course, beset by considerable difficulties in view of the peculiar pattern of reproduction. Marriage is far from universal, and is in many cases entered into only at a late stage in a woman's life, often when her reproductive period is already over. Thus, in 1943 only 44% of the women aged 35–44 were in the ever-married group, and the bulk of the births took place to women cohabiting in either relatively stable unions (common-law marriages) or in unions of the keeper type, which were more casual affairs. This makes it difficult to relate the births to the true population at risk. Roberts computes joint gross reproduction rates, which have never fallen below 2.08 in the last hundred years. Fertility is slightly lower now than in the pre-1920 period, but the improvement in mortality has led to a rise in the joint net reproduction rate, which Roberts estimates at 1.85 in 1950–52.

Jamaica is thus in the stage of demographic development where mortality has fallen but fertility has not yet followed suit, and the rate of natural increase is high in consequence. Roberts shows that fertility is lower in the larger urban areas, and in the areas in which literacy is higher, but he does not believe that a decline in fertility will be automatic. He notices a tendency towards a decline in the relative number of the less regular unions, and as fertility among married women is higher than among women living in consensual unions, if only because the former are exposed to the risk of child-bearing more regularly, there is a possibility that fertility may actually increase.

The future of fertility is, of course, the most important unknown in future

population growth. Mr. Roberts can only speculate on the subject, and one will await with interest the companion study also sponsored by the Conservation Foundation on attitudes and family relationships in the island. Mr. Roberts has, however, provided the foundation on which any further analysis must be built, and he is to be congratulated on having produced a distinguished contribution to the literature dealing with the demography of underdeveloped countries.

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Dynamic Factors in Industrial Productivity. By S. MELMAN. (Oxford: Basil Blackwell, 1956. Pp. 238. 22s. 6d.)

Foundations of Productivity Analysis. By B. GOLD. (Pittsburgh: University of Pittsburgh Press, 1955. Pp. 303. \$5.00.)

BOTH books are concerned, in different ways, with the more fundamental forces which lie behind productivity change. Professor Gold's main purpose is to develop tools of analysis for their investigation; Professor Melman's empirical study attempts to verify the basically Ricardian hypothesis that the primary factor controlling productivity adjustment is the relative cost of labour hours to machine hours. He also examines the administrative/operative ratio in Britain and America.

Professor Melman's procedure is to compare the 1938 and 1950 alternative labour/machine hourly cost (the latter includes depreciation, fuel, repairs, maintenance, insurance) of performing certain simple tasks. "Machinery" in the main example is materials-handling equipment (fork-lift trucks). From statistics and case studies he argues that the greater use of this equipment in the British motor industry 1938–50 was due primarily to a sharp rise in relative labour/machinery costs. Since these machinery cost changes in both Britain and America 1938–50 followed the same trend as kilowatt-hour prices, he suggests that changes in the latter could fairly represent changes in the former. Kilowatt-hour price is then generalised to cover machinery cost in all manufacturing industry, and the relative labour/machinery (kilowatt-hour) cost is shown to be closely related to horse-power per operative, and to labour productivity over space and time between Britain and America in particular, and several other countries.

The argument, which is well documented, appears superficially convincing, but it is not easy to accept uncritically the inferences from the materials-handling study. He admits that in Britain other important factors were present, the post-war labour shortage and the need for re-organisation, building-licence restrictions on new factory space and the like, and he does not show satisfactorily that relative cost was paramount. Moreover, fork-lift-truck price movements (including ancillary equipment, p. 37) were not typical of all machinery (the 1938–50 increases were 33 and 142% respec-

tively), which throws in question the validity of the kilowatt-hour-machinery cost generalisation.

Machinery cost is principally depreciation, fuel, repairs and maintenance. The price index of machinery (above) indicates roughly changes in unit depreciation cost; in British industrial fuel costs coal was more important than electricity (their prices rose 1938-50 by 147 and 45% respectively); while wages, a major repairs and maintenance cost, increased by 155%. Hence overall machinery costs increased at least 100% (while fork-lift-truck costs rose 40%), and to represent the former by kilowatt-hour price is an unwarranted induction from a special case; changes in the British overall labour/machinery cost ratio were thus greatly exaggerated.

It should also be mentioned that the British, Canadian and Swedish kilowatt-hour price-data adjustment (p. 192) is not only very curious in itself, but is also applied inconsistently (to one diagram only, p. 125, and not elsewhere, as on pp. 105, 120, 155). Thus the arguments, though stimulating, do not verify the hypothesis satisfactorily, and a reader is left with the feeling that the relationships are too complex for solution by the simple techniques used. But if the hypothesis becomes generally accepted, and common sense recommends it, then its influence on wage policy may be profound.

Professor Gold has two main objectives: to strengthen and to elaborate the foundations of productivity analysis; and, by examining the relationships between managerial decisions and productivity changes, to develop effective guides to practical decision making. After consideration of some conceptual problems of measurement, with emphasis on the purpose of productivity study, almost the entire discussion, which is theoretical throughout, becomes centred on constructions of identities. These "analytical models which explore . . . productivity . . . more fully than the tools which are currently available" (preface, p. v), are of the form:

$$\frac{\text{Output}}{\text{Man-hours}} = \frac{\text{Fixed investment} \times \frac{\text{Output}}{\text{Productive capacity}}}{\text{Man-hours}} \times \frac{\text{Productive capacity}}{\text{Fixed investment}}$$

To aid *ex post* analysis of movements in the various ratios, the construction of an identity (which Professor Gold persists in calling an equation) is a perfectly valid method, although its usefulness is limited. The expression above cannot, for example, indicate whether productivity was significantly affected by factors not included, such as the effort of workers, neither can it evaluate the possible effect on productivity of, say, a 10% increase in fixed investment.

It is fatally easy to draw direct conclusions from these identities about causality. To use such expressions as "is determined by" (p. 273), "may be attributed to" (p. 67), leaves one in some doubt whether this is intended.

Clearly unless causal connections can result from this approach, it is sterile, but there is no indication how to do this. In the single empirical example, from the iron and steel industry 1904-39, the analytical method is to graph the ratios contained in two identities, one being that quoted above. But the conclusions, drawn by inspection, are unconvincing, principally because of the method, but also because of the data (all variables are in physical units except fixed investment; this is "Property Value," presumably net in current prices, although not explicitly defined).

In addition to examining the factors affecting productivity adjustment (by using identities), some theoretically possible sources of change in the principal variables and in their proportions are discussed at length. Possible physical and cost effects of productivity adjustment are then examined using similar identities. Finally, managerial objectives are classified and rationalised. Again identities are introduced, incorporating now quantities, costs and profits, whose terms define "management control ratios" (p. 275).

The value of this book is severely reduced by the absence of a satisfactory method of evaluating causal relationships between variables. The possibility of using other analytical techniques, such as calculating partial correlations from the identities, or using production functions, was not explored, and no indication was given of any structure which could be built on the foundations presented.

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The American Business Creed. By F. X. SUTTON, S. E. HARRIS, C. KAYSSEN and J. TOBIN. (Cambridge, Mass.: Harvard University Press (London: Oxford University Press), 1956. Pp. xii + 414. 55s.)

It is difficult to imagine anybody writing a book about the British Business Creed; but uncertain whether the reason is that the F.B.I. includes more ideological nonconformists (as the authors of this book would no doubt call them) than the N.A.M. or whether sociology here is less skilful at divining an ideology when it sees one. The theme of the four authors is that there exists an ideology of American business; this is not, they add, in itself at all wicked: "For us the term is neutral and describes any system of beliefs publicly expressed with the manifest purpose of influencing the sentiments and actions of others." Why "ideology" should sustain such a definition is not immediately obvious. However, if words like ideology have to be used, it is something to have a precise definition of them. This, at all events, is the point from which the authors launch an examination of a great mass of evidence from sources diverse, dubious and entertaining, about a variety of topics related to American business: the nature of business-men, their views on labour, their customers, themselves, competi-

tion, free enterprise, the economic functions of government, trade cycles, monetary theory and policy, social responsibility, strains and stomach ulcers, and many other subjects. Much of the evidence is of absorbing interest, not a little of it is depressing and some is unbelievably silly. Not the least important feature of the account is the impression that it leaves, partly, one suspects, inadvertent, of the deep suspicion with which many Americans regard their kind of capitalism. The authors' inquiry itself has to be prefaced by solemn protestations of neutrality: and for the most part they stick conscientiously, almost desperately, to their aim. The business-man is analysed as if he were a fairly intelligent sort of ape, emerging with some credit if without flattery, a kind of J. Alfred Muggs of conservative habit, to be sent away with an approving if cautious sociological pat on the head. He should be able (the pupil's report runs) to make an effective and constructive contribution to American life "always provided that the level of strains which produce shrill-voiced rigidity can be avoided."

Only the chapter dealing with business and labour seems to be too much for the spirit of neutrality. True, the authors admit that labour, or at any rate labour leaders, are if anything more subject than capitalists to the dangers and strains of present-day life, so that whereas in 1900 capitalists dared make rude remarks about trade unionists, to-day only a labour leader dare call an employer a Big Baboon. But the introduction into the argument of hypotheses based on the absence of trade unions not only makes the discussion unreal: it also prejudices its objectivity. The problems raised by the growing size and centralised power of labour organisations—monopoly, victimisation, corruption, abuse of power—are too serious to be written down as capitalists' phobias.

Yet even here, the authors try hard to be fair. If, here and elsewhere, they fall short of being truly judicial, it is perhaps largely because their cross-examination is necessarily concentrated on only one of the witnesses in the economic suit. It is unlikely that the representatives of competing "ideologies" would appear in more flattering colours if they in turn were subjected to this particular form of ordeal by sociology; but they are not. There is, besides, a certain failure to grasp the real inwardness of the doctrines of economic freedom. The belief in the identity of self and society may have been right or wrong, but it was not necessarily hypocritical or foolish, and the assumption that anyone who holds it will create strains for himself and society needs more proof than is assumed here. Nor can one entirely dispel one's doubts about the authors' evidence and their handling of it. We know that everything is grist to the sociological mill, but the admission, on the last page but two, that there is a large element of wind in much of the evidence quoted from the business-men themselves is more serious than they allow. What discount must be made for what they call "ideological excitement"? Are the views quoted in the previous four hundred pages to be taken seriously or not? Finally, it must be confessed

that the authors' love of polysyllabic abstractions becomes very wearing. Even the simplest statements disappear under mountains of verbosity.

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Social Aspects of European Economic Co-operation. A Report by a Group of Experts. (Geneva: International Labour Office, 1956. Pp. vii + 180. 9s.)

THIS report is the work of a group of six professors from different western European countries under the chairmanship of Professor Ohlin, including Professor Byé of Paris, Professor Matthew of Birmingham, Professor Meinhold of Heidelberg, Professor Saraceno of Milan, and Professor Verdoorn of Rotterdam. Since they devote their attention "mainly, though not entirely, to the social implications of a liberalisation of commodity trade" in western Europe, their conclusions are of topical interest, in view of current discussions about the proposed Common Market and Free Trade Area. Unfortunately the report was prepared before the detailed proposals for either of these schemes were sufficiently advanced to be considered by the authors, who had therefore to content themselves with G.A.T.T., the O.E.E.C.'s Code of Liberalisation, the European Coal and Steel Community and Benelux. However, since much of their argument is couched in general terms, the authors' conclusions are nearly as relevant to the two recent schemes as to the earlier ones specifically considered in the report. (It is indeed a possible criticism of the report, that it is in too general terms, without getting down to brass tacks.)

The report offers answers to four questions: First, Do international differences in labour costs (including social charges) constitute an obstacle to freer trade? Second, Are special international arrangements needed to minimise the hardships which freer trade may impose on persons engaged in particular industries? Third, Does freer trade call for more international co-operation in social policies? Fourth, Would problems arise from the freer international movement of capital or labour?

The general tenor of the report is to answer each of these questions in the negative, but with reservations. The most important reservations arise from the special circumstances of the large underdeveloped areas of southern Europe: in this regard one of the experts (Professor Maurice Byé) goes farther than his colleagues, in that he favours international machinery to offset the tendency for capital "to move from the 'poor' countries towards the 'rich' countries," but all the authors agree that there is "a case for exempting the countries of this region from some of the obligations which other partners would assume under schemes for trade liberalisation" (p. 19), while their general blessing to international movements of

labour does not extend to mass migration from this (overpopulated) region (p. 102).

Other reservations relate to the special problems of agriculture (p. 83). Yet others relate to the need for the "harmonisation" of wage-rates, social charges and taxation, in the very limited sense of ensuring that no industry suffers differential penalties in one country to an extent markedly greater than in other countries: thus, in the field of taxation, co-operative action would be called for "if (a) the burden which a certain system of taxation imposed on one industry in any country were heavier than . . . on other industries in the same country, and, (b) in another country . . . the distribution of the burdens . . . among individual industries were different" (p. 67). On the whole, however, the need for "harmonisation" (in this limited sense) is not very great, at any rate in the field of wage-rates and social charges, as is demonstrated statistically in an Appendix (p. 143)—perhaps the most likely source of trouble being the variation between countries in "wage differentials according to sex."

BRIAN TEW

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The School Teachers. By A. TROPP. (London: Heinemann, 1957. Pp. viii + 286. 21s.)

To be a schoolmaster, said Erasmus, is next to being a king, but the primary school teachers (if we may so describe them) of a hundred and fifty years ago cannot have felt that there was anything kingly about their occupation. Their professional ancestry was as undistinguished as the scene of their activities was squalid—the Dame's School, the Charity School, occasionally the Endowed School fallen on evil days or, at the best and certainly the least frequent, the small country Grammar School. The lack of a good general system of education was among the chief of the many social problems which beset England in the dark days after Waterloo. And it is here that Dr. Tropp begins his story, starting off, naturally, with the pioneer monitorial schemes of Bell and Lancaster. His concern all through is not so much with the content of education or the impact of the teachers on the taught as with (to use his own words) "the social history of the professional group of elementary school teachers from the beginnings of the profession to the present day," thereby somewhat belying his sub-title (*the Growth of the Teaching Profession*), which would suggest the teachers as a whole and not merely one section of them. But within these limits Dr. Tropp has given us a clear and full account of the struggles of the elementary teachers to achieve suitable training, security of tenure, recognised status and tolerably adequate remuneration.

This restricted topic cannot, however, be completely isolated from wider aspects of education—other branches of the profession, the content of education, the training colleges, the inspectorate and educational ad-

ministration in general, and when Dr. Tropp deals with these his touch is less sure and his treatment less adequate. This appears, for instance, in his handling of the post-war period; here he is very up to date, and indeed detailed, over everything that concerns the N.U.T., for instance, the recent campaign for not handling "savings" as a protest against the additional superannuation contribution. On the other hand, the important subject of teacher training is dealt with only sketchily; Dr. Tropp pays full acknowledgment to Professor Rich's valuable book on *The Training of Teachers*, but this book stopped at 1902, and it is unfortunate that, broadly speaking, Dr. Tropp stops there also. He has a word or two about the emergency training colleges which were set up after the War, and he has a reference also to the proposals in the McNair Report about Institutes of Education. But it is a reference only; he does not tell us what has in fact happened, although the institutes have been of great importance both for co-ordinating the work of the training colleges (more especially as regards examinations) and for the provision of valuable refresher and specialist courses for teachers after they have entered the profession. Again, the research activities of the N.U.T. are duly noted, but similar work undertaken by the Institutes is ignored, important though much of this is (for instance, the three-year research into the education of the blind which is now being undertaken by the Cambridge Institute).

I am not sure, moreover, whether Dr. Tropp appreciates the intensity of nonconformist feeling both about the proposals of the 1830s and 1840s and about the Act of 1902; the nonconformists may have been mistaken (I think they sometimes were) but there can be no doubt about the passionate sincerity with which they held their views. And I remember vividly, though only a boy at the time, the deep dissensions (largely denominational) which rent the old School Boards. (In this connection why does Dr. Tropp bring in an Evelyn Cecil, of whose existence I am sceptical, and yet not mention Lord Hugh Cecil, who was a very real and a very formidable figure?)

The book contains some interesting illustrations, in particular photographs of former Secretaries of the N.U.T., and the facsimile of an early school report with entries made in the handwriting of Matthew Arnold. It is useful, too, to be given the famous Holmes Circular *in extenso*, and there are tables of teachers' salaries at various dates; but in that on p. 276 only the price curve, and not the salary curve, should be attributed to Layton and Crowther. Dr. Tropp is sometimes over-allusive, as in his unexplained references to whisky money and to the Cockerton Judgment, while he will certainly not get universal assent to his dogmatic assertion that "the profession has decreased rather than increased in attractiveness during the post-war years."

My final conclusion (and I hope it is not ungracious to say it) is that the author has fallen between two stools. He has realised that he could not

confine himself exclusively to the elementary teacher and the N.U.T., which are clearly his main interests and with which he has dealt very successfully; but he has not been able to do full justice to the wider context in which they have to be placed in order to be seen in their true perspective. And, incidentally, if he wanted to end on a note of special praise for the N.U.T., could he not have found some more recent eulogist than one whose experience of educational administration ended more than fifty years ago?

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In Their Early Twenties: A Study of Glasgow Youth. By T. FERGUSON and J. CUNNISON. (London: Oxford University Press for the Nuffield Foundation, 1956. Pp. 110. 12s. 6d.)

THIS book carries further the authors' admirable *Young Wage Earner*, which examined careers from 14 to 17 of 1,300 Glasgow boys, who left school at or near 14 in 1947, and, as regards crime, Professor Ferguson's *Young Delinquent*. They selected for review, between the ages of 20 and 22, two groups—those who completed two years National Service and those medically rejected. These comprised 707 of the 1,115 in the earlier inquiry from whom adequate information was still available. The main omission was of 332 boys whose service was deferred to complete apprenticeships or training, since to include them would have unduly delayed and complicated the inquiry. Their exclusion, the authors indicate, renders the present results more unfavourable than they otherwise would be by omitting many with the best general and industrial records, this affecting specially, but not solely, apprenticeships and training for skilled work. Of the 707 concerned, adequate information was available for 568 (80·3%)—346 servicemen and 222 rejected; and thirty of those omitted, who served less than two years, are dealt with in an Appendix. The rejected were often handicapped, some severely, by poor physique and health, but escaped the break in work suffered by those who served. The book, like its predecessors, combines thoroughness and good factual and statistical backing with grasp of human feeling and human factors generally.

Its first four chapters start with "Background," analyse the two groups concerned, and discuss factors at work during National Service, and "how the men (of both groups) fared between the ages of 20 and 22." They found the physique and health of Glasgow boys at 18 to be somewhat below the national average, and this inferiority was not appreciably reduced during service. But again the comparison is affected by the exclusion of the deferred group. The informative and excellent fifth chapter examines fully the effects of early background on careers between 20 and 22 and for some purposes between 17 and 20. These effects were often pronounced.

The tests are those used in *The Young Wage Earner*: physique and health; scholastic ability and performance; choice and change of jobs; unemployment, from which the rejected suffered somewhat more than servicemen; homes, housing and overcrowding; use of leisure. These tests are also applied (Chapter 6) to the special subject of crime. These two chapters also include interesting illustrative cases. The final summary (Chapter 7) is concise, clear and informative.

From all this some problems of great importance emerge. First comes training for skilled work. At 22 only 22·6% of the men (ex-service 24·1%, rejected 17·9%) were training or had completed training; and the numbers of men had fallen, mostly after the age of 20, from 163 at 17 to 119 at 22—or by 27%. An important influence here was that of good wages and ample openings available for lower grades in post-war full employment, with no adequate wage differentials to compensate for greater efforts in training and greater responsibilities of skilled work. Moreover, only 3–4% of the men of 20–22 were attending evening classes. This is a different picture from that in *The Young Wage Earner* of improvements among boys of 14–17 in their attitudes to apprenticeship and in their and their parents' greater care in choosing jobs. But here again, exclusion of the large deferred group, with better abilities and records, affects the comparison, and the picture, if they could have been included, might have been very different.

Secondly, while general effects of service were good with some, bad with others, the break in work involved was definitely injurious and contributed to the decline in skilled training. This difficulty was escaped by the rejected, though rejection in itself sometimes caused disturbances. Thirdly, the evil results of poor earlier backgrounds were generally pronounced, causing or aggravating much of the later troubles; and these results were specially marked in regard to crime.

In conclusion, the book well maintains the quality and humanity of its predecessors. The authors' work is specially valuable in continuing for the two groups, for whom this was immediately practicable, the study of further careers from 17 to 22. The omission of the deferred group, though regrettable, was at present inevitable. But one may hope that they will be able later to treat this group similarly, through and after their service, both for their own sake and for the light which can be thrown on the wider problem.

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Food, Volume II. Studies in Administration and Control. By R. J. HAMMOND. History of the Second World War, United Kingdom Civil Series, edited by SIR KEITH HANCOCK. (London: H.M. Stationery Office and Longmans, 1956. Pp. 835. 50s.)

INFANDUM, regina, jubes renovare dolorem. So might exclaim the author of a book on rationing, emergency food services and attempts to control the distribution of fish, eggs, potatoes and milk, which form the substance of this second volume of the history of the Ministry of Food during the Second World War. While the first volume dealt with policy, this is concerned with the carrying out of policy. Its very detailed treatment enables us to follow, almost day by day, the reactions of administrators to perpetually changing circumstances and pressures—not merely to the “laws of supply and demand” which the Ministry was always accused of ignoring when it was only trying to interpret them. The case of eggs, the shortest study of the four, is typical. There the Ministry controllers had to contend with the following; a public demand for eggs based on a belief in their food value which was denied by the Scientific Adviser; producers demanding higher prices (the reviewer recalls a telegram reading, whether by a Freudian slip or a happy misprint in the G.P.O. “Employ you to raise the price of eggs”) aided by the Ministry of Agriculture, whose co-operation with the Food Ministry often seemed less than complete; the fear that an uncontrolled price of eggs, or too high a controlled price, might threaten the milk supply by diverting feeding-stuffs from dairy herds to poultry; the inscrutability of statistics which prevented the Ministry even convincing itself, let alone anyone else, of the true equivalent in eggs of a given volume of feeding-stuffs; their desire to do as little damage as possible to the established channels of distribution, which bolstered the belief of producers that any scheme issuing from the Ministry would be biased in favour of distributors; the Treasury concerned to keep down the cost of living index. Moreover, the four foods here studied had one outstanding common characteristic, namely that there was no single essential point in the productive or distributive process which the Ministry could take hold of and so secure complete physical control of the commodity.

Thus control had chiefly to be indirect, usually by an attempt to use the “price mechanism” but also, sometimes almost literally, by means of mirrors; for example, the recommendation of recipes “combining ingredients on other than gastronomic principles” (p. 33), or S. R. & O. (1941) No. 374 “to forbid the sale from one person to another at the retail price of more than 5 dozen eggs in any one week,” of which the author comments (p. 73), “Compliance . . . cannot but have been wholly voluntary,” but it caught two Oxford colleges in its first week! In such cases the Ministry learnt, gradually on the whole, that partial measures satisfied neither traders

nor public but only made things worse; from merely fixing retail prices it was forced to proceed first to fix prices all along the line and finally to such physical controls as were possible in the circumstances. Yet, because such control, for the reason stated, could not be complete, the consumer could not be guaranteed supplies to compensate for his loss of freedom to choose his supplier. Thus, by a piece of terminological ingenuity which the consumer was far from appreciating, there were no *rations* of these foods, only *allocations*.

The section on rationing occupies nearly half the book and falls into four parts, preceded by a short historical sketch. Two of these, dealing with the general course of rationing and controlled distribution and with the special schemes for meat and tea, provide the basis for the author's conclusions on the conditions for success. That rationing was, in its way, a success the author does not deny. The coupon was “honoured like a bank-note” (was indeed more honourable for, as the author points out in a characteristically Gibbonesque footnote, the banknote had, in fact, become inconvertible paper), and public satisfaction with control “varied directly with its completeness.” But it is clear that Mr. Hammond regards this as due more to good luck and public co-operation than to the soundness of the principles adopted. The “legend of 1918” produced the consumer tied to the retailer with the registration counterfoil giving *ex ante* estimates of requirements, and involving all the complexities of tracing removals as well as an inflation of retailers' stocks. His own preference, in retrospect, would have been for an universal points system, a “self-propelled currency,” by which demand would have been measured *ex post* by the “simple, elegant and accurate” mechanism of coupons flowing back from the retailer up the chain of distribution. One of the major curiosities of the volume is a memorandum of December, 1917, by Mr. Sylvanus Vivian, advocating just such a system, a memorandum which seems to have been completely lost until rediscovered during the preparation of the present volume.

Mr. Hammond makes a good story of the Ministry's muddles and mistakes, and is certainly right in suggesting that it was mainly the particular tempo of a war of attrition, such as the last war was, that made it possible for the “ingenious and inveterate improvisers” of Rationing Division to meet each situation with a new, and sometimes strange, device rather than to “bring sustained criticism to bear on basic notions.” Points as currency have been discussed before in this JOURNAL (December 1948 and March 1950). Here it may be enough to suggest that the adjectives quoted above apply rather to the system on paper than in practice. Though the removals problem would have been eliminated, delays and rigidities would still have featured in the distribution of commodities, because of the different flow-times of coupons and commodities and the inflexible relation between wholesale and retail points prices. Moreover, the main rationing

system was linked, and not only in the public mind, with a guaranteed ration.

It is one implication of this guarantee, that Food Offices must keep track of consumers' movements, which provides the theme of another part of this section, describing the intricate relationship that developed between the Ration Book and the Identity Card. For the Registrar-General, now Sir Sylvanus Vivian, perceived that this could be used to help the maintenance of the Central Register (whose creation during the First World War had substantially eluded him) and be an added means to control civilians in war-time. "Starving them into submission" was the comment of Rationing Division, which saw its job as primarily to feed the people and, while willing to help other departments—it played an essential part in clothes rationing—felt unwilling, at first, to go farther than to exhibit "brotherly behaviour." An uneasy liaison persisted until a "fusion" of Food and National Registration Offices was negotiated at the end of 1942. But the two partners did not find—in Mrs. Patrick Campbell's immortal phrase—"the deep, deep peace of the double-bed after the hurly-burly of the chaise-longue," for the combined issue of ration books and identity cards in 1943 landed the Food Offices in the "biggest maelstrom of their not uneventful career." In fact, the integration, which might have been mutually helpful, was never complete nor even particularly successful. But for the student of administration this is, perhaps, the most fascinating part of the book.

The shortest section deals with the Emergency, Salvage and Communal Feeding Services. The former were designed to meet the certainty of air raids and the possibility of invasion. They, too, illustrate the difficulties of combined administrative operations, difficulties not lessened by the fact that neither air raids nor invasion followed the course envisaged by the planners.

For Communal Feeding the Ministry had little early enthusiasm. But migration to air-raid shelters and the London Tubes made the provision of food there a necessity, and enthusiasm did develop for British Restaurants. They were found to fit the Ministry's principle of "fair shares," by providing facilities for eating out for people for whom such would not normally be available.

For one of the characteristics of the Ministry, revealed in, even dominating, this volume was its determination that no group genuinely needing special treatment should be denied it, and it was for these that so much time, effort and paper was expended. Rationing Division might have said—as did General Hugh S. Johnson about the New Deal—"We hammered away, sometimes hitting the nail, sometimes the thumb." The great value of Mr. Hammond's book is that it gives a detailed account of each stroke, of the conditions that prompted it and of the other conditions that made it fall where it did. Mr. Hammond's criticisms are acute and just, and one may well feel that it was more often the thumb than the nail that was hit. Yet in the end the nails were driven in and a machine created which may seem,

in retrospect, tortuous and clumsy, owing more to Emmett than to the Beveridge Committee (p. 444), but did get the people fed.

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Food and Inflation in the Middle East, 1940-45. By E. M. H. LLOYD. Stanford University Food Research Institute, Studies on Food, Agriculture and World War II. (Stanford, California: Stanford University Press (London: Oxford University Press), 1956. Pp. 375. 48s.)

THIS book is important as a record of the civil background against which one of the important military struggles of the War was waged successfully in the Second World War. But it is also important in that it sheds light on some of the problems of the Middle East of to-day and on some that may well reappear in the future. The choice by the Food Research Institute of Stanford University of Mr. E. M. H. Lloyd as author was a singularly happy one; his long experience in peace and in two world wars of the problems of supply and price control in food and agriculture and his term of office as Economic Adviser to the Minister of State in the Middle East during 1943 and 1944 gave him unique qualifications for this study. His close participation in the formulation and execution of policy during these years does not obscure the wider issues, but it gives a pleasing authenticity and implants a sense of reality to his account of events.

The book starts with a well-balanced description of food production and consumption before the War, which leaves no doubt about the precarious balance between adequacy and dearth which existed throughout most of the area even in peace-time. The second section deals with the origin and development of the Middle East Supply Centre, which was designed as the central planning authority, responsible for the needs of twenty-seven territories with a population which numbered over 70 millions. In the Centre was focused the control of essential supplies of food, fuel, fertilisers, industrial raw materials, transport and medical supplies. Next follows a survey of the means whereby cereal supplies, including both home production and imports, were brought under control.

The fourth section concentrates on the problem of inflation and the measures taken by the various territories to limit its growth and combat its most serious effects. A further section deals specifically with the efforts made to increase food production, while the concluding section not only summarises the earlier chapters but also gives a brief but masterly survey of the main impact of the War in the Middle East and a brief picture of the post-war developments.

The Middle East, as in the First World War, was a region of supreme strategic importance, and as early as mid-1941 the "ration" strength of the Army had already been built up to nearly a million men. The closing

of the Mediterranean between 1940 and 1943, far from diminishing the importance of the area, merely added to the number and magnitude of its problems. These included the growing competition for the decreasing tonnage of shipping; the lengthening of the distance from home ports from 2,000 to 12,000 miles; the immense programme of port, rail and road development necessitated by the use of the ports at the South end of the Suez Canal in place of Alexandria; the imposition on communications already strained to breaking point of vast tonnages of goods to support Russia.

The impact of military requirements on a civil economy, which for much of the area was already a precarious one, is the central point of this history. Three main factors in particular gave rise to inflationary pressures which, if unchecked, might well have endangered the whole military effort. First, between 1940 and 1944, Allied net military expenditure rose steadily, and in the seven principal territories currency and bank deposits multiplied five-fold. This expenditure, which in some territories may have amounted to as much as 20% of the total value of goods and services, was spread unequally throughout the area, leading to variations in price levels which created serious obstacles to inter-territorial trade. Secondly, imported supplies for civil consumption had to be cut severely to clear the ports, railways, canals and roads for military use; by the end of 1943 civilian imports were down to the level of 1.25 million tons a year from their pre-war level of 5 million tons, while the military programme alone exceeded 5 million tons a year. Thirdly, the yield of Middle East crops from the 1941 harvests was far below average in most areas.

During the first two years of the War, the potential dangers of inflation were to a great extent ignored by the Allies, who were preoccupied by the task of clearing their lines of communication for the forthcoming flood of military supplies. By the end of 1941, however, the seeds of inflation had germinated. The account of the various measures, such as increased taxation, the raising of loans and the control of prices and supplies, which were adopted in the following years to neutralise the growing excess purchasing power, is clearly told by Mr. Lloyd. The extent to which these were introduced and were effective varied from country to country, depending on the strength of central government; here the strengths of the British administrations in the Sudan, Palestine and Cyprus are flatteringly evident. There were some developments, particularly in Egypt and Iraq, in the floating of loans, but their total effect was not impressive. About 40% of Middle East Government expenditure and Allied military expenditure up to the end of 1943 had been offset by taxation and loans, the remaining 60% being met by the expansion of currency and bank deposits.

One of the most interesting chapters in this section of the book is perhaps the account of the sale of gold to the public at open-market prices, which began in June 1943 and continued until June 1944. The background of

the debate which preceded the introduction of this novel experiment is fascinating but tantalising in its brevity. The serious danger that confidence in paper currency and sterling might be undermined did not materialise; there is perhaps too little recognition that this may have been due to a considerable extent to the limited nature of the experiment and to the fact that by 1943-44 the tide of war was seen to have turned.

The efforts to mitigate the effects of inflation by price control and by the complementary control of supplies and rationing were surprisingly effective even where the machinery of government was weak. Mr. Lloyd emphasises throughout his book the relationship between the control of food prices and anti-inflation. "From the beginning of 1942 until the end of the War, the problem of feeding the Middle East became increasingly mixed up with the issue of checking inflation." The author's final conclusion is "that inflation was kept in check as much as it was in no small measure due to the fact that all over the Middle East, through careful planning of imports and organised collection of bread grains at fixed prices, the food supply of the towns was maintained." While it was less difficult to ensure that essential imported supplies passed into the hands of the governments, the control of home-produced supplies, including the vital bread grains, was infinitely more complex. The pioneer work of the Centre in stimulating governments to abolish private trading in grain and to become the sole purchasers of grains, to introduce maximum prices, to organise collection schemes and to enforce their operation was a most important contribution to the stability of the Middle East; the Centre's experience proved of subsequent value in other countries where the similar problem existed of ensuring adequate food supplies for their urban consumers in the face of speculation and hoarding by cultivators.

The concluding chapter deals with the controversy whether the earlier introduction of all-round measures of control could have prevented inflation from reaching the levels that it did. Mr. Lloyd supports the view that as much was done as was politically and administratively possible in the light of the changing circumstances. There was little reason, from the Middle East point of view, for the introduction of strong anti-inflation measures until the end of 1941, and it would probably have been politically impossible to achieve their adoption. Thereafter the growth in military expenditure and the severe reduction in imported supplies, factors which were beyond the control of Middle East governments, made inflation inevitable. The fact that it did not get out of hand and result in a break-down in essential supplies, causing hardship to the civilian population and disastrous interference with military operations, is a tribute to the work of the Middle East Supply Centre and the United Kingdom Commercial Corporation in conjunction with the Governments of the Middle East territories.

KEITH MURRAY

London.

Bulk Buying from the Colonies. A study of the bulk purchase of colonial commodities by the United Kingdom Government. By CHARLOTTE LEUBUSCHER. (London: Oxford University Press for the Royal Institute of International Affairs, 1956. Pp. 206. 30s.)

Now that state trading and bulk buying of colonial products, except sugar, have been abandoned in the United Kingdom, though not on the Continent, Dr. Leubuscher has performed a useful service in trying to assess the results and draw conclusions. The commodities studied are the five main colonial products—oilseeds, cocoa, coffee, sugar and cotton—during the post-war years 1945–54. Her main conclusion is that for the greater part of colonial production “economically sound development” is best ensured by free markets and not by long-term contracts at guaranteed prices.

This view would probably not be shared by producers in French Colonies who enjoy guaranteed prices for their products in France and are now to have the benefit of “organised marketing” in the six countries of the Common Market. Perhaps a more valid conclusion would be that British consumers and/or tax-payers would probably pay more for colonial products under bulk purchase than in a free market. For experience shows that in time of peace, when governments guarantee prices, they usually find it expedient to fix them too high.

Dr. Leubuscher rightly emphasises that both governments and Marketing Boards are prone to make erroneous estimates of future price trends—and, she might have added, of the effect of guaranteed prices on future production. If the guaranteed price gives too sharp a stimulus to production, it may become necessary, as with hops in the United Kingdom and wheat in the United States, to restrict output—an operation that is administratively unworkable with most colonial products.

The chief argument in favour of long-term contracts is that an assured market at a stable price benefits both buyer and seller. Dr. Leubuscher finds it a bit difficult to generalise about the effects of bulk purchase even over this limited range of products. It seems that sometimes the price was too low and sometimes too high; but it was rarely, if ever, possible for both parties to be satisfied that the price was just right. There is indeed no obvious criterion for determining the right price, if it differs from the market price. Changes in average costs, or in factors affecting costs, are unsatisfactory criteria when costs vary widely between different producers, and are themselves influenced by the guaranteed prices fixed for the finished product.

Looking at the general picture of Government guaranteed prices for farm products—of which bulk purchase of colonial products is a special case—the most significant feature is that in nearly all countries one of the main objects is to raise the incomes of farmers and farm workers above

what they would be without Government intervention. Dr. Leubuscher suggests that before the War preferential customs treatment on the whole gave colonial producers an adequate share of the British market; but it gave them no guarantee that their prices and incomes would be satisfactory.

As regards price stabilisation the author points out that centralised selling by producers' Marketing Boards in the Colonies can to some extent smooth out short-term fluctuations without the support of a bulk-purchase agreement, though it is quite likely that they will make mistaken forecasts of future world prices. The radical way to avoid the embarrassing repercussions of a free world market price is, of course, to abolish it. For example, under the International Wheat Agreement the exporting countries have been able to avoid mistaken forecasts of futures prices by themselves fixing prices and accepting the risk of having unmarketable surpluses left on their hands. In view of the author's adverse conclusions about bulk purchase it is interesting to find that she thinks that there is “a strong case” for aiming at “the avoidance of excessive fluctuations in world market prices” by international agreements. This seems inconsistent with the view that sound economic development is best ensured under competitive conditions in a free market. But she is probably right in emphasising the special objections to bi-lateral purchase agreements.

The main value of the book is to draw attention to the possible shortcomings and undesirable effects of bulk purchase, which is a field of applied economics where an ounce of factual study is worth a ton of theory.

E. M. H. LLOYD

London.

The Early Churchills. An English family. By A. L. ROWSE. (London: Macmillan, 1956. Pp. 420. 36s.)

Most of the great Whig families, which were to provide the ruling *élite* for the next two hundred years, rose in the seventeenth century. They replaced the mediæval nobility ruined by the Wars of the Roses and Tudor severity and parsimony. Engaging in commerce, they benefited from the displacements caused by the Civil War and, above all, they had the luck to coincide with a new pattern of government. At all times men have gone into politics to make their fortunes, but few had the chance to pursue this aim so single-mindedly as these families, freed from the old feudal loyalty to their Sovereign, indispensable to him by reason of Parliament and therefore able to extort a high price from his coffers and his patronage. Meanwhile they married advantageously amongst each other to consolidate their wealth and, if fortunate, the family might provide a royal mistress who acquired wealth and position for herself and her kinsmen.

None played this game better than the Churchills, and their story is familiar. It is that of the West Country family who make their mark first

as small squires. Then one of them becomes Master of the Rolls and another, the first Sir Winston, marries a Villiers—a typical family of the new dispensation which was rising fast through royal favour. Sir Winston got comparatively little from his old-style Cavalier support of the Stuarts. But his daughter, Arabella, became the mistress of James, Duke of York, at the same time as her kinswoman solaced his brother Charles II; another son became an admiral, another a general and the eldest was the great Duke of Marlborough. Arabella's natural son, the Duke of Berwick, also became a famous soldier in France.

This book is not a minute study in social history such as Dr. Plumb has made on Walpole, or Professor Habakkuk on the Finches, nor yet a domestic study like Miss Gladys Scott Thompson's books on the Russells. Mr. Rowse is a master of the art of narrative, and no active historian has a greater sense of history as pageant and panorama. When amateur historians undertake such a task their pages frequently show thin, whereas his are thickened by constant references to the fruits of his researches and his understanding of politics and the past.

Mr. Rowse's admirers must bear with his remarks about poets and intellectuals as best they may, since he seems incapable of showing them the same tolerance which he bestows on politicians and generals. When he calls Pope a "brilliant monkey" does he not realise that Pope was criticising something we call civilisation and that poets do not measure men by the standards which historians—or politicians—use? Yet if Mr. Rowse's aim was to do justice to Marlborough's genius, he has certainly succeeded. Inevitably the greater part of the book deals with Marlborough and Sarah and he makes a just judgment on the man with his mild ease of manner, his sensitivity to others and that immense ambition to raise a monument to himself and the Churchills in palace and patrimony. The theme of the book, however, is the family: at the end of this volume it is established, the next volume will carry the story to the present generation.

N. G. ANNAN

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NOTES AND MEMORANDA

NOTE ON AUTOMATION

MR. Moos, in his design to blaze a trail through the tangled forest of automation, has marked so many trees that the path has become uncertain and even the shape of the wood hard to discern. There are three dimensions to the problem of the scope of automation; put shortly, they are the definition of automation, its character and its novelty. It is really only the second, more felicitously termed by Mr. Moos "the mythology of automation," that he explores.

Admittedly the definition of automation is not easy, for the term is indeed vague and open to a wide range of interpretation. But though Mr. Moos tries to get around this difficulty by describing modern automation as a "combination of . . . techniques which yields a 'break-through' in production methods," it is not at all clear what he means by this, or by the term "break-through." Indeed, up to p. 34 of his article automation seems chiefly to mean transfer machinery, with some reference to tape-controlled machine-tools; thereafter chiefly electronic computers. His extension of the term to include pre-fabrication surely widens unduly the range of interpretation.

The problem of novelty is, indeed, raised on p. 34 in the statement that "with the electronic computer something different in kind has arrived" and is implied in his reference (p. 26) to the ready-made assumption that automation will bring no fundamental change in industrial organisation but will advance at the ordinary rate of technical progress—whatever that may be. It is obviously of importance to decide whether the consequences of automation differ only in degree from those of previous industrial innovations or whether, despite any fundamental similarity between automation and earlier technical developments, the degree of change produced is so great as to constitute, in effect, a different kind of change, for which therefore our previous experience is of no help. In the first half of his article Mr. Moos' views on this matter tend to be ambivalent; in the second he seems to accept that differences in kind will occur, but fails to indicate their nature perhaps because, so I think, he has lost touch with his own earlier tentative definition.

Consider, for example, his discussion of automation and size of firms (though sometimes he really means plants), which is mainly on pp. 27–9, although some very relevant points also crop up later. He says that "industries based on the 'flow-concept' of automation are best suited for large firms." But the flow-concept of those he cites is not derived from automation but from the nature of the product, liquids, gases, pulped solids

or energy. The interest of automation, in the limited sense of transfer machinery, is that it has applied the flow-concept to such bulky and unhandy solids as car engines, for which small firms may be equally suitable. Again, "whenever automatic equipment is so expensive that it is beyond the financial strength of the small and medium firm to replace their old equipment . . . the small firm will die out." But how does this differentiate automation from any other requirement of the firm, of whatever size? Surely, if any essential resource, labour, materials, machinery, is too expensive for any firm that firm must die out. There is some evidence—and from later remarks Mr. Moos is obviously aware of it—that automated machinery is not only cheaper in running cost but even in capital cost than the machinery it replaces for a given volume of output. If this be so, there seems less justification for concluding that automation will accentuate the division of industry into large-scale and small-scale. The division seems more likely to be between those industries which can and those which cannot be automated, be they large-scale or small-scale.

Again, in discussing the location of industry, Mr. Moos gives reasons for supposing that automation may both lead firms to locate their plants in areas of sparse population and require them to choose areas of dense population. His later conclusion (p. 36) that the final pattern may be of decentralised plants linked electronically to a central control may well be right, and seems to assume that, on balance, automation has a dispersing effect. But does the influence of automation on the dispersion or concentration of plants differ at all, essentially, from that exercised in the past by the internal-combustion engine or the development of electric power? And the specific problems of location remain. His American example of the 600–700-employee factory supposes a town of 3,000–3,500. If it is not to be a "company town" or dependent on a single industry its size must be doubled or trebled. How many American towns are of 7,000 or over?

Mr. Moos is very right in urging the need for further research. But I submit that if this is to proceed the field must be laid out more systematically, if in somewhat simplified form. May I suggest a preliminary scheme?

The categories of automation with which he starts may be reduced to three: production engineering (transfer machines and automatic assembly, chiefly), electronic control (which may be by computers or other electronic mechanism), communications engineering or data-processing (which is also a function of computers which may not be electronic). Both the first and the last may claim to have "evolved over decades or centuries," as also has mechanical or non-electronic control. The problems they raise may well not differ from those of earlier decades, save in degree. It is the fusion of electronic control with either of the others (or even of all three) that constitutes the "combination" which Mr. Moos notes as the essentially modern development. This fusion, as Mr. Moos indicates, can profoundly influence the time dimension of industrial processes. But so far as the fusion of

electronics and production engineering is concerned I suggest that there is so far little reason to think that its effect over industry as a whole will be markedly different from what we have experienced in past decades or centuries. There will be an up-grading and down-grading of labour, as on the earliest introduction of powered machinery, but will the ensuing problems be more severe than those of the hand-loom weavers of a century ago? It may be; but, "It ain't necessarily so." It may rather happen, as I have suggested above, that a rather deep chasm will be created between automated and non-automated industries, exaggerating their differences in wage and cost structure, because in the former wages will be higher than in the latter and will form a part of industry's fixed costs. At the same time the fusion of electronics and data-processing may speed up the reaction time of entrepreneurs, because information will then be more rapidly available. The danger here is that it may also increase to an unbearable volume. But such mechanisms can be instructed to present only information that shows divergencies from management policy—*e.g.*, stocks below the minimum or sales of a multi-product plant getting out of balance. (This, presumably, is the purpose of the massive order for computers placed by I.C.I. (p. 35, footnote) and, if achieved, will reduce the incidence of managerial ulcers in that vast organisation.) Thus lag-less economic theory may become a reality.

But why stop there? If the computer can signal a stock deficiency, may it not proceed to issue the orders necessary to correct the deficiency? After all, the city of Norwich is installing such a machine to calculate, and then issue, demands for rates (*Manchester Guardian*, April 4, 1957). And if it were given information not only of the firm's activities but also of those of its competitors, might it not, as George Soule suggests (*What Automation Does to Human Beings*, 1956), on observing that a competitor's sales were declining, infer a stock shortage and order a drive by its own sales department? With its memory stored with the Theory of Games it could not only chart the pattern of economic behaviour but also itself become the entrepreneur. The N.R.D.C. taught their computer to play draughts. That shortly thereafter it began to cheat encouraged the hypothesis that it was capable of acquiring human characteristics.

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COMMENT ON THE MARGINAL EFFICIENCY OF CAPITAL AND INVESTMENT PROGRAMMING

THERE are certain significant factors effecting investment programming to which Brockie and Grey, in their paper published in the December issue of the *ECONOMIC JOURNAL*, make little reference.

The popularity of the pay-off-period method surely rests more firmly on

its use as a guide to the date of return to liquidity and manoeuvrability than it does on the difficulty of assessing distant earnings, but for this purpose it is valueless to the firm unless the incidence of taxation is taken into account. It is fairly certain that the effect of taxation on investment programming receives closer attention by the firm than does the incidence of interest rates; and actuarial formulæ for the present worth of annuities are to some extent unrealistic unless they allow for the greater retained earnings in earlier years which arise in the United Kingdom by virtue of the incidence of wear-and-tear allowances calculated on the diminishing-balance basis and of initial and investment allowances.

Business-men, looking round for a basis on which to make internal or external comparisons turn naturally to projected forms of orthodox accounting presentation and terminology, or to stock-exchange concepts of "yield," with both of which they are in regular contact. Concepts of "comparative net profit to capital employed" and "average additional return to cash re-invested" differ from the pay-off concept in that they allow for depreciation and seem to be in fairly general use for testing investment programming, and it is rather surprising that their validity was not commented on in the paper.

The real problem, however, is to determine the estimated content and trend of R —"the successive anticipated annual earnings." Such papers as have appeared on the subject seem to assume that capital rather than labour is the scarce resource. Where economies from labour utilisation arise from re-equipment, such gains are naturally embodied in the increased "earnings," but few references are made to the contribution to earnings which may well accrue from labour released for other work.

A further factor of significance to the firm arises when it, or any of its competitors, undertakes re-equipment leading to a reduction in marginal costs. This in turn may, of course, affect pricing policies, particularly in times of stress, leading up to a potential displacement of income away from the non-re-equipped firm to the re-equipped. If the problem of assessing the effects of this very hypothetical factor on the trend of earnings (and unit costs) could be satisfactorily resolved, there is little doubt that lesser reliance would be laid on past trends and greater faith placed on future forecasts.

Perhaps the basic problem for the firm, however, is not so much that of assessing the earnings if a specific type of plant is replaced or expanded, but of determining the appropriate assumptions for setting the basis of comparison—the alternative that it is not. Of the infinite number of ways in which funds could then profitably or unprofitably be used or disused, is it legitimate to work on the assumption that the alternative is for funds to be left in other investments at commercial interest rates or that the old plant must ultimately be replaced at the very end of its useful life?

The logical reasoning which precedes a corporate decision to invest will rise above the private reasoning leading up to buying a new house, but not

dissimilar social and economic factors come into play. In determining priorities within the firm little distinction is made between say an investment in new plant, an extensive outlay on an advertising programme, or the engagement of half a dozen top-line scientists. Though they are not formally recognised as such, each are thought of as "investments" on which a yield is hoped for, and a comprehensive formula must cover this. Nevertheless, the schedule of alternative choices often falls within a much more limited sphere than might be envisaged. Enthusiasm for certain technical advances, lack of familiarity with alien processes, the desire to maintain a long tradition of pre-eminence in a particular trade, to win the next round against an old rival, such things can form inhibiting barriers which circumscribe the field within which investment decisions are likely to be taken.

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A FURTHER COMMENT ON THE "TRANSFORMATION PROBLEM"

PROFESSOR DICKINSON is, of course, right in saying (ECONOMIC JOURNAL, December 1956, pp. 740–1) that the manner in which the individual "prices" are related to the "values" is simply a question of the chosen *numéraire*; although in accusing them of "pursuing a will-o'-the-wisp" he seems to underestimate the extent to which those who have discussed the "transformation problem" have appreciated this. (Dr. Sweezy, says so explicitly,¹ and Bortkiewicz implies it, surely.²) But the point he makes is worth emphasising, since its implications may not always have been grasped: namely, that the essential price-ratios and the rate of profit are dependent solely on the characteristics of the initial value-situation (given the condition that the profit-rate must be equalised) and are not affected by the choice of *numéraire* (as they are unaffected also by whether simple or expanded reproduction is assumed). Moreover, the rate of profit is dependent on the circumstances of the wage-goods sector and of the capital-goods sector alone, as Bortkiewicz indicated. In this sense any numerical relation between "values" and "prices" is purely formal: since the result is not affected thereby, so far as the essentials of the problem are concerned, there is no virtue in having any particular totals equal in the two situations.

To the modern ear there may be nothing at all strange in this. But in the context of classical thought it is a much more striking result (even paradoxical at first sight), since in this context money is itself a commodity and the circumstances of its production are a crucial determinant of the general price-level. With a commodity-money system it was natural that

¹ *Theory of Capitalist Development*, pp. 122–3.

² "Value and Price in the Marxian System," trans. in *International Economic Papers*, No. 2, pp. 10–11.

one should be interested in the *process* by which a given set of price-ratios is established. Professor Dickinson probably does not mean to imply that there is no context in which the assumption one makes about money can matter. One such context where it does matter is Ricardo's problem of the effect of a change of wages upon prices. What is assumed about the conditions of production of gold (whether produced by "unassisted labour" or with average compositions of capital and turnover-periods) will make no difference to the final result, *i.e.*, to the effect on profits and on the price-ratios of commodities other than gold. But it certainly makes a difference to the way in which prices change when wages change (whether no prices rise and most fall or some rise and some fall), as is clear from the shift of assumption on this point between the first and third editions of Ricardo's *Principles*.¹

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M. H. DOBB

STABILITY AND GROWTH: A REJOINDER

IN my December 1955 paper in this JOURNAL, I tried to show that the stability of the equilibrium rate of growth was dependent upon the length of the time unit used in investment planning. Professor A. M. Cartter's comment on it in the December 1956 issue of this JOURNAL has three things to say. The first is that what makes my model different from the Harrod-Domar model is my distinction between a short-run, non-homogeneous consumption function and a long-run, homogeneous one. I agree that some autonomous element is needed for stability, and that it does not matter whether that element is one of short-run consumption or short-run investment.

Second, Professor Cartter says that if stability is possible only at investment planning periods of nine to fifteen years length, then stability has been gained at the price of realism. My answer is that while the modern large corporation does seem increasingly willing to think in very long terms, we know little about these matters; and as long as we do not know what reality is like, we do not know what is realistic either.

Third, Professor Cartter says that unless the consumption function shifts exactly so that its autonomous term $A(t)$ rises at the same proportionate rate of growth as equilibrium output $Y(t)$, instability will result. More specifically, he says, if consumers "overshoot," explosive growth will occur; if they undershoot, income will fall towards zero. With all three statements I heartily disagree: instability will not result, overshooting will not cause explosive growth and undershooting will not cause a fall of income towards zero. Unlike Professor Cartter, who made no attempt to show us how he derived his answers, I shall set out my own answers as rigorously as I can, so

¹ Introduction to Vol. I of *Works and Correspondence of David Ricardo*, ed. Sraffa, pp. xlii-xlv.

that the source of our difference of opinion can be located. I propose to keep the study of the equilibrium growth path clearly distinguished from the study of the stability of that path.

What is the effect upon the equilibrium rate of growth of relaxing the assumption that the ratio between the autonomous term $A(t)$ and the equilibrium level of output $Y(t)$ is constant over time? To allow for the change of that ratio, y , over time we should write our equations (3c) as:

$$(3d) \quad \frac{A(t)}{Y(t)} = y(t); \quad \frac{A(t-1)}{Y(t-1)} = y(t-1); \dots$$

Suspecting that the proportionate equilibrium rate of growth may no longer be constant over time, we shall play safe and write the latter $g(t)$, thus turning our equation (1) into:

$$(1a) \quad Y(t) = [1 + g(t)]Y(t-1)$$

Otherwise we shall leave the system as it is. Solve the modified system and get this modified version of (II):

$$(IIa) \quad g(t) = \frac{1 - a - y(t)}{a + b + y(t) - 1}$$

Our suspicion is thus confirmed; the proportionate equilibrium rate of growth $g(t)$ is no longer expressed purely in terms of parameters as was the case in (II). Among its determinants we find $y(t)$, which is changing over time. The effect of our modification is, then, that the proportionate equilibrium rate of growth will vary over time. More specifically, it will vary as follows. If consumers "overshoot" in the sense that the autonomous term $A(t)$ of the consumption function rises faster than equilibrium output $Y(t)$ or, which is the same thing, if $y(t)$ is rising over time, then according to (IIa), the proportionate equilibrium rate of growth will be falling over time. This follows from the fact that rising $y(t)$ will reduce the numerator and increase the denominator of (IIa). Vice versa, if consumers undershoot in the sense that $A(t)$ is rising more slowly than $Y(t)$, then $y(t)$ is falling over time, and $g(t)$ consequently will be rising over time.

These results can easily be verified on a graph of the type shown in my Fig. 4: a parallel upward shift of the consumption function will reduce equilibrium output $Y_0(t)$, raising $y(t)$ and reducing $g(t)$. Less readily, they can also be verified on a graph of the type shown in my Fig. 7. Here, a parallel upward shift of the consumption function indicating a higher $A(t)$ will raise equilibrium output $Y_0(t)$. But one can prove that $Y_0(t)$ will rise proportionately more than did $A(t)$, and thus $y(t)$, the ratio between them, has actually fallen. The proof is this. From comparison of similar triangles in our new Fig. 8 one can see that

$$\frac{P_2 Q_2}{O P_2} = \frac{P_4 Q_4}{O P_4} = \frac{P_3 Q_3}{O P_3}$$

But since

$$P_1 Q_1 = P_3 Q_3; \text{ and } O P_3 < O P_1$$

then

$$\frac{P_2 Q_2}{O P_2} > \frac{P_1 Q_1}{O P_1}$$

or: $Y_0(t)$ has risen proportionately more than did $A(t)$, so $y(t)$ has fallen. Thus our parallel upward shift has reduced $y(t)$ and raised $g(t)$, for Q_2 lies farther to the right than does P_2 .

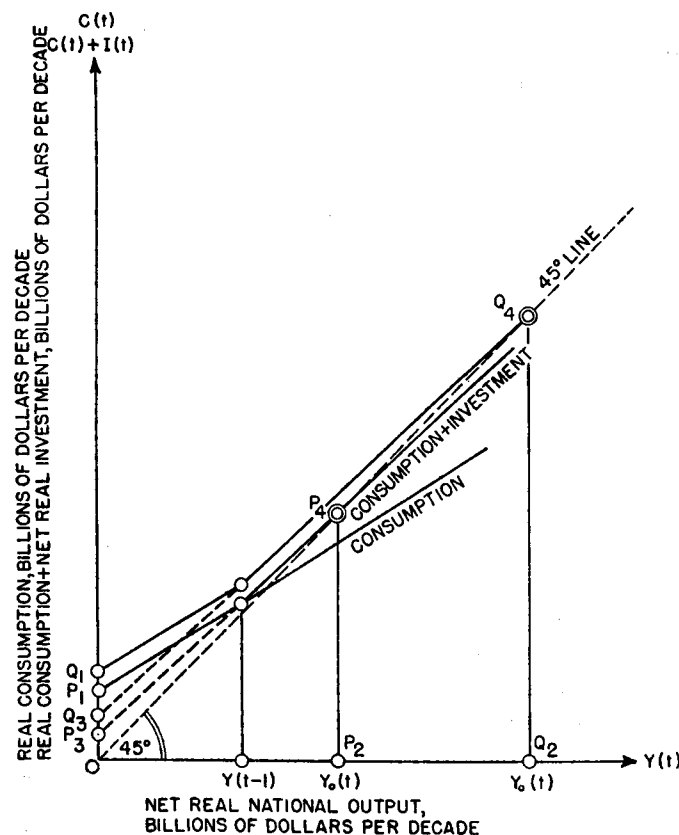


FIG. 8

Our next question is this: What is the effect upon the *stability* of the equilibrium rate of growth of relaxing the assumption that $y(t)$ is constant over time? This question is easily answered. Our Figs. 4 and 7 did not imply any commitment to any particular growth pattern of the autonomous term $A(t)$. In this sense they are quite general and would, consequently illustrate the short-term determination of equilibrium output $Y_0(t)$ in case equations (3d) and (1a) above were adopted instead of (3c) and (1), respectively. The result is that the stability of the system *still* depends upon the

slope of the aggregate demand function. In Fig. 4 that slope is high. In Fig. 7, because of the much longer time unit used, that slope is low. In the former case equilibrium is unstable, in the latter it is stable. Stability, then, does *not* depend upon the particular growth pattern of the autonomous term $A(t)$.

My results, then, are the exact opposites of those of Professor Cartter. Unfortunately, far from clarifying his argument, his footnote on page 740 obscures it. On my page 621 I had defined "instability" in its usual meaning as follows: "Once the system deviates from equilibrium it releases forces pulling it even farther away from equilibrium." In his footnote on p. 740, Professor Cartter seems to use the term "stable growth" in the meaning of *constancy* of the proportionate equilibrium rate of growth. This is alarmingly different from the usual meaning which I followed. The second confusing point is the statement that the divergence between the rate of growth of $A(t)$ and $Y_0(t)$ is "analogous" to the divergence between Harrod's "warranted" and "actual" rates. Nothing could be farther from the truth: Both $A(t)$ and $Y_0(t)$ refer to an equilibrium growth path (like Harrod's "warranted" rate). That they diverge has no counterpart in Harrod's system.

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A NOTE ON "A REVISED THEORY OF EXPECTATIONS" ¹

In an article published in a recent issue of this JOURNAL,² Professor C. F. Carter wrote: "It is a logical impossibility to derive a unique ranking by compounding two pure rankings, or one ranking and a numerical index." He goes on to criticize Professor G. L. S. Shackle for defining his Stimulus Function as a function of utility and potential surprise—both merely ordinal criteria—and argues that these must be rendered measurable if Professor Shackle's theory is to be saved.

The purpose of the present note is to demonstrate that this criticism is not well taken.

When one says that the stimulus felt by the mind when confronted with a certain hypothesis depends upon, or is a function of, the potential surprise and the utility associated with that hypothesis, one means that hypotheses can be classified according to these three criteria, and that the stimulus class to which a given hypothesis belongs can be determined once one knows the potential surprise and utility classes to which it belongs. When one goes on to say that the stimulus classes are ordered, it means that, among a given

¹ This is Journal Paper No. J-3142 of the Iowa Experimental Station, Ames, Iowa, Project No. 1200.

² C. F. Carter, "A Revised Theory of Expectations," ECONOMIC JOURNAL, December 1953.

set of hypotheses, one can always determine the most stimulating.¹ This is all that Professor Shackle wishes to be able to do, and it can be done whether utility and potential surprise are cardinal or ordinal concepts, or merely determine an unordered set of classes.² If height were known to depend³ only on eye colour and skin quality, we could still determine the tallest person in a group from mere knowledge of the eye and skin qualities of its members.

There is always a problem in naming classes determined by these criteria. Since, however, they are all three ordinal, we can choose to label each with a number⁴—higher numbers going with higher classes. Of course, the actual number-names chosen will be largely conventional. Within this system each hypothesis can be labelled with three numbers—say x, y, z —representing respectively the utility, potential surprise and stimulus classes to which it belongs. In terms of these Professor Shackle states that

$$z = \phi(x, y) \quad . \quad . \quad . \quad . \quad . \quad (1)$$

Now, if the original numbers were all positive $X = x^2$, $Y = y^3$ and $Z = 2z$ would have yielded an equally useful method of naming the classes, for it would have left the ordering unchanged. In terms of these we would have:

$$Z = \Phi(X, Y) = 2\phi(\sqrt{X}, \sqrt[3]{Y})$$

since this yields $z = \frac{Z}{2} = \phi(x, y)$. That is, the actual *mathematical form* of the function changes when we change our naming convention.

In general we could have chosen the new convention such that

$$x = f(X), y = g(Y), z = h(Z) \quad . \quad . \quad . \quad (2)$$

where f, g, h are monotonically increasing functions.

Having done so we have

$$Z = \Phi(X, Y) = h[\phi(f(X), g(Y))] \quad . \quad . \quad . \quad (3)$$

as the new form of the stimulus function.

Now Professor Carter's argument depends on the assumption that the mathematical form of the function is the same whatever naming convention is followed. Such a requirement is unusual, and would, for instance, mean that we could not say that the distance covered by a body falling freely under gravity is a function of the time which has elapsed since it was dropped—for

¹ This is not quite true—we might find ourselves seeking the greatest number less than two. However, the problems are purely mathematical and have nothing to do with the point at issue.

² He says as much in his article "Expectation and Cardinality," *ECONOMIC JOURNAL*, July 1956, which was published after this note had been submitted. However, his discussion of the point does not appear to be complete.

³ We assume, of course, that the form of the dependence is known.

⁴ This assumes that there are enough numbers to go around. This is another mathematical problem which has nothing to do with the point at issue.

the gravitational constant, which enters into the formula, depends on the units of measurement chosen.

A typical problem would be to maximise the stimulus $z = \phi(x, y)$ subject to the constraint that the available hypotheses satisfy the constraint

$$\psi(x, y) = 0 \quad . \quad . \quad . \quad . \quad . \quad (4)$$

On transformation (4) becomes

$$\Psi(X, Y) = \psi(f(X), g(Y)) = 0 \quad . \quad . \quad . \quad . \quad (5)$$

To maximise z under the constraint (4) we have

$$\frac{\partial \phi}{\partial x} \bigg/ \frac{\partial \psi}{\partial x} = \frac{\partial \phi}{\partial y} \bigg/ \frac{\partial \psi}{\partial y} \quad . \quad . \quad . \quad . \quad . \quad (6)$$

Now

$$\frac{\partial \Phi}{\partial X} = \frac{d\Phi}{d\phi} \cdot \frac{\partial \phi}{\partial x} \cdot \frac{dx}{dX} = h' \cdot f' \cdot \frac{\partial \phi}{\partial x}$$

and

$$\frac{\partial \Psi}{\partial X} = \frac{d\Psi}{d\psi} \cdot \frac{\partial \psi}{\partial x} \cdot \frac{dx}{dX} = 1 \cdot f' \cdot \frac{\partial \psi}{\partial x}$$

with similar formulæ for the derivatives with respect to Y .

Substituting in (6) and cancelling, one soon finds

$$\frac{\partial \Phi}{\partial X} \bigg/ \frac{\partial \Psi}{\partial X} = \frac{\partial \Phi}{\partial Y} \bigg/ \frac{\partial \Psi}{\partial Y} \quad . \quad . \quad . \quad . \quad . \quad (7)$$

which is the condition that Z should be maximised under the constraint (5).

Since the constraints themselves are obviously identical, we get the same results whichever convention we use. That is: the mathematics works, as we would expect it to.

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NOTE ON THE RATIO OF STAFF TO WAGE-EARNERS

G. C. BILLING's article on the "Industrial Pattern and New Zealand's Future" in the March issue of the *ECONOMIC JOURNAL* quotes my use of the trend in the ratio of administrative staff to wage-earners as an added index of the growth in the size of factory. A table is then given showing that in New Zealand the "ratio 'staff' to wage-earners" did not rise but fell from 22.1 to 18.7 between 1928–30 and 1947–51. The heading should have read "ratio of staff to a 100 wage-earners". But this is a small slip compared to the large misunderstanding likely to arise due to comparing data from the New Zealand and other Censuses, which include all factories, however small, with data from Censuses, like the British, which exclude factories employing less than eleven persons.

The rise in the ratio of administrative staff to wage-earners is a trend observable in almost all countries where the Census is confined to the "11+" factories. With the growth in the size of factories, the very small factories are declining rapidly in importance. But they contain a very high proportion of working proprietors as compared with the larger factories. If these very small factories are included, their falling importance may well entail a fall in the overall ratio of staff when working proprietors are included among staff. In short, the working proprietor (*i.e.*, the "old-type" entrepreneur working for profit) if in significant numbers, should not be lumped together with salaried administrative staff in the ratio; or if owing to Census categories he has to be, authors should warn their readers of his presence.

University of Birmingham.

P. SARGANT FLORENCE

CURRENT TOPICS

THE Annual General Meeting of the Royal Economic Society was held on Thursday July 4 at the London School of Economics. Sir Alexander Carr-Saunders was re-elected to the office of President. Sir Sydney Caine was elected to the Council in the place of Professor T. S. Ashton; with this exception the Council and Officers were elected without change for 1957-58. After the formal business a discussion was held on the subject: Is a Wages Policy Desirable and Practicable? It was opened by Professor D. T. Jack and Mr. B. C. Roberts.

THE Secretary reported on the membership and finances as follows:

	1956.	1955.	1939.	1914.
New Fellows and Library Members elected	436	517	490	50
Fellows lost by death, resignation or default	402	482	496	33
Number of Fellows and Library Members on December 31	6105	6391	4572	694
Total Compounders included in above total	1739	2139	1155	159
Surplus of Income over Expenditure		£299	—	278
Surplus of Expenditure over Income	£31	—	38	—

The apparent change in the membership was principally ascribable to a revision of the methods of computing the membership.

WE offer our congratulations to Sir Geoffrey Crowther on the conferment of the honour of Knight Bachelor in the Birthday Honours List. He has been a member of the Council of the Society since 1940. His editorship of *The Economist* from 1938 to 1956 marked a period of great distinction in the history of that journal.

PROFESSOR J. E. MEADE has been elected to the Chair of Political Economy in the University of Cambridge in succession to Sir Dennis Robertson. Professor Meade, since his retirement from the Economic Section of the Cabinet Office in 1947, has been Professor of Commerce, with special reference to international trade, at the London School of Economics.

MR. J. C. GILBERT and Mr. D. C. Hague have been elected to Chairs in the University of Sheffield. Mr. Gilbert succeeds Professor G. P. Jones as Head of the Department. Mr. Hague is the first holder of a recently created Newton Chambers Professorship.

THE following have been admitted to Life Fellowship of the Society:

Hurst, H.	Preston, A. Z.	Sanchez, Miss R. B.
Peters, W.	Richardson, G. B.	Sivanathan, S.

THE following have been admitted to Fellowship of the Society:

Aboo, S. M. H.	Clarke, D. R.	James, C. W.
Achuthan, P.	Claydon, D.	Jasilkowski, W. M.
Adams, R. J.	Coleman, A. G. W.	Johnson, A.
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[This is an anthropological study of a community of a type about which not much has previously been written—an urbanised community, in which cash income from wages is almost the sole source of support, but which has not been "detribalised." The author provides a detailed analysis of the patterns of social and economic life in the community, based on a year's residence there. One of his main themes is the interaction of social and economic factors: the effect of social factors in facilitating or impeding economic development, and the changes in social structure wrought by economic advances.]

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DEPARTMENT OF AGRICULTURAL ECONOMICS, UNIVERSITY OF READING. *The Use of Labour on Fruit Farms and Glasshouse Holdings. Miscellaneous Studies, No. 10.* Reading: Department of Agricultural Economics, University of Reading, 1957. 10". Pp. 33. 3s. 6d.

[This report describes on the basis of a sample survey the organisation of labour on different types of holding. Measures of labour productivity are then discussed, and in the final part of the report an account is given of the application of simple work-study methods to horticultural tasks.]

DUNLOP (J. T.) (Ed.). *The Theory of Wage Determination. Proceedings of a conference held by the International Economic Association.* London: Macmillan, 1957. 9". Pp. xv + 437. 36s.

[To be reviewed.]

The Economic Writings of FRANCIS HORNER in The Edinburgh Review 1802-6. Edited with an Introduction by F. W. FETTER. *Reprints of Scarce Works on Political Economy, No. 13.* London: London School of Economics, 1957. 9". Pp. 134. 21s.

[Francis Horner is known to posterity chiefly as the chairman of the Bullion Committee of 1810. He was, however, also one of the founders of the *Edinburgh Review*, and he was the chief writer on economic issues in its early numbers. This reprint contains his long reviews of Thornton's *Paper*

Credit, of Ganard's *Principes d'Économie Politique*, of Lord King's *Thoughts on the Restriction of Payments in Specie* and of a pamphlet on the corn export bounty, together with a number of shorter items. In his introduction Professor Fetter outlines Horner's career and suggests that his influence on the development of an intelligent public interest in economics was an important one, more so than has often been realised, since the circulation of the *Edinburgh Review* was so very much greater than that of most books or pamphlets on economics at that time.]

The Family Farm. A discussion of the present position and future prospects of the small farm. Farm Economics Branch, University of Cambridge School of Agriculture, Occasional Paper No. 4. Cambridge: School of Agriculture, 1956. 10". Pp. 36. 3s.

[This interesting report is based mainly on information taken from the Farm Management Survey carried out at Cambridge. A family farm is defined as one of between 20 and 100 acres. Farms of this size occupy about a quarter of the farm land of the country as a whole. The authors show from unpublished data of the Ministry of Agriculture the preponderant importance of milk, pigs and poultry on these holdings. They then consider on the basis of their sample the reasons for which income from such a farm may fall below £500, this being taken as the minimum tolerable level. Two-thirds of the farms of less than 50 acres in the sample (excluding fen farms) fall below this level, and one-third of those between 50 and 100 acres. The trouble may be either too low a value of output per acre or too high a ratio of outgoings to receipts. The former is more usual. On the question of the relative efficiency of large and small farms, the authors suggest that the inverse relationship shown in national statistics between value of net output per acre and size of farm is misleading, inasmuch as there is a systematic tendency for large farms to predominate on poor-quality soil, where small farms could simply not survive. In the farms included in the present sample there is not much difference in the fertility of the soil, and it accordingly emerges that net output per acre on the smaller farms is little greater than on the larger ones. Productivity is lower on the smaller farms than on the large ones if measured by output per man or by output per £100 of input (including farmer's labour). On the question of policy, the authors suggest numbers of ways in which small farms can be made more profitable, but they do not believe that these are an entire solution of the problem. Some of them would, if generally adopted, have unfavourable national effects; e.g., more pigs and poultry are a good way of increasing profit for the individual small farmer, but involve increased imports of feeding-stuffs and increased Exchequer grants to support the prices of fat pigs and eggs. Others call for a high degree of efficiency from the farmer, and highly efficient farmers do not generally remain content with small holdings. In many cases therefore amalgamation seems to be the best solution. This applies particularly to farms of less than 50 acres.]

FEDERATION OF BRITISH INDUSTRIES. *Britain's Economic Problems and Policies.* London: Federation of British Industries, 1957. 8½". Pp. 34. 3s.

[The attitude adopted in this paper is in outline as follows. Britain's post-war prosperity has been precarious because the chronic overloading of the nation's resources has prevented price stability and endangered external solvency; monetary restrictions, though much better than leaving inflationary tendencies unchecked, are not really a satisfactory way of eliminating the overload because they discourage the investment that is needed to raise productivity; increased taxation is unthinkable; therefore reduction in government expenditure is the only way out. This case is argued with much skill and not a little sophistication. While the authors are not happy about the use of monetary policy as a means of eliminating a chronic tendency to excess demand, they appear to hold that it will be an adequate instrument for the avoidance of fluctuations once the general overload has been got rid of by cutting government spending. They do not think well of budgetary policy as an instrument for this purpose, chiefly because "it must rest on estimates about the future."]

FROWEN (S.) and HILLMANN (H. C.) (Eds.). *Economic Issues. A financial and economic debate in the critical years, 1954-1957.* London: Waterlow, 1957. 10". Pp. viii + 231. 21s. 6d.

[This brings together some thirty essays, mostly by academic economists, that were originally published in *The Bankers' Magazine*. It reflects the notable widening of the scope of the magazine in the last few years, as a result of which it has become one of the leading forums of debate on the economic issues of the day.]

GRAY (M.). *The Highland Economy, 1750-1850.* Edinburgh and London: Oliver & Boyd, 1957. 9". Pp. 280. 25s.

[To be reviewed.]

HAGUE (D. C.). *The Economics of Man-made Fibres.* London: Duckworth, 1957. 9". Pp. 315. 30s.

[To be reviewed.]

ILERSIC (A. R.) (Ed.). *Statistics and their Application to Commerce*. Revised 11th Edition. London: H.F.L. (66 Chandos Place, W.C.2), 1956. 8½". Pp. 401. 25s.

[The previous edition of this work was in fact a completely new book by Mr Ilersic taking the place of an earlier work with the same title. The present edition differs from the last in that considerably more space is devoted to Sample Surveys and the chapters on Statistical Sources and contemporary Index Numbers have been brought up to date. In general, this book should prove helpful to students embarking on a course in Applied Economic Statistics. However, it has its weaknesses: the chapter on correlation does not seem to be related to the rest of the discussion; the theoretical explanation of index numbers is not wholly satisfactory; and the discussion of time series is confined too closely to sheer manipulation. Undoubtedly the best part of the book is the elementary discussion of Sample Surveys.]

The Implications of Technical Change in Agriculture. Proceedings of the Ninth International Conference of Agricultural Economists. London: Oxford University Press, 1957. 9". Pp. 571. 42s.

[To be reviewed.]

LAMBERT (J. A.). *Reminiscences of a Financial Venturer*. Second Edition. Bath: Published by the author (Walden, Claverton Down, Bath), 1957. 7½". Pp. 201.

[The author first went into business in the year 1886. These discursive reminiscences of the various types of financial enterprise in which he has engaged make entertaining reading.]

LONSDALE (K.). *Is Peace Possible?* Harmondsworth: Penguin Books, 1957. 7". Pp. 127. 2s. 6d.

[The distinguished Quaker scientist here states the pacifist approach to the problems of war and armaments and tries to explain what this approach means in terms of practical action at the present time. She argues that if a war developed between the major powers, the chances of its stopping short of the use of nuclear weapons are negligible; indeed, if and when other countries also come to have their own nuclear weapons, the same may apply to minor wars as well. Nor is it promising to hope that the settlement of current sources of conflicts between countries will eliminate the danger of war, because new conflicts of interest are always liable to arise, and the question is not whether we are going to be able to avoid a suicidal war in the immediate future, but whether we can avoid having one ever. She suggests that the only hope for permanent peace lies not in the balance of power nor in partial restrictions of armaments, but in the dissemination through education of the notion that war and war-like preparation are wrong, till the point is reached when governments are simply unable to wage war or to prepare to do so because of the non-co-operation of the people.]

MAYNARD (G.). *The Control of Inflation*. Fabian Research Series, No. 187. London: Fabian Society (11 Dartmouth Street, S.W.1), 1957. 8½". Pp. 32. 2s.

[The author is Lecturer in Economics at Cardiff. He discusses the relative contributions of excess demand and cost increases to the post-war rise in prices in Great Britain. While not denying the importance of the level of demand, he argues that the chief part has been played by the rise in costs—first the rise in world prices of primary products, and latterly the reduction in subsidies—taking place in the situation where neither labour nor employers were willing to accept a reduction in their share of national product. The aim of policy must, in his view, be to avoid inflation while at the same time increasing investment. To this end he suggests a return to more conscious central direction of the economy: control over investment, imports and to some extent wages.]

The Middle East, 1957. 5th edition. London: Europa Publications, 1957. 10". Pp. 444. 70s.

[This edition follows the same lines as former issues. A survey is given for each of the countries in the area of geography, history, economic conditions, political institutions, etc., together with a brief collection of statistics. The volume also includes a Who's Who in the Middle East.]

MYRDAL (G.). *Economic Theory and Under-developed Regions*. London: Duckworth, 1957. 9". Pp. v + 168. 18s.

[To be reviewed.]

NATIONAL INSTITUTE OF ECONOMIC AND SOCIAL RESEARCH. *Company Income and Finance, 1949-53*. London: National Institute of Economic and Social Research (2 Dean Trench Street, Smith Square, S.W.1), 1956. 11". Pp. 72. 10s.

[This important publication marks the completion of a stage in the National Institute's research project on the finance of public companies. It contains an appropriation account and an opening

and closing balance sheet, together with the sources and uses of capital funds, for all companies with shares quoted on stock exchanges within the United Kingdom, divided into twenty-one industrial groups. A special tabulation is given of the aggregated accounts of the hundred largest quoted companies. There is a brief introductory discussion of the methods employed and of the trends shown, including a comparison with corresponding trends in the National Income Blue Book data for all companies. Detailed analysis of the results is in progress, but the data are published in the meanwhile to assist others working in this field.]

NATIONAL INSTITUTE OF ECONOMIC AND SOCIAL RESEARCH. 14th Annual Report, 1956. London: National Institute of Economic and Social Research, 1957. 10". Pp. 36.

[This contains as usual a full and useful account of the National Institute's current research programmes and the lines along which they are developing. The report opens with an obituary notice of Mrs. Feodora Stone, who acted as Secretary to the Institute from 1939 until her death in 1956.]

PREST (A. R.). *The Investigation of National Income in British Tropical Dependencies*. University of London, Institute of Commonwealth Studies, Commonwealth Papers No. IV. London: The Athlone Press, University of London, 1957. 8½". Pp. 32. 4s. 6d.

[The first two sections of this paper give a lucid brief explanation of the concepts of national-income accounting and the uses to which national-income data have been put in the more advanced countries. Dr. Prest then goes on to describe the conceptual and practical difficulties of national-income estimation in colonial-type territories and to survey briefly the work that has so far been done in this field for British tropical dependencies and the uses that have been made of it. He argues that the conceptual difficulties in measuring national income in this type of territory, though real, are not such as to prevent the work from being worth while, so long as it is remembered that the pattern of accounts adopted for any particular territory should be designed in the light of the individual characteristics of its economy and not copied mechanically from that used in advanced countries.]

ROBSON (W. A.). *The Welfare State*. L. T. Hobhouse Memorial Trust Twenty-sixth Lecture. London: Oxford University Press, 1957. 9". Pp. 19. 2s. 6d.

[Professor Robson discusses the origins, aims, achievements and problems of the welfare state in the light of L. T. Hobhouse's writings. In Hobhouse's day the expression "the welfare state" had not yet been coined, but much of his writing bears directly on the principles involved. Professor Robson pays particular attention to the problem of reconciling state activities with individual liberty. He suggests that liberty, understood in a positive sense rather than as the mere absence of restraints, has been increased rather than diminished by many of the extensions of state activity in the social sphere.]

SAVILLE (J.). *Rural Depopulation in England and Wales, 1851-1951*. A Dartington Hall Study in Rural Sociology in the International Library of Sociology and Social Reconstruction. London: Routledge & Kegan Paul, 1957. 9". Pp. xvi + 253. 28s.

[To be reviewed.]

SHILS (E. A.). *The Torment of Secrecy*. The background and consequences of American security policies. London: Heinemann, 1957. 9". Pp. 238. 15s.

[This study is concerned with that obsession with subversion which we have come to call McCarthyism. As we should expect from so able a social theorist as Professor Shils, it is no polemic, but an original contribution to the sociology of politics. Although its occasion is the recent hysteria in the United States, and the greater part of it is devoted to an analysis of the phenomenon in that country, the book deals with fundamental issues affecting the health of the State. It explores the morbid effects which occur for civility when the workings of publicity, privacy and secrecy are perverted by extremists, whether they be revolutionaries, reactionaries or populist demagogues. Its underlying theme is the imperative need, in a free society, to preserve a genuinely pluralistic set of relations among the many professional, class and functional groups which comprise the body politic. The argument, which is developed with a minimum of abstraction, is reinforced convincingly by a succession of special analyses of the strains upon politicians, civil servants, scientists and intellectuals. For Mr. Shils is a first-class observer as well as theorist. He is also almost unique in demonstrating systematic knowledge not only of his own country but also of Great Britain. He uses this asset to great advantage in contrasting the circumstances of the two countries. His comparative judgments are enlightening, and they in no way minimise the dangers inherent in populist America nor the advantages of the British institutional structure.]

SZCZEPANIK (E. F.). *The Cost of Living in Hong Kong*. Hong Kong: Hong Kong University Press, 1956. 8½". Pp. 25. 7s. 6d.

[This describes the results of a family budget survey carried out by the University of Hong Kong in 1955 in order to establish more up-to-date weights for calculating the cost-of-living index for the Colony than those currently in use. The distribution of expenditure turned out, however, to be not very different from that indicated by the 1948 survey on which the weights in the official cost-of-living index are based. The data collected in the University survey also provide material for estimating food consumption and the standard of living generally of workers in the Colony, and the author uses these for some comparisons with the standard of living in the mainland of China.]

THACKER (C. W.). *Estate Duty in Cyprus*. A memorandum presented to His Excellency the Governor. Nicosia: Cyprus Federation of Trade and Industry, 1957. 10". Pp. 106.

[This is not an official study, but was commissioned by the Cyprus Federation of Trade and Industry, which now calls the attention of the Governor to its findings. Its author believes that any sort of Estate Duty is harmful, especially in a territory like Cyprus, where capital is very scarce. More specifically, he argues that the effective rate of duty is heavier in Cyprus than in the United Kingdom, and that various classes of relief allowed by United Kingdom legislation are not available in Cyprus. He suggests that at the very least the law should be changed so that the burden of estate duty in Cyprus is not heavier than in the United Kingdom.]

THORNE (A. P.). *Size, Structure and Growth of the Economy of Jamaica*. A national economic accounts study. Supplement to Vol. 4, No. 4 of *Social and Economic Studies*. Mona, Jamaica: Institute of Social and Economic Research, University College of the West Indies, 1956. 9½". Pp. 112. 6s.

[This report on a national-income inquiry was made for the Government of Jamaica by a Research Fellow of the Institute of Social and Economic Research. It is a sensible, workmanlike document, based on up-to-date techniques of national-income measurement, and it deserves recommendation to a more specific audience than the "general reader" for which it is designed. The estimates and accounts are largely for the years 1950-52, but the author relates them to earlier estimates (back to 1938) and provides some interesting discussion of their character, implications and practical uses. For administrators, economists and business-men whose work demands a knowledge of the size, structure and prospects of the Jamaican economy the report should be required reading. It is interesting enough to be recommended also to students and others who are concerned generally with questions of national-income measurement and analysis in the less-developed countries.]

TURVEY (R.). *The Economics of Real Property*. An analysis of property values and patterns for use. London: Allen & Unwin, 1957. 9". Pp. 150. 16s.

[To be reviewed.]

YOUNG (M.) and WILLMOTT (P.). *Family and Kinship in East London*. A survey by the Institute of Community Studies. London: Routledge & Kegan Paul, 1957. 9". Pp. xix + 232. 25s.

[The authors analyse on the basis of sample surveys certain aspects of family life in Bethnal Green and in an L.C.C. housing estate at "Greenleigh" in Essex. Their chief emphasis is on the importance of the "extended family," in particular the relation between the married daughter and her mother, in Bethnal Green, and its disruption when the married daughter and her family move out to "Greenleigh," leaving behind her mother and her siblings and the whole of the community life developed through perhaps generations of residence in the East End. A married woman's life in an old-established working-class district like Bethnal Green is closely bound up with that of a ramifying network of female relatives, at whose centre is her mother. This provides companionship to both generations and a source of mutual help. The authors admit that the importance of the extended family is tending to become less, even in Bethnal Green, as husbands come to participate more in the life of family and home. But the loss is still great when the extended family is forcibly separated by the migration of part of it to an outlying housing estate. The absence of kinship ties on new estates is held to be one (though only one) of the reasons for the unsocial atmosphere so often complained of there. The conclusion is drawn that housing policy has been mistaken in treating the family of husband and wife and young children as a self-sufficient unit, and that more attempts should be made in future planning to avoid the need for shifting people over large distances away from their relatives. This means, in particular, that more rehousing should be done within the East End, if necessary at the cost of higher density. The same problem will also arise in "Greenleigh" when the present generation of children reaches marriageable age, and the authors indicate some of the difficulties that will then arise if further migrations are to be avoided, on account of the unbalanced age-composition of the population on new housing

estates. The authors lay themselves open to some criticism in their implication that the problem arising from the division of the extended family by movement away is a new one associated with the development of municipal housing estates; surely the acreage covered by working-class districts in towns has always tended to expand? The natural growth of population within an already built-up district cannot normally have been accommodated within that district, even apart from any secular tendency for the population per acre to fall. Another possible criticism of their work is that the practice they followed of interviewing people at home, so that the husband, if seen at all, was seen in the company of the wife, gives their findings a "wife-orientation"; if, for example, it had been possible to talk to husbands at their places of work, as has been done in some similar surveys, some different impressions might have been obtained. But these criticisms do not detract from the great interest of their work and it is difficult to quarrel with their conclusion that planners have tended to be guided by too narrow a conception of the nature of family life.]

Australian

SINCLAIR (W. A.). *Economic Recovery in Victoria, 1894-1899*. Australian National University Social Science Monographs, No. 8. Canberra: The Australian National University, 1956. 9½". Pp. 128. 25s.

[This monograph describes the course and causes in one colony of the recovery from the very severe cyclical depression which afflicted the Australian economy in the early 1890s. The author draws largely on contemporary reports in newspapers as well as on such statistics as are available. Comparing the actual experience of this period with the account of the recovery phase given in theoretical models of the cycle, he finds that improvement in profit rates due to the working off of excess capacity appears to have contributed little to recovery. Excess capacity was a burden throughout the period concerned, and investment did not rise much at all. Recovery came rather from exports. This reflected partly the improvement in world prices of the staple exports wool and wheat after 1895, but the chronic drought hindered the recovery of earnings from these sources. More importance came to attach to newer types of export, butter and frozen meat and also gold, and the author believes that this broadening of the export base was directly stimulated by the depression in the traditional lines. The adverse balance of payments associated with the decline in capital imports also stimulated the growth of manufacturing industry as a source of import-substitutes.]

Canadian

BLADEN (V. W.). *An Introduction to Political Economy*. Third Edition. Toronto: University of Toronto Press, 1956 (London: Oxford University Press, 1957). 9". Pp. 319. 40s.

[The first edition was published in 1941, and the author has revised it to take account of changes in the character of economic problems and conditions since that time. It is not a text-book of elementary theory, but is designed to be read in conjunction with other books in order to help the Canadian first-year student to relate the subject of his studies to the real world. Its scope may be indicated by the chapter headings: The Basic Conditions of Social Wealth; The Price System; The Price System in a Hypothetical Handicraft Economy; Money and the Price System; Population; Wheat in the Canadian Economy; Newsprint in the Canadian Economy; Combines and Public Policy; The Wage Earner in Modern Industry.]

KEIRSTEAD (B. S.). *Canada in World Affairs, September 1951 to October 1955*. Toronto and London: Oxford University Press for the Canadian Institute of International Affairs, 1956. 9". Pp. 268. 28s.

[This is one of a series of biennial surveys by different authors on Canada's place in world affairs since before the War. In addition to being a distinguished economist, Professor Keirstead is well known to the Canadian public as a radio commentator on current affairs. He has used his opportunity in the present volume to give a characteristically vigorous, acute and independent account of the events of the period and the conduct of Canadian foreign policy.]

Indian

ALL-INDIA RURAL CREDIT SURVEY. Reports of the Committee of Direction. Vol. I, Pt. I, The Survey Report (Rural Families), and Vol. III, The Technical Report. Bombay: Reserve Bank of India, 1956. 10" and 11". Pp. 1067 and 1045. Rs. 9/- and 10/-.

[A note on Vol. II (The General Report) in this series appeared in the *ECONOMIC JOURNAL* for June 1955. Vol. I, Pt. I, now published analyses in detail the data on rural credit collected from

families in seventy-five sample Districts of India during the course of a year's survey. The topics covered include not only various aspects of indebtedness but also farm expenditure, receipts and savings. Altogether the Report forms a valuable source for all interested in the Indian rural economy. (Pt. II of this volume will cover the various credit agencies at present available.) Vol. III, also now published, contains introductory chapters on the design and conduct of the survey and a series of appendices illustrative of the same themes, but is mainly devoted to a large number of useful statistical tables which summarise the data collected.]

ALL-INDIA RURAL CREDIT SURVEY. The general report of the Committee of Direction. Abridged edition. Bombay: Reserve Bank of India, 1955. 9". Pp. 301. Rs. 2/-.

[This is a readable abridgment of Vol. II (The General Report) mentioned in the previous note.]

American

ABRAMOVITZ (M.) and ELIASBERG (V.). The Growth of Public Employment in Great Britain. Princeton, New Jersey: Princeton University Press for the National Bureau of Economic Research (London: Oxford University Press), 1957. 9½". Pp. 151. 30s.

[To be reviewed.]

The Anti-Stalin Campaign and International Communism. A selection of documents edited by the Russian Institute, Columbia University. New York: Columbia University Press, 1956 (London: Oxford University Press, 1957). 8½". Pp. 337.

[The purpose of this collection is to bring together material showing the response of Communists in Western countries to the famous speech of Mr. Khrushchev at the Twentieth Congress of the Communist Party of the Soviet Union. It contains the text of the speech, followed by reprints of statements by Western Communist Party leaders and newspapers elicited by it.]

BRADLEY (P. D.). Involuntary Participation in Unionism. National Economic Problems, No. 462. Washington, D.C.: American Enterprise Association, 1956. 8½". Pp. 49. \$1.00.

[The author states a number of grounds for rejecting the argument commonly advanced in favour of the closed shop, that the worker who is not a member of the union benefits from its activities without contributing to them.]

CHILDS (M. W.) and CATER (D.). Ethics in a Business Society. A Mentor Book. New York: New American Library of World Literature (501 Madison Avenue, New York 22), 1957. 7". Pp. 192. \$0.35.

[This is a paper-backed reprint of a book first published in 1954. Its aim is to present and discuss some of the results of an elaborate study programme on the relationship between religion and economics, undertaken by a federal organisation of Christian Churches in the United States. This programme involved the participation of economists and other social scientists along with church leaders and theologians. Messrs. Childs and Cater have drawn both on the published works that resulted from this programme and on unpublished materials. They give a fairly lengthy survey of historical developments in the attitudes of the churches towards economic problems before going on to state the issues that present themselves at the present day to anyone seeking to reconcile Christianity with the demands of economic life. Their book contains much valuable and interesting material, though the solutions proposed are notably less lucid and specific than the statement of the problems.]

CHURCHMAN (C. W.), ACKOFF (R. L.) and ARNOFF (E. L.). Introduction to Operations Research. New York: John Wiley (London: Chapman & Hall), 1957. 9½". Pp. 645. 96s.

[To be reviewed.]

Debt: Public and Private. A report of the Committee on Economic Policy of the Chamber of Commerce of the United States. Washington, D.C.: Economic Research Department, Chamber of Commerce of the United States, 1957. 11". Pp. 48. \$1.00.

[This is a factual study of the importance of different types of indebtedness in the American economy. It is found that the ratio of total debt to GNP has not shown any clear tendency to rise ill over the last forty years. There have, however, been changes in the relative importance of rent types of debt: the debt of the federal government has increased at a more rapid rate than

national income, corporate debt at a less rapid rate. The authors believe that continuous scrutiny of the credit-debt situation is essential for the pursuit of an intelligent monetary policy, but they do not think that present tendencies give any special cause for alarm. Their study contains a large number of well-presented tables and charts, mostly based on official sources.]

Financing Kentucky's Roads and Streets. Lexington, Kentucky: Bureau of Business Research, University of Kentucky, 1956. 9". Pp. 114.

[This describes the present sources of finance and the possible means of paying for improvements which, it is believed, would abundantly justify themselves by reducing transport costs. At present 69% of highway expenditure is financed by taxation of highway users, and an interesting section of the report describes an analysis of the extent to which the contributions made by owners of different classes of vehicles correspond to the costs attributable to those vehicles.]

HAMPTON (R. J.). Merchandise Control in the Retail Pharmacy. Pullman, Washington: Bureau of Economic and Business Research, State College of Washington, 1957. 9". Pp. 96. \$1.50.

[By merchandise control is meant the systematic analysis by the retailer of stocks and sales designed to facilitate an efficient procurement policy. The author describes the existing practice and the ways in which it might be improved in the branches of retailing concerned.]

HENDRICKS (W. A.). The Mathematical Theory of Sampling. New Brunswick, New Jersey: The Scarecrow Press, 1956 (London: Bailey Bros. & Swinfen, 1957). 9½". Pp. 364. 67s. 6d.

[To be reviewed.]

IWAŃSKA (A.) (Ed.). Contemporary Poland. Society, politics, economy. New Haven, Connecticut: Human Relations Area Files (Box 2054, Yale Station), 1955. 10½". Pp. 578.

[The aim of this monograph is stated to be to present a balanced account of the contemporary social, economic and political situation in Poland and to trace the development of present-day institutions to their main historical antecedents. It is the product of research carried out in the Division of the Social Sciences of the University of Chicago. The long section on economic institutions is by Michał Zawadzki.]

KOIVISTO (W. A.). Principles and Problems of Modern Economics. New York: John Wiley (London: Chapman & Hall), 1957. 9½". Pp. 834. 48s.

[To be reviewed.]

LADD (D. R.). Cost Data for the Management of Railroad Passenger Service. Boston, Mass.: Graduate School of Business Administration, Harvard University (London: Bailey Bros. & Swinfen), 1957. 8½". Pp. 345. 36s.

[The subject of this monograph is the use that may be made of cost analysis by railroad management in the United States in order to cope with the chronic deficits that they incur on passenger service. The author describes methods currently in use and methods that might be used to assess the cost of particular trains, services, etc. The argument is illustrated by numerous examples drawn from the experience of individual railroads.]

LEWIS (H. T.), CULLITON (J. W.) and STEELE (J. D.). The Role of Air Freight in Physical Distribution. Boston, Mass.: Graduate School of Business Administration, Harvard University, 1956 (London: Bailey Bros. & Swinfen, 1957). 8". Pp. 180. 20s.

[This book is addressed chiefly to business executives concerned with the question whether or not to make use of air transportation, and it sets out to indicate, on the basis of field studies, what sort of issues are involved, without attempting to formulate criteria ready for immediate application. The authors take as their text a dictum of Dupuit that "the ultimate purpose of a means of transportation ought not to be to reduce the expenses of transportation, but to reduce the expense of production." They emphasise the need for a firm to view the decision for or against the use of air transportation in the context of the whole process of procurement and distribution. Such an overall approach is often made more difficult by the absence of any one person or office within a firm with responsibility for all aspects of the distributive process. The authors had difficulty in finding sufficient material to justify many firm conclusions, but it emerges clearly enough that the chief economy derived from air transportation is commonly a reduction in the amount of capital tied up in stocks. To a large extent therefore the issue becomes one of weighing the costs of air freight against the costs of warehousing.]

MCALLISTER (H. E.). *The Elasticity of Demand for Gasoline in the State of Washington*. Pullman, Washington: Bureau of Economic and Business Research, State College of Washington, 1956. 9". Pp. xiv + 80. \$2.00.

[The author proceeds by means of single-equation multiple correlation analysis, supplemented by a long "qualitative" chapter on factors affecting demand, designed to serve as a check on the statistical findings. The conclusion reached is that both price-elasticity and income-elasticity are less than unity. There is, however, some divergence between the coefficients indicated by inter-war data and those indicated by post-war data. The former yield a price-elasticity of 0.48 and an income-elasticity of 0.47, the latter a price-elasticity of 0.08 and an income-elasticity of 0.91.]

MILLS (C. W.). *The Power Elite*. New York and London: Oxford University Press, 1956. 8½". Pp. 423. 36s.

[In earlier studies Mr. Wright Mills exposed the anatomy of the white-collar classes and of trade-union leadership in the United States. Now he expands his analysis to take in contemporary American society as a whole. The result is a picture of power relationships dominated by a highly integrated *élite* of big business-men, military and politicians, who manipulate at will the mass of Americans. This somewhat lurid thesis is supported by a great deal of evidence drawn from a wide variety of sources; and it would be difficult to deny the validity of much of it. However, one may accept the facts and still consider the total picture to be overdrawn. The rhetorical overtones suggest the indignant Muckraker, brought up to believe that the ballot box should settle all, discovering an inner power network, the existence of which might dismay an American, but hardly a European accustomed to the idea of an Establishment. Despite the wealth of illustration, there is much that is sheer assertion, made plausible by Mr. Mills' great skill as a writer; and the ultimate vision of an American consisting of an irresponsible and mindless *élite* playing upon an equally mindless mass which has ceased to be a public, strains one's common sense. It is, however, an important study and calls attention to tendencies which, it must be admitted, are disturbing.]

NEISWANGER (W. A.). *Elementary Statistical Methods, as applied to business and economic data*. Revised edition. New York and London: The Macmillan Company, 1956. 9½". Pp. 749. 48s. 6d.

[This is a valuable and carefully written book for students of applied statistics. While the exposition of the necessary quantum of statistical theory is at a sufficiently elementary level, all the difficulties are squarely faced. Possible sources of confusion and error are illustrated with a wealth of well-chosen examples. In addition to the conventional contents of a book of this type, there is a comprehensive and helpful discussion of sample surveys; particular emphasis being given to the ways in which non-sampling errors will occur. Its main disadvantage is its length, since Dr. Neiswanger leaves nothing to the reader's imagination.]

People, Housing and Rent Control in Syracuse. A Report of the Temporary State Housing Rent Commission of New York. New York: Temporary State Housing Rent Commission, 1956. 9". Pp. 117.

[This is a quantitative study of the effects on the rental housing position in Syracuse of successive decontrols of sectors of the market in 1953-56. Despite a substantial rise in rents, there was no perceptible increase in the proportion of vacancies. The evidence collected leads the authors to the conclusion that the influence of custom in the use of housing space is so strong that further decontrol would be unlikely to lead to many vacancies as a result of reallocation of space among existing households. Some vacancies would, however, probably result "to the extent that older, low-income one-person households would be forced to surrender their controlled units and double up as a result of increases in rent."]

PHILLIPS (A.). *Automation. Its impact on economic growth and stability*. Washington, D.C.: American Enterprise Association, 1957. 8½". Pp. 36. \$1.00.

[The author argues that automation represents essentially no more than the continuation of the long-run process of technical improvement and that there is no ground for fearing ill-effects such as would justify special legislation to provide for those put out of employment by it.]

POUNDS (N. J. G.) and SPULBER (N.) (Eds.). *Resources and Planning in Eastern Europe*. Indiana University Slavic and East European Series, Vol. 4. Bloomington, Indiana: Indiana University, 1957. 8½". Pp. 173. \$2.50.

[This contains the proceedings of a conference held at Indiana University in May 1956. The contributions are as follows: *Eastern Europe and the Balance of Power* by Henry L. Roberts; *Agricultural Resources*, by Arthur E. Moodie; *Mineral Resources*, by Victor H. Winston; *Planning and Development*, by Nicolas Spulber; *Economic Relations with the U.S.S.R.*, by David Granick; and *Some Social and Political Implications of Planning*, by Jan Wszelaki.]

SMITH (B. L. and C. M.). *International Communication and Political Opinion*. A guide to the literature. Prepared for the Rand Corporation by the Bureau of Social Science Research, Washington. Princeton, New Jersey: Princeton University Press, 1956 (London: Oxford University Press, 1957). 10". Pp. 325. 48s.

[This is a classified and annotated bibliography containing some 2,500 items published between 1943 and 1955. It is a continuation of an earlier bibliography by B. L. Smith and others, which covered material published up to 1943. Its scope includes international propaganda, communication and opinion. Works dealing with countries' internal affairs are cited in so far as they are relevant to international politics.]

SOULE (G.) and CAROSSO (V. P.). *American Economic History*. New York: The Dryden Press (31 West 54th Street, New York 19), 1957. 9½". Pp. 654. \$6.00.

[To be reviewed.]

STURMTHAL (A.) (Ed.). *Contemporary Collective Bargaining in Seven Countries*. Ithaca, New York: Institute of International Industrial and Labor Relations, Cornell University, 1957. 9½". Pp. ix + 382. \$4.50.

[This contains nine papers by different authors on collective bargaining, with special reference to the post-war period. Seven of these are country studies: on Great Britain, by Allan Flanders; on Norway, by J. Inman; on the Netherlands, by P. S. Pels; on France, by Adolf Sturmthal; on Germany, by Clark Kerr; on Italy, by Luisa Riva Sanseverino; and on the United States, by Neil W. Chamberlain. There is a further paper on Italy (Wage Structure and Cost of Labor in Italy, by Cesare Vannutelli), and the editor concludes the volume with a long comparative essay in which he draws on the material contained in the other contributions. The country studies on Britain, the United States and Italy are published for the first time; the other contributions are revised versions of papers previously published in other sources. Most of the papers have been brought up to date to about the end of 1955. This is a useful collection, which covers a large amount of ground readably and within a reasonable compass.]

Suggestions for Research in the Economics of Pensions. Report of an exploratory survey by the National Bureau of Economic Research of the economic aspects of organized provision for the aged and surviving dependents. New York: National Bureau of Economic Research, 1957. 9". Pp. 51. \$1.00.

[This contains an analysis in some detail of the lines along which research might usefully be conducted into the economics of pensions in the United States. The authors point out that the growth in the importance of pensions has been so rapid that our knowledge of the problems involved has not kept pace. Their suggestions for research almost amount in themselves to a survey of the economic aspects of pensions, with fairly extensive references to the existing literature. The report is organised under five main headings: present and future scope and characteristics of pension plans; impact of pension plans on savings and investment; relations of pension plans to the level and distribution of national income and product; pensions and economic stability; and the tax treatment of pensions and the aged. The intention is not to propose a single integrated research project nor one suitable for execution by a single research agency. It is rather to make suggestions that may serve to stimulate research among the many organisations and individuals with interests in the field.]

WALLACE (R. F.). *An Evaluation of Wildlife Resources in the State of Washington*. Pullman, Washington: Bureau of Economic and Business Research, State College of Washington, 1956. 9". Pp. 63. \$1.00.

[An analysis of the economic importance of the sports of hunting and fishing to the State of Washington.]

YANG (SHU-CHIN). *A Multiple Exchange Rate System*. An appraisal of Thailand's experience, 1946-1955. Madison, Wisconsin: University of Wisconsin Press, 1957. 9½". Pp. x + 200. \$3.00.

[In the early post-war years Thailand had a much overvalued currency, coupled with an inefficient system of quantitative controls, and black-market transactions were rampant. To cope with this situation, it was decided to resort to a system of multiple exchange rates. Most imports other than those required for government reconstruction needs had to be paid for at the open-market rate. All export proceeds from rice and a proportion of the proceeds of other exports had to be surrendered to the government at the low official exchange-rate; the remainder could be sold at the open-market rate. Dr. Yang discusses how the system in fact worked out, and what are its theoretical advantages and disadvantages. He argues that for a country like Thailand some

flexibility in exchange rates is desirable to stabilise the balance of payments. The advantage of multiple exchange rates from the national point of view is that they enable the effective exchange rate for each article of trade to be adjusted in the light of its individual elasticities of supply and demand. Moreover, since the average rate for imports is higher than that for exports, the government makes a profit on exchange transactions, which can be used as an instrument both for stabilising national income and for redistributing it. These results could in principle also be attained by a system of taxes and subsidies, but in Thailand this would probably be less feasible administratively. In his analysis of events, Dr. Yang finds that certain misjudgments on the part of the central bank have prevented the system from serving the national interest as well as it would in theory have been capable of doing.]

ZINNER (P. E.) (Ed.). *National Communism and Popular Revolt in Eastern Europe*. A selection of documents on events in Poland and Hungary, February–November 1956. New York: Columbia University Press, 1956 (London: Oxford University Press, 1957). 8½". Pp. 563.

[An extensive selection of documents, translated into English, consisting mainly of articles in the East European Press and statements by political leaders and organisations, some published and some from monitored broadcasts. The editor provides a brief connecting narrative to indicate the chronology of events and to give the context of particular documents.]

Dutch

DIAB (M. A.). *The United States Capital Position and the Structure of its Foreign Trade*. Contributions to Economic Analysis, No. XI. Amsterdam: North-Holland Publishing Company, 1956. 8½". Pp. 67. 20s.

[This book is a critique of the Leontief scarce-factor paradox (that the United States exports labour-intensive goods). After a rather defective exposition of the Haberler–Ohlin theorem and a summary of Leontief's method and results, it is shown that revision of the agriculture capital coefficient reduces but does not reverse the difference in capital-intensity between United States exports and imports. Leontief's explanation in terms of superior labour quality is confirmed by an ingenious (though suspect) use of the Cobb–Douglas function, but the real explanation is shown to be the higher capital-intensity of non-manufacturing groups and the preponderance of these in United States imports, attributable to limitation of natural resources rather than capital. Several interesting comments on the nature of the problem are included.]

VAN GLINSTRAL BLEEKER (R. J. P.). *Guided Money*. A new monetary instrument. Amsterdam: North-Holland Publishing Company, 1956. 9". Pp. 173. 30s.

["Guided Money" is hardly money at all but a points-rationing scheme in reverse, designed to deal with surpluses of a kind whose reduction by normal economic processes appears socially wasteful. Dr. Bleeker explains its application in cases of wide temporary fluctuation in particular demand; as an instrument for tapering structural decline; as a partial answer to world agricultural disequilibrium; and as a means of aiding low-income groups nationally and internationally. He does not ignore, but grossly underestimates, the administrative difficulties and political pressures involved, and dismisses too easily the arguments against further substituting central decision for free consumer choice as a determinant of the lay-out of production.]

MEERTENS (L.). *De organisatie van de verkoop*. Leiden: Stenfert Kroese, 1954. 9". Pp. 290.

[A handbook on the marketing of consumer goods, primarily addressed to management.]

ZIJLSTRA (J.). *De omloopssnelheid van het geld en zijn betekenis voor geldwaarde en nonetair evenwicht*. Leiden: Stenfert Kroese, 1955. 9". Pp. 230.

[This monograph on the velocity of circulation should go a long way to make up for the neglect of which the subject traditionally suffers. Most of it is taken up by definition and explanation, and by a restatement of the role of the velocity of circulation in situations in which it is usually overlooked or treated as a constant. The result is an elaboration and elucidation of existing monetary theory rather than a new departure.]

Swiss

BRUGGER (H.). *Die Schweizerische Landwirtschaft in der ersten Hälfte des 19. Jahrhunderts*. Frauenfeld: Huber, 1956. 8¼". Pp. 270. Sw.Fr. 22.80.

[A well-documented survey of Swiss agricultural production in the first half of the nineteenth century, of historical rather than analytical interest.]

BURCHHARDT (D.). *Kapitalbildung in England von 1946 bis 1950*. Zurich: Polygraphischer Verlag, 1956. 9". Pp. 126. Sw.Fr. 12.45.

[Over the period 1946–50 both personal and corporate savings in this country showed a steady decline, which was only partly offset by an increased contribution of the public sector. The greater part of this book is taken up by a statistical analysis, mainly of national-income data, which establishes these facts. The author also discusses various possible causes of the decline in personal savings without, however, ascribing a decisive influence to any particular factor.]

NYDEGGER (A.). *Die wirtschaftliche Bedeutung der Allgemeinverbindlicherklärung von Gesamtarbeitsverträgen in der Schweiz*. Zurich and St Gallen: Polygraphischer Verlag, 1957. 8". Pp. 198. Sfr. 12.45.

[Since 1941 the Swiss Government may, by decree, enforce any collective wage agreement negotiated between unions and employers' associations on all firms in the industry concerned. This book describes the development and administrative detail of the system, which by now extends to a third of all national wage agreements. The author then examines its economic consequences, and ends up with an interesting attempt to weigh the advantages and disadvantages numerically in an index of policy objectives. This leads to the conclusion that the system is favourable in full employment, harmful in depressions.]

RAU (A.). *Agricultural Policy and Trade Liberalization in the United States, 1934–1956*. A study of conflicting policies. Geneva: Librairie Droz, 1957. 10". Pp. 160.

[The inconsistency between current United States agricultural policy and the aims of reducing the barriers to world trade is admitted by official American spokesmen, and has sometimes put them in an embarrassing position. The author of this monograph traces the evolution of agricultural policy in the United States that has brought this situation about. His own view is that a less protective policy would not damage American agricultural interests as much as is sometimes supposed.]

TROTTMANN (M.). *Zur Interpretation und Kritik der Zusammenbruchstheorie von Henryk Grossmann*. Zurich: Polygraphischer, 1956. 9". Pp. 92. Sw.Fr. 12.50.

[A specialist's study in Marxist economy, this book deals with the efforts of Grossmann, a German author of the twenties, to reinterpret the theory of capitalistic accumulation and its self-defeating character. While sympathetic to his subject the author concludes that Grossmann's theory must be dismissed as logically inconsistent.]

Austrian

FORSCHUNGSSTELLE ZUR AUFSTELLUNG VOLKSWIRTSCHAFTLICHER BILANZEN. *Der Verbrauch der städtischen Bevölkerung Österreichs*. Vienna: Österreichische Statistische Zentralamt und Österreichisches Institut für Wirtschaftsforschung, 1956. 12". Pp. 127.

[This book contains the main results of a budget inquiry among 7,000 urban households held in Austria in 1954. A brief description of the sample and the methods used (with the questionnaire, the interviewer's instructions and other documents reproduced in full) is followed by eighty pages of tables. Three main sets can be distinguished: (i) expenditure on twenty-one comprehensive commodity groups; (ii) expenditure and quantity for sixty-three different foodstuffs; (iii) number, sex and status of earners in the household. Each of these has been tabulated by four social classes, twelve family composition groups and twelve income groups, and for the first item there is, in addition, a double classification by family composition and income. Most information is given separately for Vienna and other cities, and there are a great many parallel tables where the original data have been converted into percentages and other derived figures.]

FORSCHUNGSSTELLE ZUR AUFSTELLUNG VOLKSWIRTSCHAFTLICHER BILANZEN. *Der öffentliche Haushalt in der volkswirtschaftlichen Gesamtrechnung*. Vienna: Österreichische Statistische Zentralamt und Österreichisches Institut für Wirtschaftsforschung, 1956. 9". Pp. 75.

[A small pamphlet discussing the difficulties connected with the public sector in national accounting.]

Italian

MENEGASSI (G.). *Method and Foundations of Social Science*. Bari: Institute of Economics and Finance, University of Bari, 1957. 9½". Pp. 122. Lire 1,000.

[The author seeks to point the way to a "new social humanism" emancipated from materialism and "supported by the power of the spirit." His use of a wide range of vague abstract concepts inevitably makes the book uncongenial to the English reader, and the style of the translation does not help.]

Finnish

PAAKKANEN (J.). *Hintateorian Realismi ja Yritysten Hintapäätökset*. (The Realism of Price Theory and the Price Decisions of the Firm). Jakaja: Liiketaloustieteellinen Tutkimuslaitos, 1957. 9½". Pp. 135.

[The main purpose of this book is to provide Finnish students with an account of recent controversies on the theory of the firm, marginal theory versus the full cost principle, etc. To judge by the lucid English summary and the well-chosen select bibliography, it should fulfil this purpose well. The author does not claim to have arrived at any secure conclusions, but he suggests that the unsatisfactoriness of the present state of the subject is largely due to an excessively static approach and to the tendency to separate the theory of price-determination from other related subjects, such as the theory of profit and the theory of investment.]

Official

INTERNATIONAL

EUROPEAN PRODUCTIVITY AGENCY, ORGANISATION FOR EUROPEAN ECONOMIC CO-OPERATION. *The Supply of Capital Funds for Industrial Development in Europe*. Resources, structure, methods. Paris: O.E.E.C., 1957. 9½". Pp. 235. 12s.

[To be reviewed.]

EUROPEAN PRODUCTIVITY AGENCY, ORGANISATION FOR EUROPEAN ECONOMIC CO-OPERATION. *About Automation*, by COLOMB (S.) and LIÉNART (P.). Paris: O.E.E.C., 1956. 9". Pp. 62. 3s.

[This outline account of the nature of automation and the problems it raises is designed to give trade unionists basic information about the issues involved.]

INTERNATIONAL LABOUR OFFICE. *Report of the Director General. Part I: Automation and Other Technological Developments. Labour and social implications*. Geneva: I.L.O., 1957. 9½". Pp. 105. 6s.

[This is the first part of the Director-General's annual report to the International Labour Conference, published separately from the second part, which will be a general survey of the I.L.O.'s activities. In it he considers in rather broad terms, though with a fair number of illustrative examples, automation's likely consequences for labour: its effects on employment, skill requirements, education, displacement and re-employment of individual workers, wages and hours of work, job satisfaction and social security. He concludes by discussing the policy implications for employers, trade-union leaders and governments.]

ORGANISATION FOR EUROPEAN ECONOMIC CO-OPERATION. *Report on the Possibility of Creating a Free Trade Area in Europe*. Prepared for the Council by a special working party. Paris: O.E.E.C., 1957. 9½". Pp. 57. 3s.

[This is the report which was welcomed in the recent White Paper published by the Government. The working party gives reasons for supposing that the formation of a Free Trade Area is technically feasible and outlines the main problems to be resolved.]

UNITED NATIONS. *Statistical Yearbook 1956*. Prepared by the Statistical Office of the United Nations Department of Economic and Social Affairs. New York: United Nations, 1956. 11½". Pp. 646. 40s.

[This year's issue follows the usual pattern, with a number of additions. Among the new tables included is one showing the value of consumption expenditure and its percentage distribution between commodities. In many of the tables it has been possible for the first time to include data for the U.S.S.R., Bulgaria, Hungary and Poland, owing to the greater degree of co-operation offered by the statistical authorities in those countries.]

THE ECONOMIC JOURNAL

DECEMBER 1957

IS A WAGES POLICY DESIRABLE AND PRACTICABLE?¹

It would, I suppose, be possible to describe as a wages policy the present practice in this country whereby wages are settled by individual or collective bargaining in each industry or occupation, with little or no regard to the repercussions which wage movements may have upon the economy as a whole. But that is not what is usually meant when a wages policy is recommended. Lord Beveridge, for example, advocated a "unified wage policy" to ensure "that the demands of individual unions will be judged with reference to the economic situation as a whole."² That, I think, expresses in general terms what the advocacy of a wages policy is intended to imply. It is an alternative to the sectional determination of wages as we know it to-day.

The desire for such a policy springs from two main sources which may or may not be connected. On the one hand, there is the recognition that in a period of inflation the wage-price spiral is frustrating to all wage-earners and most injurious to some. Keynes, in 1940, put the point in these terms:

"A demand on the part of the Trade Unions for an increase in money rates of wages to compensate for every increase in the cost of living is futile, and greatly to the disadvantage of the working class. Like the dog in the fable, they lose the substance in gaping at the shadow. It is true that the better off sections might benefit at the expense of other consumers. But except as an effort at group selfishness, as a means of hustling someone else out of the queue, it is a mug's game to play. In their minds and hearts the leaders of the Trade Unions know this as well as anyone else. They do not want what they ask. But they dare not abate their demands until they know what alternative policy is offered. This is legitimate. No coherent plan has yet been put up to them."³

The second source is bound up with the fact of full or over-full employment. If, as Lord Beveridge would have it, full employment means "more

¹ This formed the first contribution to a Discussion on the above topic at the Annual General Meeting of the Royal Economic Society held on July 4, 1957. Mr. Roberts, who made the second contribution, has published his views in the London and Cambridge Economic Service.

² *Full Employment in a Free Society*, p. 100.

³ Keynes, *How to Pay for the War*, pp. 6-7.

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jobs than men" a situation is created in which bargaining strength is heavily weighted on the side of the unions and, provided the monetary system is accommodating, it would be surprising if wages in general were not pushed up more than the overall increase in the productivity of labour.

One might point to other supporting sources. There are the economic planners, some of whom at least would recognise that both their nice calculations and their intelligent guesses may be reduced to nothingness if the wages sector of the economy is allowed to follow its own course while the remainder of the economy is tied to the plan. And finally there are those whose preoccupation is with the ethical aspects of wages distribution and who can see no way of promoting a fairer or "more right" distribution save by the conscious adoption of a wages plan. Without disrespect to those who hold these latter views, I think it may be claimed that they do not represent the main sources of the present interest in the possibility of adopting a wages policy. The present interest in the idea of a wages policy derives in the main from the inflationary setting in which the wages problem is cast, and from that viewpoint it makes no significant difference whether rising wages are regarded as a cause or as a consequence of the inflation.

But the advocates of a wages policy have not been outstandingly successful in their attempts to give substance to the idea. Lord Beveridge, writing in 1944, told us that "organised labour in Britain has sufficiently demonstrated its citizenship and responsibility to justify the expectation that it will evolve, in its own manner, the machinery by which a better co-ordinated wage policy can be carried through."¹ The passage of thirteen years, however, has done nothing to strengthen that expectation. In 1949 a United Nations Report on *National and International Measures for Full Employment* recommended that "if there is evidence of a continuous general upward pressure of money wages exceeding substantially the rate of increase of productivity and leading to offsetting price increases, the situation requires such action by the government, jointly with organised labour and employers' associations, as would ensure that any wage increases that may be granted will not result in a general wage inflation. The character of the action to be taken would naturally depend upon the conditions ruling in each country."² There is little help to be found in that prescription.

Perhaps it will be useful to ask two questions: Assuming a unified wages policy to be desirable, what kind of body should be established to effect or to promote the co-ordination? and What would be the appropriate scope of the deliberations of that body? The two questions are related and may be considered together.

In this country the trade unions have a strong dislike for any radical departure from the traditional sectional wage-bargaining procedure. The right to strike is still defended with almost religious fervour. And individual unions remain intensely jealous of their organisational autonomies. It

¹ *Full Employment in a Free Society*, p. 199.

² *Op. cit.*, p. 43.

is one of the many paradoxes to which we have grown accustomed that with few exceptions trade-union leaders who are generally among the most vocal of economic planners express great indignation at any suggestion that the planning process should interfere in substance with the wage demands which are to be formulated either by themselves or by their members. In spite of this we have seen, in recent years, a very marked tendency for autonomous wage claims to conform to a standard pattern—e.g., x shillings per week or $y\%$ or "a substantial increase in wages," which, the industrial correspondents of our newspapers proceed to inform us, "is understood to mean an increase of z shillings." But there is still no thought that the standardised claim should be discussed even informally if not in formal session between representatives of the unions as a whole and representatives of employers as a whole. Perhaps the reason is that the energy which might be devoted to the evolution of a wages policy is now concentrated on the adoption of suitable tactical procedures.

If this is correct, it has a most unfortunate effect on the system of industrial relations in this country. Under conditions of full employment tactics may suggest that wage demands should be pressed in the first instance not against the most prosperous industries but against industries which are deemed to be of great public importance but which, as it happens, are either not profitable or only barely profitable. And if success is achieved in that field, industries which are really profitable will have their resistance undermined even to demands for wage increases which are proportionately greater than any increase which may reasonably be expected in their labour productivity. Moreover, under the conditions which now prevail the rejection of a claim is represented as a "blunt refusal to negotiate," the assumption being that the only matter to be negotiated is the amount of the increase.

It is not difficult to conceive of countervailing tactics—if I may borrow a phrase from Professor J. K. Galbraith—on the employers' side, but in this case the chances of success, in the relatively short period, are not likely to be very great. And so we are led straight to the larger issues of economic, financial and monetary policy. When Lord Beveridge, in the passage quoted above, recommended the formulation of a unified wage policy he said explicitly that it was "unreasonable to expect from trade unions a reasonable wage policy, unless there is a reasonable price policy, just as much as it is impossible to have a price policy without a wage policy." Similarly, Sir Ralph Hawtrey argues: "Trade unionists, it may be said, ought, no less than the rest of the public, to accept considerations of public policy. And labour might reasonably be asked to co-operate with the Government in checking inflation, if the Government themselves were taking effective measures to do so."¹ Wages policy, if it is to be formulated, cannot be considered in a vacuum. It must have regard to Government

¹ *Times*, April 13, 1957.

policy and its efforts to restrain inflation. The appropriate wages policy when Governments are causing or are acquiescent in accepting inflation is obviously different from the appropriate wages policy when Governments are determined to stop inflation or hold it in check.

At this point the problem may be bedevilled by political chicanery. Sometimes we are told that the trade unions would be prepared to co-operate with a Labour Government but not with a Conservative Government or more precisely, that the co-operation of the unions on matters of wages depends upon the acceptance by Government of the views of the T.U.C. on the larger issues of fiscal, financial and monetary policy. I do not discuss the moral or political implications of this assertion except to point out that it has a bearing upon the terms of reference which might be assigned to any wages "body," and to suggest that any such "body" which might be created must at least be made cognisant of Government policy in the matter of inflation.

As against this viewpoint there is another which may be expressed in simple terms: If Government succeeds in the prevention of inflation a formalised wages policy is superfluous; if Government does not so succeed a formalised wages policy is doomed to failure. As in so much of the contemporary debate this seems to over-simplify the issue. Governments have now committed themselves to the pursuit of full employment as one of the ends of public policy, but it is not an end which can be considered in isolation without damage to the economy and injustice to its members. The pursuit of full employment without inflation or, if we allow for those who think that this may be impossible of attainment, with the minimum of inflation is an objective of policy which requires both the determination of Governments and the co-operation of the main economic groups within the community.

This co-operation, however, is not likely to be effective if the constituent parties to it are saddled with burdens which they cannot properly carry. In a broadcast talk in April 1956 Professor Kahn spoke of "the need to get the trade unions' representatives to consider the wage level as a whole and not in terms of the sectional interests of individual trade unions or workers."¹ But Professor Kahn went on to say that the approach by Government to the trade unions which he had in mind "would be based on the belief that a proper balance between imports and exports can and must be established." This balance, once established, would not have to be disturbed "at least for some time to come, through our wage costs going up faster than costs in other countries." The burden of defence would have to be taken as given and also "the burdens of housing, the social services, and such-like."

"It then" [he says] "becomes a matter of the right division of what is left between consumption and productive investment in

¹ *Listener*, May 3, 1956.

extending and improving the equipment of industry. One would assume a continual growth of productivity; one would be dealing mainly with the destinations of the growth of production in the immediate future rather than holding a *post mortem* on the use of productive power in the immediate past."

Professor Kahn continues:

"it then does become a matter of a choice on behalf of wage-earners themselves between consumption and investment—between the interests of the immediate and of the more distant future. . . . Any agreement which could in this sort of way be arrived at as to the best balance between higher investment and higher consumption could easily be translated into terms of a suitable wages policy."

I can see no grounds for this optimism—as regards the ease with which the choice is to be made between the claims of consumption and those of investment and the ease with which this could be translated into terms of wages policy. It is no disparagement of trade-union leaders to say that few of them take much interest in these matters and fewer still are capable of pronouncing upon them. The main responsibilities of these trade-union officers are towards their own members, and they are not likely to be deflected from the exercise of these responsibilities by the acceptance of new burdens in the shaping of national economic policies. Professor Kahn does not tell us whether he expects Government to hand over its responsibility for major economic decisions to some body on which the trade unions would be represented or, in the event of the body being a negotiating body, what steps he thinks should be taken if agreement cannot be reached between the parties.

Considerable opposition has been expressed on both sides of industry to any suggestion that there should be some central body which would be empowered to settle either the total of wages to be paid or its allocation between different industries or groups of work people. This opposition is understandable, though it is generally focused against a proposal which is seldom advanced. A unified wages policy, in the setting of the system of industrial relations which operates in this country, would have to be the result of discussions between representatives of the two sides of industry with Government, perhaps, in an informative or advisory capacity. But difficulties arise at once. On both sides of industry the number of sectional interests which would claim entitlement to participate in these discussions would be so large that fruitful discussions would not be possible; and any serious attempt to overcome that difficulty would almost certainly founder on the refusal of important sectional organisations to surrender the autonomy which they now enjoy.

If some approach to a wages policy should be deemed to be desirable there are two lines along which that approach might conceivably be made.

The one might be called nation-wide bargaining. At present this exists in many industries but not for industry as a whole. In many of the industries where this scale of bargaining exists there are some grounds for supposing that it has introduced a number of undesirable rigidities into the wages structure. If the nation-wide bargaining were to include the whole of industry—assuming the organisational difficulties mentioned above to be overcome—these undesirable rigidities might well be developed on a much larger scale.

But to reject nation-wide bargaining is not to reject nation-wide discussions. As things now are, wage negotiations are conducted on a sectional basis, and considerations which relate to matters outside the narrower limits of the particular claim are introduced only for debating purposes. Even when differences are referred to arbitration the arbitrator must have strict regard to his terms of reference and the submissions of the parties. There is, at present, no means whereby leading representatives of the two sides of industry can examine, with or without the collaboration of Government, the larger issues of wages policy. It may be that a body which made this examination possible—provided it was not an astral body—could serve a useful, if modest, purpose and that its views would influence, without determining, the attitudes of the sectional interests. In this country there is a not unhealthy suspicion of excessive reliance on the authoritarian element in wage-fixing procedures; but it may be that the possibilities of informed and responsible persuasion have not yet been fully explored.

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A MODEL OF ECONOMIC GROWTH¹

THE purpose of a theory of economic growth is to show the nature of the non-economic variables which ultimately determine the rate at which the general level of production of an economy is growing, and thereby contribute to an understanding of the question of why some societies grow so much faster than others. There is general agreement that the critical factors determining the trend rate of growth are to be sought in the savings propensities of the community (which determine the rate of capital accumulation), the flow of invention or innovation (which determines the rate of growth of productivity) and the growth of population. Until recently, these factors were regarded as the parameters of a growth model—i.e., as non-economic variables which are invariant with respect to changes in the other variables—and theoretical inquiry was confined to the more modest task of showing the particular relationships that must prevail between the values of these different parameters in order that they should be consistent with a steady rate of growth for the economy as a whole. But more recently, there has been an increasing awareness of the fact that neither the proportion of income saved nor the rate of growth of productivity per man (nor, of course, the rate of increase in population) are independent variables with respect to the rate of increase in production; and that the actual rate of progress of a capitalist economy is the outcome of the mutual interaction of forces which can adequately be represented only in the form of simple functional relationships (like supply or demand curves) rather than by constants. The purpose of this paper is to present a simple model of economic growth based on a minimum number of such relationships.²

A satisfactory model concerning the nature of the growth process in a capitalist economy must also account for the remarkable historical constancies revealed by recent empirical investigations. It was known for some time that the share of wages and the share of profits in the national income has shown a remarkable constancy in "developed" capitalist economies of

¹ This paper owes a great deal to discussions with Professor D. G. Champernowne, both in its general ideas and even more in the detailed presentation of the mathematical parts of the argument. I am particularly indebted for his help in working out the implications of the assumptions in mathematical terms, and for the mathematical proofs of some of the propositions made, though he bears no responsibility for the choice of assumptions underlying the models.

² The present paper represents an elaboration and further development of ideas put forward in two earlier papers by the author, "Alternative Theories of Distribution," *Review of Economic Studies*, Vol. XXIII, No. 2 (March 1956), pp. 94–100, and "Capitalist Evolution in the Light of Keynesian Economics," a lecture delivered at the University of Peking in May 1956, and reprinted in *Sankhyā (Journal of the Indian Statistical Institute)*, Vol. 18, Parts 1 and 2, June 1957. Reference may perhaps also be made to two former papers by the author which set out the reasoning underlying some of the arguments and assumptions in more detail, "Mr. Hicks and the Trade Cycle," *ECONOMIC JOURNAL*, December 1951, pp. 833–844, and the "The Relation of Economic Growth and Cyclical Fluctuations," *ECONOMIC JOURNAL*, March 1954, pp. 53–71.

the United States and the United Kingdom since the second half of the nineteenth century.¹ More recent investigations have also revealed that whilst in the course of economic progress the value of the capital equipment per worker (measured at constant prices) and the value of the annual output per worker (also in constant prices) are steadily rising, the trend rates of increase of both of these factors has tended to be the same, so as to leave the capital/output ratio virtually unchanged over longer periods.² This means that while progress involved a continuous increase in the amount of capital used per worker—whether capital is measured in terms of an index number of the value of capital goods at constant prices, in terms of horse-power per man or in tons of steel embodied in equipment per operative, etc.—there was no “deepening” of the capital structure in the economist’s sense: no increase in the amount of “waiting” per unit of current output, or in the ratio of “embodied” to “current” labour, or in the length of some (arbitrarily measured) “investment period.”³ Constancy in the share of profit and in the capital/output ratio also involves constancy in the rate of profit earned on investments (in the “marginal efficiency” of capital), and this again appears to be confirmed by empirical investigations.⁴ Existing theories are unable to account for such constancies except in terms of particular hypotheses (unsupported by any independent evidence), such as the unity-elasticity of substitution between Capital and Labour,⁵ or more recently, con-

¹ For the United Kingdom the share of wages has shown only small variations around the level of 40% of the national income in the period 1840–1950. (Cf. Phelps Brown and Hart, “The Share of Wages in the National Income,” *ECONOMIC JOURNAL*, June 1952, pp. 253–77.) In the United States the share of wages and salaries remained constant at around 60% of the national income up to about 1929, and has since shown a rising trend, mounting to 69% in the post-war decade, while the share of profits and property income (dividends, interest and rent) declined since 1929 from 38 to around 30%. Some of this change no doubt reflects the rise in wage and salary earners as a proportion of the total population. (Cf. Kuznets, “Long Term Changes in the National Income of the U.S.A. since 1870,” *Income and Wealth*, Series II.)

² According to Mr. Maiwald’s calculations based on fire-insurance figures, the capital/output ratio in Britain remained practically unchanged in the period 1870–1914 (at around 3.3) and fell slightly (to around 3.0) in the period 1914–38 (*Economic History Review*, Part I, 1956, p. 102). The same impression is gained from the study of Phelps Brown and Weber (“Accumulation, Productivity and Distribution in the British Economy, 1870–1938,” *ECONOMIC JOURNAL*, June 1953, pp. 263–88) for the period 1870–1900, though they indicate a rising ratio for the period 1900–14, and a falling ratio for 1924–38. In the United States the capital/output ratio has shown a slightly rising trend from the decade 1879–88 to the decade 1909–18, and a falling trend since, and (ignoring the depression period) is not significantly different now (at around 3.0) than it was sixty years ago. (Cf. Fellner, *Monetary Policies and Full Employment*, Table 3, p. 80), based on Kuznets’ estimates.)

³ The usual explanation for this apparent paradox is, of course, that the productivity of labour increased at the same rate in the capital-goods-making industries (taken as a group) as in the economy as a whole (i.e., in all industries taken together) as a result of the peculiar character of technical progress (the “neutrality” of inventions). As will be shown below however no such assumption is necessary for explaining the constancy of the capital/output ratio.

⁴ According to Phelps Brown and Weber (*loc. cit.*) the rate of profit on capital in the United Kingdom (including buildings) remained remarkably steady at around 10½% in the period 1870–1914, the annual variations being within the range of 9½–11½%. The same steadiness is shown in the United States in the relationship of property income to total capital (cf. Kuznets, *loc. cit.*)

⁵ Hicks, *Theory of Wages* (1932) Ch. VI, *passim*.

stancy of the degree of monopoly or the “neutrality” of technical progress.¹ One of the merits of the present model is that it shows that the constancy in the capital/output ratio, in the share of profit and in the rate of profit can be shown to be the consequence of endogenous forces operating in the system, and not just the result of some coincidence—as, e.g., that “capital saving” and “labour saving” inventions happened (historically) to have precisely offset one another, or that the growth in monopoly happened (historically) to have been counterbalanced by the fall in raw-material prices in terms of finished goods.²

BASIC PROPERTIES OF THE MODEL

The present model is based on Keynesian techniques of analysis and follows the well-known “dynamic” approach originally developed by Mr. Harrod³ in regarding the rates of change of income and of capital as the dependent variables of the system. The properties of our model differ, however, in important respects from those of Mr. Harrod and other writers, and these differences can be traced to the following:

(1) It is assumed here that in a growing economy the general level of output at any one time is limited by available resources, and not by effective demand. The model in other words assumes “full employment” in the strictly Keynesian sense—a state of affairs in which the short-period supply of goods and services in the aggregate is inelastic and irresponsive to further increases in monetary demand. This need not necessarily imply the full employment of labour except in a developed economy where the available capital equipment is sufficient or more than sufficient to employ the whole of the available working force. But it does imply that, excepting for periods in which the process of growth through capital accumulation (for reasons outlined later) is altogether interrupted, the system cannot long operate in a state of (Keynesian) under-employment equilibrium, because at any level of output short of “full employment” the aggregate demand associated with that particular level of output will exceed the aggregate supply price of that output, and thus lead to an expansion in output until a state of full employment is reached. In a state of full employment, on the other hand, aggregate demand and aggregate supply (in real terms) are brought into equality through the movement of prices in relation to prime costs, i.e., the relation of prices to wages. (It is assumed that any rise in prices in relation to wages increases savings relative to investment and thus reduces aggregate

¹ Kalecki, *Essays in the Theory of Economic Fluctuations*, Chapter I; Harrod, *Towards a Dynamic Economics*, p. 23; Joan Robinson, *The Rate of Interest and Other Essays*, pp. 90–97, and *The Accumulation of Capital*, pp. 73–100.

² Kalecki, *op. cit.*, pp. 32–34.

³ “An Essay in Dynamic Theory,” *ECONOMIC JOURNAL*, March 1939, subsequently elaborated in *Towards a Dynamic Economics* (Macmillan, 1949). Substantially the same analysis was put forward in the well known article by Domar (*Econometrica*, 1946).

demand in real terms, and vice versa).¹ The assumption that there can be no under-employment equilibrium in periods in which the rate of growth of capital and income is normal is not arbitrary; it is based on the view that an equilibrium of steady growth is inconsistent with under-employment equilibrium. For in the latter situation the relationship of prices and wages is determined by extraneous factors (such as the "degree of monopoly," full-cost pricing, Marshall's "traditional margin of profit on turnover" or what not) and, as will be shown below, these either yield an insufficient ratio of savings to income (in which case, in a growing economy, the system is not stable *below* full employment) or else an excessive ratio of savings to income (in which case, for reasons described by Mr. Harrod,² the process of growth cannot continue, and the system will relapse into stagnation). A state of Keynesian under-employment equilibrium, whilst it is perfectly consistent with a static short-period equilibrium, is therefore inconsistent (except by a fluke) with a dynamic equilibrium of steady growth.³

The Keynesian techniques of analysis were originally designed, of course, to explain how an economy can remain indefinitely in a state of under-employment equilibrium; it may seem at first sight paradoxical therefore to label a model "Keynesian" if it is based on the full-employment assumption. However, as I argued in an earlier paper⁴ the specifically Keynesian apparatus of thought can be applied to full-employment situations and not only to under-employment situations, and there is some evidence that in an earlier stage in the development of his ideas (in *A Treatise on Money*) Keynes applied the multiplier principle—the idea that is, that expenditure decisions determine income and savings rather than the other way round—for the purpose of a price theory rather than an employment theory, even though in the *General Theory* he explicitly disclaimed that his ideas had any relevance to full-employment conditions.⁵ Yet the specifically Keynesian hypothesis that

¹ Any sharp and clear-cut distinction between an under-employment equilibrium, where production is limited by effective demand, and a full-employment-equilibrium, where it is limited by available resources, presumes, of course, something like a reverse L-shaped supply function for output as a whole, so that marginal costs are either infinite (or indefinite) or else equal to average prime costs, and thus in neither case exert an important influence on the ruling relationship between prices and wages. In reality there is a twilight zone of semi-full employment in which the supply of goods and services in the aggregate is neither elastic nor inelastic, and in which an increase in money demand will increase both prices and production in roughly equal measure. For the purposes of the present model it will be assumed that this "twilight zone" is sufficiently narrow in range to be left out of consideration altogether. (Its introduction would complicate the exposition without radically altering the basic features of the model.)

² "An Essay on Dynamic Theory," *loc. cit.*, pp. 23–26; *Towards a Dynamic Economics*, pp. 77 ff.

³ I believe it was Mr. Harrod's failure to see the inconsistency between a continuous under-employment equilibrium and a state of steady growth which led him to the belief that a dynamic equilibrium of growth is necessarily unstable. His proposition applies only if the savings coefficient is extraneously determined, and this in turn presumes a state of affairs where short-period output is elastic. It does not apply to full employment or even to the "twilight zone" of semi-full employment.

⁴ "Alternative Theories of Distribution," *loc. cit.*, p. 94.

⁵ *General Theory*, pp. 3, 26 and 112.

equilibrium between savings and investment is secured through a movement of prices and/or incomes, rather than through changes in the rate of interest, is just as fruitful in the context of a dynamic growth model based on the postulate of full employment as in a (short-period) static model based on the postulate of under-employment; nor does the postulate of full employment appear as unrealistic at the present day (at any rate in the context of a dynamic theory of growth) as it appeared in the 1930s. Although the great depression of the 1930s was both more severe and more prolonged in duration than its predecessors, the gloomy forebodings made at the time that it heralded the approach of an era of long-term economic stagnation have certainly proved premature: since 1945 the momentum of growth in the capitalist economies has been at least as strong as in any comparable period since 1870. It does not therefore seem unrealistic to assume that capitalist economies operate under full-employment conditions in all such periods (and these appear to take up the majority in terms of chronological time) when capital is accumulating and the national income is growing. Similarly, in the case of under-developed economies, whilst there may be vast numbers of unemployed or under-employed the situation is not one of Keynesian under-employment as the supply of goods is in general inelastic in the short period and irresponsive to increases in monetary demand. Here again it certainly appears more correct to assume that output at any one time is limited by the scarcity of resources rather than by effective demand.

(2) The second main respect in which the present model departs from its predecessors is that it eschews any distinction between changes in techniques (and in productivity) which are induced by changes in the supply of capital relative to labour and those induced by technical invention or innovation—*i.e.*, the introduction of new knowledge. The use of more capital per worker (whether measured in terms of the value of capital at constant prices, in terms of tons of weight of the equipment, mechanical power, etc.) inevitably entails the introduction of superior techniques which require "inventiveness" of some kind, though these need not necessarily represent the application of basically new principles or ideas. On the other hand, most, though not all, technical innovations which are capable of raising the productivity of labour require the use of more capital per man—more elaborate equipment and/or more mechanical power. Hence the speed with which a society can "absorb" capital (*i.e.*, it can increase its stock of man-made equipment, relatively to labour) depends on its technical dynamism, its ability to invent and introduce new techniques of production. A society where technical change and adaptation proceed slowly, where producers are reluctant to abandon traditional methods and to adopt new techniques is necessarily one where the rate of capital accumulation is small. The converse of this proposition is also true: the rate at which a society can absorb and exploit new techniques is limited by its ability to accumulate capital.

It follows that any sharp or clear-cut distinction between the movement *along* a "production function" with a given state of knowledge, and a *shift* in the "production function" caused by a change in the state of knowledge is arbitrary and artificial.¹ Hence instead of assuming that some given rate of increase in productivity is attributable to technical progress which is superimposed, so to speak, on the growth of productivity attributable to capital accumulation, we shall postulate a single relationship between the growth of capital and the growth of productivity which incorporates the influence of both factors. The plausible shape of this "technical progress function" is that given by the curve TT' in Fig. 1. Let C_t and O_t represent the capital per worker and the annual output per worker at time t , so that $\frac{1}{C_t} \frac{dC}{dt}$ (measured horizontally) represents the annual percentage

growth in capital per worker, and $\frac{1}{O_t} \frac{dO}{dt}$ (measured vertically) the annual percentage growth in output per man. The shape and the position of the curve reflect both the magnitude and the character of technical progress as well as the increasing organisational, etc., difficulties imposed by faster rates of technical change. It may be assumed that *some* increases in productivity would take place even if capital per man remained constant over time, since there are always some innovations—improvements in factory lay-out and organisation, for example—which enable production to be increased without additional investment. But beyond these the growth in productivity will depend on the rate of growth in the capital stock—clearly the more capital is increased, the more labour-saving technical improvements can be adopted, though there is likely to be some maximum beyond which the rate of growth in productivity could not be raised, however fast capital is being accumulated. Hence the TT' curve is likely to be convex upwards and flatten out altogether beyond a certain point. The postulate of the existence of a given curve presumes, of course, a constant flow in the rate of new ideas over time. Variations in the flow of new ideas, and in the readiness with which they are adopted, are likely to be reflected in shifting the height of the curve rather than in altering its general character.² In an unprogressive economy, with a low capacity to absorb technical change the height of the TT' curve will be relatively low (as in the dotted line in Fig. 1), whilst important new discoveries (such as the invention of the internal combustion engine or atomic energy) are likely to raise the position of the curve considerably for some time.

P represents the particular point on the TT' curve where it is crossed by

¹ The technical possibilities shown by the "production function" of any one period are in fact nothing more than the reflection of the yet unexploited inventions and innovations of the past.

² Our TT' curve thus reflects not only "inventiveness" in the strict sense, but the degree of technical dynamism of the economy in a broader sense—which includes not only the capacity to think of new ideas, but the readiness of those in charge of production to adopt new methods of production.

a line drawn from the origin at an angle of 45 degrees—where, in other words, the percentage rate of growth of capital and the percentage rate of growth of output are equal. When the rate of capital accumulation is less than this rate the percentage rate of growth in output will exceed the growth in capital (involving a fall in the capital/output ratio), and vice versa.

The recognition of the existence of a functional relationship between the proportionate growth in capital and the annual proportionate growth in productivity shows the futility of regarding the movements in the capital/

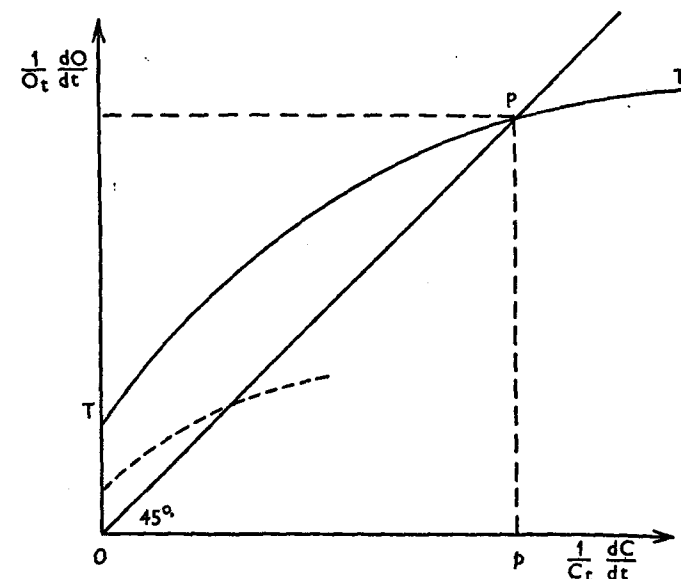


FIG. 1

output ratio as dependent upon the technical character of the stream of inventions—according as they are predominantly "labour-saving" or "capital-saving" in character.¹ For whether the capital/output ratio will be rising or falling will depend not on the technical nature of the inventions, but simply on the relationship between the flow of new ideas (characterised by the shape and position of our TT' curve) and the rate of capital accumulation. If capital accumulation is less than adequate to exploit the current stream of inventions to the point where the growth of capital and the growth in output are equal—if the actual position is to the left of P —the capital/output ratio will be falling, and the character of inventions will appear to be predominantly "capital-saving" in nature; if the position is to the right of P they will appear to be predominantly "labour-saving" in nature.² As will be shown below, with a given TT' curve, the system will always tend

¹ Cf. Harrod, *op. cit.*, p. 23; Joan Robinson, *op. cit.*, pp. 164 ff.

² New techniques capable of raising the productivity of labour in any given proportion will, of course, be all the more profitable the less additional capital they require for adoption. It is evident, therefore, that relatively labour-saving and capital-using innovations are the more likely to be adopted the higher the rate of capital accumulation.

towards the point where the growth of capital and the growth in productivity are equal— P is therefore the long-run equilibrium point and Op the long-run equilibrium rate of growth. (The basic reason for this is that if the rate of capital accumulation is less than Op , it will tend to be stepped up and the rate of profit on new investment will rise over time; in the converse case, the rate of growth of capital will tend to be slowed down, and the rate of profit will fall. It is only when capital and output grow at the same rate, and the capital/output ratio is constant, that the rate of profit remains constant over time; and then technical progress will appear to take on a "neutral" character.¹) An upward shift in the TT' curve caused by a burst of new inventions will cause (for a time) a falling capital/output ratio; progress will thus appear to take on a predominantly "capital-saving" character. A drying up in the flow of ideas, represented by a downward shift in the TT' curve will, on the other hand, cause the growth of productivity to lag behind; the capital/output ratio will rise, and innovation will appear to be predominantly "labour-saving."

This is not to deny that in *particular industries* the capital/output ratio may change significantly in an upward or downward direction as a result of the character of new inventions occurring there. If an important capital-saving invention occurs in some industry—due, for example, to some revolutionary improvement in design which raises the productive capacity of capital equipment of a given value—the capital/output ratio in that industry is bound to fall. But precisely because this involves a gradual rise in the rate of profit, and thus in the rate of capital investment, it will induce compensating changes in the capital/output ratio of other industries, so that for the economy as a whole (and in the long run) the overall capital/output ratio will tend to remain constant.

(3) Our model, like other macro-economic models, is based on simple aggregative concepts of income, capital, profits, wages, investment and savings, expressed in real terms—*i.e.*, in terms of values of constant purchasing power. This raises all the familiar difficulties involved in the use of index numbers, as well as the more fundamental questions of the measurement of the quantity of capital. The measurement of the stock of capital in terms of money values corrected for price changes raises peculiar problems of its own on account of: (i) the fact that owing to technical progress, the capital goods produced in any one period are physically non-identical with the capital goods produced in previous periods, and therefore cannot simply be added to the latter, even if the proportions of the different capital goods serving different end-uses remained the same; ² (ii) that the *value* of the stock

¹ cf. pp. 609–10 below.

² Much the same problem arises, of course, in the measurement of real income, since in a progressive economy new kinds of commodities are constantly being introduced. But whereas in the case of income, the changing character and composition of the constituents could be ignored in the first approximation (by assuming, *e.g.*, a single type of consumption good, such as "bread") in the case of capital goods it cannot, since it is the essence of a change of techniques that the character of the instruments, etc., used in production changes.

of capital existing at any moment is not the sum of the values of the capital goods produced in the past, but is that quantity *less* accrued depreciation.

Whatever may be the situation as regards the "stationary states" of neo-classical theory, there can be no question that in a developing economy with constantly changing knowledge and techniques neither the problem of equating the capital goods produced at different dates and at differing states of knowledge nor the measurement of depreciation admits of any clear-cut theoretical solution: the measurement of the stock of *real* capital must therefore necessarily be based on some (more or less arbitrary) convention. One such convention would measure the stock of real capital in terms of the amount of mechanical power which the outstanding stock of capital goods (or the addition to it in a particular year) represents. Another such convention (which appears rather less arbitrary) measures it in terms of the total weight of steel embodied in the capital equipment.¹ For the purposes of this model we shall adopt the latter convention. We shall also assume that the average price, per ton of steel, of finished capital goods produced in successive periods remains constant in terms of income units so that the rate of growth of capital is the same in "steel" as in terms of real income. (This assumption, while it greatly simplifies the exposition, is not an essential feature of the model.) With regard to depreciation, we shall assume: (a) that individual capital goods retain their physical efficiency until they are scrapped; (b) that the proportion of the outstanding capital stock which is scrapped in any one year (again measured in tons of steel) is a constant fraction of the total stock of capital. Hence we shall define depreciation as the value of that part of the output of capital goods produced in any one period which is needed to maintain the total weight of steel in the outstanding capital stock constant (and which, in a steadily growing economy, is also a constant fraction of total turnover). We shall define income, savings, investment *net* of depreciation in this special sense of the term "net." The difference between gross and net income and gross and net savings will be assumed to be identically equal to the difference between gross and net investment.²

(4) It is evident from the foregoing that the prime mover in the process of economic growth is the readiness to absorb technical change combined with the willingness to invest capital in business ventures. It is through the continued increase in the amount of machinery, etc., used in combination

¹ Another variant of this kind of measurement would be the total physical weight of all capital goods produced (of whatever material it consisted).

² It would also be possible, of course, to value capital at the original cost of installation of capital goods less accrued depreciation (the latter being spread over the physical life of the assets, either by the straight-line method, the reducing-balance method, etc.) and deflated by an index of capital-goods prices. But the point is that the application of a price index to the historical cost of the capital goods produced at different periods implicitly makes use of some kind of convention of the type introduced here explicitly. (Measuring capital in terms of value deflated by capital-goods-prices is not the same, of course, as valuing capital in real income units; but the complications due to the differences between the two will not be gone into here.)

with labour that the productivity of labour is continuously increased. In a capitalist economy the process of accumulation is the resultant of innumerable investment decisions made by entrepreneurs—using this term in a broad sense, so as to comprise the owners of risk capital generally, as well as the Boards of Directors of companies who take the actual decisions on their behalf. Any act of investment the outcome of which is necessarily uncertain at the time the decisions are taken, implies an act of faith—it involves a favourable judgment concerning the future course of markets, as well as the future relationship of prices and costs. Unless entrepreneurs are willing to revise their estimates of future sales and profits upwards in the light of current experience—unless they are imbued with sufficient optimism to react favourably to favourable events, and to increase the amount of capital invested in response to an increase in current sales and profits—it is difficult to envisage the growth of production and capital as a continuous process. For unless the capacity to produce is continually increased, the increase of production must necessarily come to a halt; a continued growth in output capacity presupposes in turn a belief (which must be grounded, and can only be grounded, in past experience) in the continued growth in markets. In order that there should be continued growth, it is necessary therefore to suppose both that, on the one hand, output increases as a result of capital investment and, on the other hand, investment takes place in response to an increase in output. Hence as a complement to our technical progress function which denotes the former we must postulate a function based on assumptions concerning entrepreneurial psychology to denote the latter. With regard to this second function, which we shall call the investment function, it will be assumed: (i) that given the (expected) rate of profit on capital, entrepreneurs desire to maintain a constant relationship between the amount of capital invested and their turnover; (ii) that this relationship between desired capital and turnover is an increasing function of the expected rate of profit on capital;¹ (iii) that the investment decisions of each “period” are governed by the condition that actual capital is to be brought into line with desired capital, the length of the “period” being so defined as to make it technically feasible to eliminate in one period the backlog of investment (the difference between desired and actual capital) existing at the beginning of the period;² (iv) that entrepreneurs expect the same growth in turnover

¹ The assumption that for each enterprise there is some *desired* amount of invested capital in relation to turnover which is itself a rising function of the rate of profit can be justified by the greater risk and uncertainty of expectations for the more distant future as against the nearer future and the consequent preference (at equal rates of expected return) for investments with a more rapid turnover of capital as against investments which entail a longer period of inevitable commitment. A high capital/output ratio implies a longer period of commitment because it implies a higher ratio of fixed capital to circulating capital (irrespective of any differences in the durability of fixed capital).

² As we shall see later (cf. pp. 619–20 below) this assumption is applicable only to an “advanced” capitalist economy in which, at the ruling rate of profit, the capital stock in the various industries has already been brought into the desired relationship with turnover, so that net investment takes place only in response to a rise in the (expected) turnover or a rise in the rate of profit.

in the coming period as was actually attained in the previous period; (v) that they expect to obtain the same margin of profit on turnover in the coming period as actually obtained in the previous period.

These assumptions imply an investment function which makes investment of any period partly a function of the change in output in the previous period¹ and partly of the change in the rate of profit on capital in that period. They are not, of course, the only possible assumptions that one could choose in this regard. It would be possible to assume, for example, that investment, at any given rate of profit, is a constant percentage addition to the existing stock of capital, rather than a coefficient related to the increase in turnover.² But in a model which makes the amount of profits actually generated in the production process dependent on the rate of investment and makes the rate of investment in turn dependent on the growth of profits, it is necessary to postulate a certain minimum “buoyancy” in entrepreneurial behaviour in order to ensure that the investment necessary to generate the profits which call forth a further increase in investment in the next period actually *does* take place, so that productivity, total output, profits and investment continue to grow. Without assuming a certain minimum of “buoyancy,” the mere accrual of fresh investment opportunities through technical progress will not alone ensure the continued growth in production³—since the latter requires in addition that effective demand and profits should

¹ In earlier articles on the trade cycle (cf. *ECONOMIC JOURNAL*, March 1940, p. 79, and *ECONOMIC JOURNAL*, December, 1951, p. 837) I strongly criticised the use of the acceleration principle in connection with trade-cycle models, because it assumes a constant relationship between output and capital (or rather between output and output capacity), whereas the recognition of a changing relationship between these two seemed to me essential for an understanding of the cyclical mechanism. I recognised, however, the validity of the principle “as between alternative positions of long period equilibria” (*ibid.*, p. 838). For the purpose of a long-run model of economic growth it is legitimate to divide time into “periods” long enough for the capital stock in any one period to be fully adjusted to the output expected for that period at the beginning of that period; which means that the “acceleration principle” is an appropriate principle to apply to characterise investment behaviour for such “periods.”

² On the implication of this latter assumption cf. p. 610, note 1 below. The difference between these two kinds of assumptions relating to investment behaviour may be explained as follows. The postulate of an investment function where the rate of increase of the stock of capital (*i.e.*, the rate of investment as a proportion of the existing stock of capital) is treated as an increasing function of the rate of profit on capital implies the assumption that entrepreneurial risk is an increasing function of the rate of capital accumulation, irrespective of the relation between the growth of the capital stock and the growth of turnover. It thus corresponds to Keynes’ declining marginal-efficiency-of-capital function, as re-interpreted by Kalecki’s principle of increasing marginal risk. The postulate of an investment function where the desired stock of capital in relation to turnover is treated as an increasing function of the rate of profit on capital implies, on the other hand, that the principle of increasing risk is not applicable to the rate of capital accumulation as such, but only to a situation where the (proportionate) rate of capital accumulation exceeds the rate of growth of turnover. This seems a more reasonable supposition for so long as the growth of capital merely keeps pace with the growth of turnover there seems to be little empirical justification for the belief that a faster rate of growth of capital entails a higher subjective marginal risk to the entrepreneur. This latter assumption, moreover, as will be shown below, is consistent with a stable equilibrium of steady growth whereas the former is not.

³ Cf. *ECONOMIC JOURNAL*, December 1951 p. 842.

increase sufficiently to match the growth in potential supply, and thus keep the process of accumulation going.

(5) We shall assume that monetary policy plays a purely passive role—which means that interest rates, subject to differences due to borrowers' risks, etc., follow, in the long run, the standard set by the rate of profit obtainable on investments. The operation of our model is consistent with continued price-inflation (with money wages rising faster than productivity) or with a constant price level (money wages rising *pari passu* with productivity). It is in principle also consistent with constant money wages (money prices falling with the rise in productivity), though the latter situation might give rise to additional complications as regards investment behaviour which will not be gone into here. We shall deal with the case of isolated communities only—i.e., we shall ignore the problems arising in connection with trade between regions in differing stages of development.

(6) We shall ignore also the influence of a change in the share of profits and wages and of a change in rate of profit on capital (or of interest rates) on the choice of techniques adopted which has been the focal point of attention of neo-classical theory.¹ At any one time the individual entrepreneur has, of course, a variety of "techniques" to choose from, and he may be assumed to choose the particular technique which secures the lowest cost, or the highest rate of return, on his investment. It seems reasonable to assume, however, that the choice of technique is far more dependent on the prevailing prices of different types of capital goods and on the price of labour in terms of commodities generally (in so far as this reflects the productivity of labour) than on the prevailing rate of profit or the prevailing interest rates. If an entrepreneur in an advanced economy employs bulldozers for making roads, whilst his opposite number in an under-developed country employs only shovels, this is not, to any significant degree, the consequence of differences in the prevailing rates of profit (or of the rates of interest on loans) in the two communities, but simply of the fact that the price of bulldozers in terms of shovels is much lower in the advanced community than in the primitive community. As an economy progresses as the combined result of capital accumulation and technical progress the prices of "superior" capital goods (capable of securing a higher output per unit of work) may be assumed to fall continuously relative to inferior capital goods: the character

¹ The importance attributed in neo-classical theory to the choice between more or less labour-saving and capital-using techniques being dependent on the rate of profit (or the rate of interest) is, of course, inherently connected with the acceptance of the marginal productivity theory as the basic principle in the explanation of the pricing process and the determination of distributive shares: for it is the choice among a range of techniques requiring more or less capital (and less or more labour) per unit of output which alone makes it possible (theoretically) to assign specific marginal productivities to the factors of production, Capital and Labour, in the long run. Our model, however, shows that for the system as a whole the share of wages and of profits, and the rate of profit on capital is determined quite independently of the principle of marginal productivity; the choice of alternative methods of production differing in "capital intensity" at any given state of knowledge loses therefore its central importance in the theoretical scheme.

of the most economical type of equipment will continually alter. This alone is sufficient to explain why it becomes profitable to employ bulldozers once a certain level of capital accumulation has been attained which has not been profitable at a lower stage of accumulation.¹ If, in addition, the use of the bulldozer-technique involves a higher investment per unit of output (a higher capital/output ratio) than the shovel-technique (which is by no means necessarily the case!) it will also be true that the rise in wages in terms of commodities, associated with the growth in the productivity of labour, will contribute to making the bulldozer-technique profitable at a certain stage of development.² In the latter case it may further be true that the use of bulldozers will be stimulated not only by the rise in wages due to the growth of productivity, but also by a rise in the *share* of wages at any given level of productivity due to a fall in profits. Thus as between two growing communities with equal technical progress functions, but in one of which the rate of profit is lower than in the other (due to a higher propensity to save out of profits and/or wages) the introduction of bulldozers may occur at a somewhat earlier stage of development (at a lower level of productivity and capital accumulation) than in the high-profit community, which in turn may have repercussions on the speed of development—at any rate during an intermediate stage, until an equilibrium of steady growth is attained. But we shall regard these as secondary complications which can safely be neglected in the first approximation; which means that we shall regard the choice of techniques as entirely a matter of the relative prices of different types of capital goods, which can be assumed to alter with the accumulation of capital and the progress of techniques in the capital-goods making industries.

¹ It may be thought that, given international trade, a particular under-developed country, in accordance with the law of comparative costs, would export shovels and import bulldozers and thereby gain the same terms of choice (as between different techniques) as the advanced country. But this pre-supposes a potential market for inferior capital goods in the advanced country (as well as a potential market for superior capital goods in the primitive country) which is non-existent.

² The fall in the price of bulldozers in terms of shovels will, of course, reduce the capital/output ratio involved in the bulldozer-technique relatively to the shovel-technique; and it may be supposed that at a certain stage of development the capital/output ratios in the two techniques will become identical. But whether this stage will have been reached or not at the time when the introduction of the bulldozer technique becomes profitable will depend (in part) on the rate of growth of productivity in the bulldozer-making industry relative to the rate of growth in the productivity of labour in the economy in general. The lower the former is relative to the latter, the more its introduction will have been prompted by the rise in wages (in terms of commodities in general) and the less by the fall in the price of bulldozers relative to shovels. If the introduction of the bulldozer technique has in the main been due to the rise in wages, and not to the fall in its price in relation to shovels, its introduction is in the nature of a "compensating" labour-saving innovation prompted by the introduction of capital-saving innovations in other parts of the economy. The fact that in the course of progress the prices of "superior" capital goods fall continually in relation to relatively inferior capital goods is not, of course, inconsistent with our assumption (stated on p. 599 above) that the price of newly produced capital goods per ton of steel embodied remain constant in terms of consumption goods.

THE WORKING OF THE MODEL

We are now in a position to set out the essential features of the model. We shall examine its mode of operation in two stages—first, under the hypothesis of a constant working population and second by allowing for population growth. In the former case (constant full employment being assumed) the proportionate rate of growth in total real income, Y_t , will be the same as the proportionate rate of growth in output per head, O_t . In the latter case the proportionate change in total real income will be the sum of the proportionate change in productivity, O_t , and the proportionate change in the working population, L_t .

(a) *Constant Working Population*

We shall postulate: (i) given savings propensities for profit-earners and wage-earners, respectively;¹ (ii) that the investment decisions in any one period are governed by the desire to maintain the capital stock in a given relationship to turnover, modified by any change in the rate of profit on capital; (iii) a given technical relationship between the (proportionate) rate of growth in productivity per man and the (proportionate) rate of growth in capital per man. Writing Y_t , K_t , P_t , S_t , I_t for real income, capital, profits, savings and investment at the time t , we may assume the familiar income identities

$$S_t = I_t = K_{t+1} - K_t$$

To represent our three relationships mentioned above we shall, for expository purposes, adopt linear equations as follows:

(1) *Savings Function*

$$S_t = \alpha P_t + \beta(Y_t - P_t)$$

$$1 > \alpha > \beta \geq 0$$

where

(2) *Investment Function*

$$(2.1) \quad K_t = \alpha' Y_{t-1} + \beta' \left(\frac{P_{t-1}}{K_{t-1}} \right) Y_{t-1}$$

$$(2.2) \quad I_t = K_{t+1} - K_t = (Y_t - Y_{t-1}) \left(\alpha' + \beta' \frac{P_{t-1}}{K_{t-1}} \right) + \beta' \left(\frac{P_t}{K_t} - \frac{P_{t-1}}{K_{t-1}} \right) Y_t$$

where

$$\alpha' > 0, \quad \beta' > 0$$

(3) *Technical Progress Function*

$$\frac{Y_{t+1} - Y_t}{Y_t} = \alpha'' + \beta'' \frac{I_t}{K_t}$$

where

$$\alpha'' > 0 \quad \text{and} \quad 1 > \beta'' > 0$$

¹ Income is assumed to be divided into two categories, wages and profits, where the wage category comprises salaries as well as the earnings of manual labour; profits comprise not only entrepreneurial incomes but also incomes accruing to property generally.

Equation (1) shows the community's savings as consisting of a proportion α of aggregate profits (P_t) and a proportion β of wages ($Y_t - P_t$). Equation (2.1) shows that the stock of capital at time t (and which is assumed to be equal to the *desired* stock of capital at time $t-1$) is a coefficient α' of the output of the previous period (Y_{t-1}) and a coefficient β' of the rate of profit on capital of the previous period, multiplied by the output of the previous period. Equation (2.2), derived from (2.1) by difference equation, shows that investment in period t , (I_t), assumed to correspond to the difference between desired and actual capital at t , is equal to the increment in output over the previous period ($Y_t - Y_{t-1}$) multiplied by the relationship between desired capital and output in the previous period $\left(\frac{K_t}{Y_{t-1}} \right)^1$ plus a coefficient β' of the change in the rate of profit over that period, multiplied by the output of the current period. Equation (2.2) thus implies that, expressed as a proportion of the existing stock of capital, K_t , the investment of period t is equal to the expected rate of growth of turnover (which in turn is assumed to be equal to the actual rate of growth in turnover for the previous period) if the rate of profit on capital is constant; and it is greater (or smaller) than this if the rate of profit on capital is rising (or falling). Equation (3) shows the rate of growth of labour productivity (and income) as an increasing function of the rate of net investment expressed as a proportion of the stock of capital—i.e., of the (proportionate) rate of growth of the capital stock.

Starting from an arbitrary point of time, $t = 1$, we can regard the existing capital stock, K_1 as a datum, a heritage of the past. We can also take as given the income Y_1 which the fully employed labour force produces with the aid of the capital equipment K_1 and the income and capital in the previous period Y_0 and K_0 .² Assuming that the capital stock K_1 satisfies the condition

$$(2.1.2) \quad \frac{K_1}{Y_0} = \alpha' + \beta' \frac{P_0}{K_0}$$

and treating, for the moment, K_1 as well as K_0 and Y_0 as a datum, equation (2.2) can be written in the form

$$(2.3) \quad \frac{I_1}{Y_1} = \frac{Y_1 - Y_0}{Y_0} \cdot \frac{K_1}{Y_1} + \beta' \left(\frac{P_1}{K_1} - \frac{P_0}{K_0} \right)$$

(bearing in mind that $\frac{Y_1 - Y_0}{Y_1} \cdot \frac{K_1}{Y_0} = \frac{Y_1 - Y_0}{Y_0} \cdot \frac{K_1}{Y_1}$), which means that the rate of investment in period 1, as a proportion of the income of that

¹ Since it is implicit in equation (2.1) that

$$\alpha' + \beta' \frac{P_{t-1}}{K_{t-1}} = \frac{K_t}{Y_{t-1}}$$

² Only three of these magnitudes are independent, since they must satisfy the technical equation (3) above with $t = 0$.

period, equals the rate of growth of income over the previous period multiplied by the capital/output ratio of the current period, plus a term depending on the change of the rate of profit over the previous period. Equation (2.3) can in turn be written in the form

$$(2.4) \quad \frac{I_1}{Y_1} = \left\{ \frac{Y_1 - Y_0}{Y_0} \frac{K_1}{Y_1} - \beta' \frac{P_0}{K_0} \right\} + \beta' \frac{Y_1}{K_1} \cdot \frac{P_1}{Y_1}$$

while equation (1) can be written in the form

$$(1.2) \quad \frac{S_1}{Y_1} = \alpha \frac{P_1}{Y_1} + \beta \frac{Y_1 - P_1}{Y_1} = \beta + (\alpha - \beta) \frac{P_1}{Y_1}$$

These two equations, (1.2) and (2.4) then determine both the distribution of income (between profits and wages) and the proportion of income saved

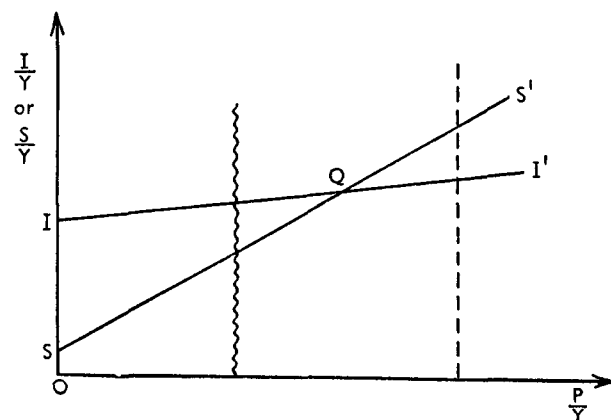


FIG. 2

and invested at $t = 1$. For the level of profits has to be such as to induce a rate of investment that is just equal to the rate of savings forthcoming at that particular distribution of income. This mechanism is illustrated in Fig. 2, where profits as a ratio of income $\left(\frac{P}{Y}\right)$ are measured horizontally

and savings and investment as a ratio of income $\left(\frac{S}{Y} \text{ and } \frac{I}{Y}\right)$ vertically. The line SS' represents our equation (1.2) and II' our equation (2.4).¹ The point of intersection Q indicates the short-period equilibrium level of profits and of investment as a proportion of income. If profits are a lower proportion of income the investment plans (although lower than the equilibrium level) will tend to exceed the available savings; prices will rise in relation to costs, until the discrepancy is eliminated through the consequential rise in profits. The equilibrium will be stable if the slope of the SS'

¹ The starting point of SS' on the vertical axis represents β and its slope $\alpha - \beta$. The starting point of II' on the vertical axis depends on the proportional change in income in the previous period and on the rate of profit on capital in the previous period while the slope of II' is $\beta' \frac{Y_1}{K_1}$.

curve exceeds the slope of the II' curve, which implies, that the coefficients of the first two equations satisfy the condition

$$\alpha - \beta > \beta' \frac{Y_1}{K_1}$$

We shall assume that this is so.¹

The working of the model is subject to two further restrictions, which were explained in an earlier article,² and which can be expressed as follows:

$$(4) \quad P_t \leq Y_t - W_{\min}$$

$$(5) \quad \frac{P_t}{Y_t} \geq m$$

The first of these restrictions (4) means that the profits determined by equations (1) and (2.2) should not be greater than the surplus available after the labour force has been paid a subsistence wage-bill. If this condition were not satisfied investment would be less than that indicated by equation (2.2) and would be determined by the savings available according to equation (1), when profits are equal to the surplus over subsistence wages. (In Fig. 2 the vertical dotted line represents the maximum permissible level of $\frac{P}{Y}$, and this is obtained by deducting the subsistence wage-bill from the full-employment income, determined by this condition. If the dotted line were to fall to the left of Q , as in Fig. 3, the short-period equilibrium would be represented not by Q , but by R . It will be evident that the position of the dotted line in relation to Q depends on the productivity of labour, which in turn depends in our model on the capital stock. In a progressive economy with a growing capital and output per head the dotted line will move steadily to the right, so that *sooner or later* it will pass Q and equation (2) will become operative as in Fig. 2.³)

The second of these restrictions (equation (5)) means that the profits resulting from equations (1) and (2.2) are higher than the minimum required to secure a margin of profit over turnover below which entrepreneurs would not reduce prices, irrespective of the state of demand. (This minimum

¹ The assumption of stability in the savings-investment equilibrium under full employment has quite different implications from the corresponding assumption in a situation of under-employment equilibrium where the short-period output is regarded as variable. In the latter case the stability conditions depend on the effect of the change of income on the proportion of investment to income whereas in the former case only on the corresponding effect of a change in the *distribution* of income. In terms of our equation, a necessary (though not a sufficient) condition for short-period stability in an under-employment equilibrium—irrespective of whether equation (1) holds or not, and provided only that the marginal propensity to consume is higher than zero—is that $K_1 < Y_1$ (*i.e.*, the accelerator coefficient in the first term of our second equation is less than unity). In a full-employment model the stability of our equilibrium is not dependent at all on the accelerator coefficient, but only on the change of that coefficient induced by a change in the rate of profit associated with a change in the distribution of income.

² Cf. "Alternative Theories of Distribution," *op. cit.*, pp. 97–8.

Cf. also pp. 618–21 below.

margin of profit is that corresponding to the "degree of monopoly," or the traditional profit margin required to cover full costs, etc.) If this condition were not satisfied, full-employment savings indicated by equation (1) would exceed investment (since prices and profits would not fall sufficiently to secure the equality of savings and investment), so that income and employment would be reduced *below* the full-employment level to the point where

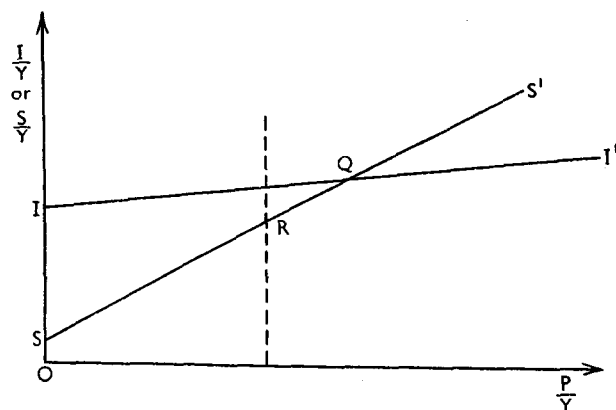


FIG. 3

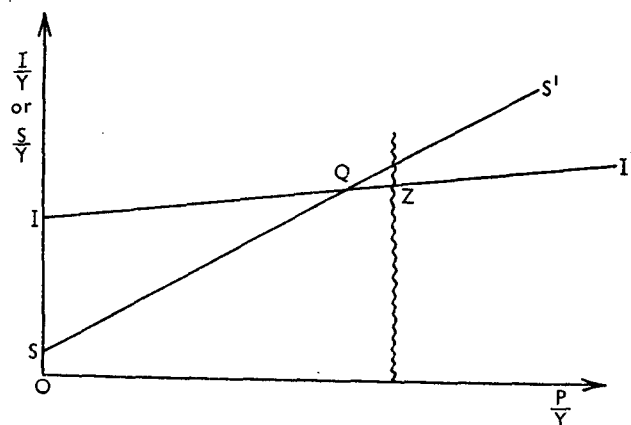


FIG. 4

the savings generated by that income are no more than sufficient to finance investment. (In Fig. 2 the waved line represents this minimum level of profits. If this minimum were to fall to the right of Q equilibrium would not be at Q , but at Z , as shown in Fig. 4, while income will fall below Y_0 to the point where the savings-income ratio is reduced to the level indicated by Z .)

Our model thus supposes: (i) that the wages ($Y_0 - P_0$) resulting from equations (1) and (2.2) are higher than the minimum, set by the supply-price of labour; (ii) that the profits resulting from these same equations are higher than the minimum required to satisfy entrepreneurs. The absence of the first condition leads to the Marxian type of model, where profits are deter-

mined by the surplus over subsistence wages, and investment is governed by the size of that surplus; the absence of the second condition leads to a Keynesian model of under-employment equilibrium, which, as was indicated above,¹ is inconsistent with the long-run equilibrium of a growing economy. Our model thus relates to a capitalist economy which is sufficiently highly developed for wages to be above subsistence level and sufficiently competitive at the same time to generate adequate demand to secure full employment.

Assuming these conditions are satisfied, our technical progress function (equation (3) above) indicates the growth of income and capital from $t = 1$ onwards, and the gradual movement of the economy from a short-period equilibrium to a long-period equilibrium of steady growth. This is illustrated in Fig. 5, where the proportionate growth of capital is measured

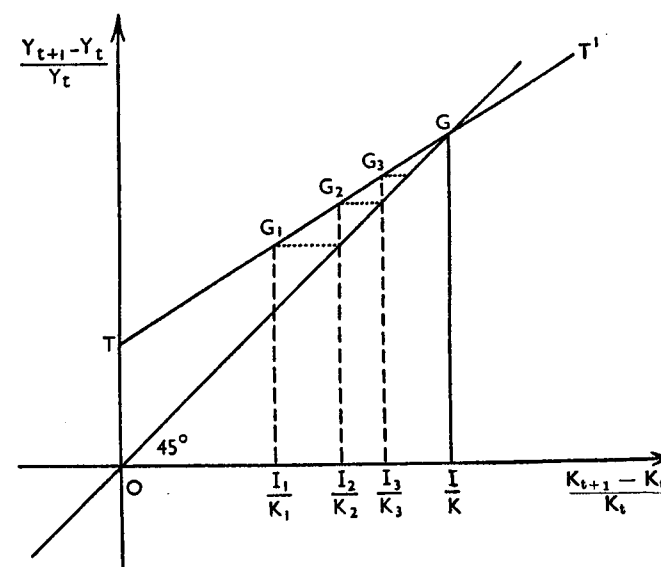


FIG. 5

horizontally and the proportionate growth of income vertically.² Suppose that the initial rate of investment, as determined by equations (1) and (2.3), at $t = 1$, $\frac{I_1}{K_1}$ is to the left of $\frac{I}{K}$. This implies that the growth of output, g , in successive units of time will be greater than the growth of capital, $\frac{I_1}{K_1}$,³ and, in accordance with our equation (2.3), and apart from any changes in the rate of profit on capital, the rate of investment will be stepped up in the

¹ Cf. p. 594 above.

² Fig. 5 is identical with Fig. 1 except that in accordance with equation (3), the technical progress function TT' is here represented by a straight line.

³ We shall denote g_1, g_2 , etc., the rates of growth in income corresponding to the points G_1, G_2 , etc., in the diagram.

subsequent period so as to make $\frac{I_2}{K_2}$ equal to g_1 , which in turn will raise the growth in income in the second period to g_2 . By similar reasoning, the growth of output in the third period will rise to g_3 and so on, until G is reached, at which the rates of growth of income and capital are equal.

The indirect effects through changes in the rates of profit on capital will reinforce this process. For since $\frac{Y_t}{K_t}$ is increasing so long as G_t is to the left of G , $\frac{P_t}{K_t}$ will be increasing so long as $\frac{P_t}{Y_t}$ is not decreasing; while, in accordance with equation (1), $\frac{P_t}{Y_t}$ will be non-decreasing provided $\frac{I_t}{Y_t}$ is not decreasing. The change in $\frac{I_t}{Y_t}$ attributable to the first term of (the right-hand side of) equation (2.2) will be positive with any movement of G_t towards G , for the rise in g_t will more than offset the fall in the capital/output ratio, $\frac{K_t}{Y_t}$.

It follows that any associated change in the rate of profit on capital $\frac{P_t}{K_t}$ will make the rate of increase in investment even greater. (This means that in Fig. 2 above the point of intersection Q must be moving towards the right, which implies also that the curve II' must be shifting upwards.¹)

¹ A more rigorous proof of the proposition that equation (2) represents a curve in the $(\frac{I_t}{Y_t}, \frac{P_t}{Y_t})$ plane which moves upwards when the percentage growth in income exceeds the percentage growth in capital can be given as follows.

Since, according to equation (2.1) and (2.2)

$$K_{t+1} = \left\{ \alpha' + \beta' \frac{P_t}{K_t} \right\} Y_t$$

Equation (2.2) can be written in the form

$$I_t = K_{t+1} - K_t = \alpha' Y_t - K_t + Y_t \left\{ \beta' \frac{Y_t}{K_t} \right\} \frac{P_t}{Y_t}$$

hence

$$\frac{I_t}{Y_t} = \left\{ \alpha' - \frac{K_t}{Y_t} \right\} + \left\{ \beta' \frac{Y_t}{K_t} \right\} \frac{P_t}{Y_t}$$

This curve must evidently shift upwards with any increase in $\frac{Y_t}{K_t}$ for any fixed value of $\frac{P_t}{Y_t}$.

On the other hand, if instead of equation (2.2) we had chosen an investment function of the form

$$\frac{I_t}{K_t} = \alpha' + \beta' \frac{P_t}{K_t} \quad (\text{where } \alpha' > 0),$$

which makes the proportionate rate of growth of capital depend simply on the rate of profit on capital and without regard to the rate of change of income, the relationship of investment to income will be

$$\frac{I_t}{Y_t} = \alpha' \frac{K_t}{Y_t} + \beta' \frac{P_t}{Y_t}$$

In that case if $\frac{\Delta Y_t}{Y_t} > \frac{I_t}{K_t}$, so that $\frac{K_t}{Y_t}$ is falling, this curve $\frac{I_t}{Y_t}$ in the $(\frac{I_t}{Y_t}, \frac{P_t}{Y_t})$ plane will be falling. An investment function of this form therefore, whilst it satisfies the conditions of stability of short-period equilibrium, makes the position of long-period equilibrium at G unstable, since the point G in Fig. 5 would be moving away from instead of towards G .

An exactly similar proof could be adduced to show that if G_t were to lie to the right of G , then it must be moving to the left towards G . Long-run equilibrium must therefore be at G , where the rates of growth of income and capital are equal.

It follows from our equations that the long-run equilibrium rate of growth of income and capital is independent of the value of the coefficients of equations (1) and (2.3) (the savings and investment functions), and depends only on the coefficients in equation (3), the technical progress function. It is given by

$$(6) \quad G = \frac{\alpha''}{1 - \beta''}$$

which is the equilibrium rate of growth in productivity, *i.e.*, that particular rate of growth of productivity which makes the (percentage) rates of growth of capital and income equal, and which (under the hypothesis of a constant population) is itself equal to them both.

Putting

$$\frac{\alpha''}{1 - \beta''} = \gamma'',$$

the equilibrium ratio of investment to income, the equilibrium share of profits to income and the equilibrium rate of profit on capital can all be derived with the aid of equations (1) and (2.3) as follows:

$$(7.1) \quad \frac{I}{Y} = \gamma'' \frac{K}{Y}$$

Since from equation (1.2)

$$\frac{S}{Y} = \alpha \frac{P}{Y} + \beta \left(1 - \frac{P}{Y} \right)$$

$$(8.1) \quad \frac{P}{Y} = \frac{\gamma'' \frac{K}{Y} - \beta}{\alpha - \beta}$$

$$(9.1) \quad \frac{P}{K} = \frac{\gamma'' - \beta \frac{Y}{K}}{\alpha - \beta}$$

The family resemblance between our set of equations and the Harrod-Domar formula will be evident. Equation (7.1), together with equation (1.2), is a variant of Mr. Harrod's "warranted rate of growth," with the important differences: (i) that the assumption of given savings propensities (for profit-receivers and wage-earners) does not define a unique warranted rate, but is consistent with any number of warranted rates, depending on the distribution of income, which determines the average propensity to save for the community as a whole, the latter in turn being dependent on the ratio of investment to income; (ii) the rate of growth of the system is not determined

by the savings function, but by equation (6), which is, in effect, a variant of Mr. Harrod's "natural rate" (under the hypothesis of a constant population) except that the rate of increase in productivity due to technical progress is not treated as a constant here, but as a variable, and our γ'' is that particular rate of increase of productivity which makes the latter equal to the rate of increase in capital per head. In fact, the implications of our model in terms of Mr. Harrod's terminology could be summed up by saying that the system tends towards an equilibrium rate of growth at which the "natural" and the "warranted" rates are equal, since any divergence between the two will set up forces tending to eliminate the difference; and these forces act partly through an adjustment of the "natural" rate, and partly through an adjustment of the "warranted" rate.

So far the expression $\frac{K}{Y}$, though an outcome of the equilibrating process, has not been eliminated from our formulæ. To do so, we must return to our desired capital function (2.1), which, owing to the substitution introduced in (2.1.2), has not so far been made use of. Dividing (2.1) with Y_t , we obtain

$$(2.1.3) \quad \frac{K_t}{Y_t} = \alpha' \frac{Y_{t-1}}{Y_t} + \beta' \left(\frac{P_{t-1}}{K_{t-1}} \right) \frac{Y_{t-1}}{Y_t}$$

Bearing in mind that in long-period equilibrium

$$\frac{P_{t-1}}{K_{t-1}} = \frac{P_t}{K_t} = \frac{P}{K} \quad \text{and} \quad \frac{Y_{t-1}}{Y_t} = \frac{1}{1 + \gamma''}$$

and putting

$$\frac{K_t}{Y_t} = \frac{K}{Y} = x$$

we obtain the expression

$$(2.1.4) \quad x = \frac{1}{1 + \gamma''} \left(\alpha' + \beta' \frac{P}{K} \right)$$

Further, since in long run equilibrium

$$\frac{S_t}{K_t} = \frac{S}{K} = \gamma''$$

equation (1.2), divided by K_t , can be written in the form

$$(1.3) \quad \gamma'' = \frac{\beta}{x} + (\alpha - \beta) \frac{P}{K}$$

Hence
$$\frac{P}{K} = \frac{1}{\alpha - \beta} \left\{ \gamma'' - \frac{\beta}{x} \right\}$$

and
$$x = \frac{1}{1 + \gamma''} \left\{ \alpha' + \frac{\beta'}{\alpha - \beta} \left(\gamma'' - \frac{\beta}{x} \right) \right\}$$

which can be re-written in the form

$$(\alpha - \beta)(1 + \gamma'')^2 - \alpha'(\alpha - \beta)(1 + \gamma'') - \beta' = 0$$

Hence

$$(10.1) \quad Ax^2 - Bx + C = 0$$

where $A = (\alpha - \beta)(1 + \gamma'')$, $B = (\alpha - \beta)\alpha' + \beta'\gamma''$, and $C = \beta\beta'$

Thus the derivation of the capital/output ratio, $\frac{K}{Y}$, involves a quadratic equation which has two positive roots in $\frac{K}{Y}$, of which normally the greater of the two only would be relevant.¹

The complication of quadratic solutions is avoided, however (and the formulæ greatly simplified), if we assumed that all savings come out of profits, so that $\beta = 0$. (Since β is in any case likely to be small, the difference introduced by this cannot quantitatively be very significant.) In that case the equilibrium value of the capital/output ratio, derived from (2.1.4) and (1.3), is given by the expression

$$(10.2) \quad \frac{K}{Y} = \frac{\alpha\alpha' + \beta'\gamma''}{\alpha(1 + \gamma'')}$$

while the equilibrium values of the other variables reduce to the formulæ

$$(7.2) \quad \frac{I}{Y} = \frac{\alpha\alpha'\gamma'' + \beta'(\gamma'')^2}{\alpha(1 + \gamma'')}$$

$$(8.2) \quad \frac{P}{Y} = \frac{\alpha\alpha'\gamma'' + \beta'(\gamma'')^2}{(\alpha)^2(1 + \gamma'')}$$

$$(9.2) \quad \frac{P}{K} = \frac{\gamma''}{\alpha}$$

It is interesting to note that the rate of profit on capital depends on the rate of growth, γ'' (and thus ultimately on the coefficients of the technical progress function, α'' , and β'' which determine this rate), and on the savings coefficients of profits, α . On the other hand, the investment coefficient and the share of profits in income, just as the capital/output ratio, depend on the coefficients of the investment function, α' and β' , as well as on α and α'' and β'' .

The result shown by equation (9.2) that the rate of return on capital depends only on the rate of economic growth and the division of capitalists' income between consumption and saving, and is independent of everything else (such as the factors determining the share of profits in income and the capital/output ratio) may sound highly paradoxical at first. Yet a little reflection shows that it must evidently be correct. For if the income accruing to capital were all devoted to accumulation (when that income is

¹ Since on any reasonable values of the coefficients, the larger root will be greater than unity and the smaller root less than unity when Y is thought of as annual income, and $\frac{K}{Y}$ is likely to be appreciably larger than 1. (The same holds, of course, with appropriate adjustments in the values of the coefficients when Y is thought of in terms of some different period.)

the sole source of savings) the rate of profit on capital would evidently be identical with the rate of growth of the capital stock; if capital and output grow at the same rate this rate must be identical with the rate of growth of the economy. If the owners of capital do not save all their income but consume part of it (but profits remain the only source of savings) the rate of profit must exceed the rate of accumulation by the ratio of capitalists' consumption to savings.¹

(b) Expanding Population

According to the Malthusian theory, the rate of population increase is a function of the rate of increase of the "means of subsistence" (which we can assume to be equivalent to the rate of increase in total production.) This doctrine is clearly subject to certain limitations. For any given fertility rate (or gross reproduction rate) in a community the percentage rate of growth in population cannot exceed a certain maximum, however fast real income is rising; and it may be supposed that the rate of population growth will rise only moderately as a function of the rate of growth in income over some interval of the latter before that maximum is reached. The dependence of population growth on the growth of income is best represented therefore in the terms of a curve which is convex upwards, as in Fig. 6 (measuring the proportionate rate of growth of population vertically and that of income horizontally) and whose slope nearly equals unity when the rate of growth of income is relatively low, and which becomes virtually horizontal when the rate of growth of income exceeds a certain critical value.² In terms of a linear equation, this relationship can be approximated by two straight lines indicated by the dotted lines in Fig. 6, which can be algebraically expressed as follows. Writing l_t, g_t for the (percentage) rates of growth of population and income, and λ for the maximum rate of growth of population,

$$(11) \quad \begin{aligned} l_t &= g_t \quad (g_t \leq \lambda) \\ l_t &= \lambda \quad (g_t > \lambda). \end{aligned}$$

¹ As (9.1) shows, when profits are not the sole source of savings, the rate of return on capital will also depend on wage-earners' savings, though in no simple fashion, since β (the proportion of wages saved) appears both in the numerator and the denominator of the expression. It follows, however, from (8.1) that $\gamma'' < \alpha \frac{Y}{K}$ when $\frac{P}{Y} < 1$, hence a rise in β must lower the rate of profit on capital (and the share of profits in income). This is the basis of the (seemingly paradoxical) assertion that whereas the capitalists (as a group) can raise their share in the national income by spending more, wage-earners as a group can increase their share only by spending less.

² The maximum rate of population growth is partly a matter of fertility rates (*i.e.*, the gross reproduction rate) and partly of medical knowledge which determines the rate of survival (in particular, the infant-mortality rates) at a given standard of living. The fall in fertility rates in the advanced countries during the last half-century or more lowered the position of their Malthusian population curves considerably. On the other hand, there is a good deal of evidence tending to suggest that the considerable acceleration in the rates of population growth of the under-developed areas which occurred in the last half-century or so was due, in the main, not to an acceleration in the rate of growth of income but to a rise in the survival rate (due to the medical improvements which reduced the incidence of epidemics, etc.) and was attended in some cases by an appreciable fall in the standard of living of the population.

Assuming to start with that the rate of population growth is λ (*i.e.*, $g_t > \lambda$), $\frac{I_t}{K_t}$ in equation (3) is replaced by $\frac{I_t}{K_t} - \lambda$, and $\frac{Y_{t+1} - Y_t}{Y_t}$ by $(\frac{Y_{t+1} - Y_t}{Y_t} - \lambda)$. Hence the long-run equilibrium rate of growth of both capital and income becomes

$$(6.2) \quad G = \gamma'' + \lambda$$

The long-run equilibrium values of other ratios are then obtained by substituting $(\gamma'' + \lambda)$ for γ'' in equations (7)-(10).

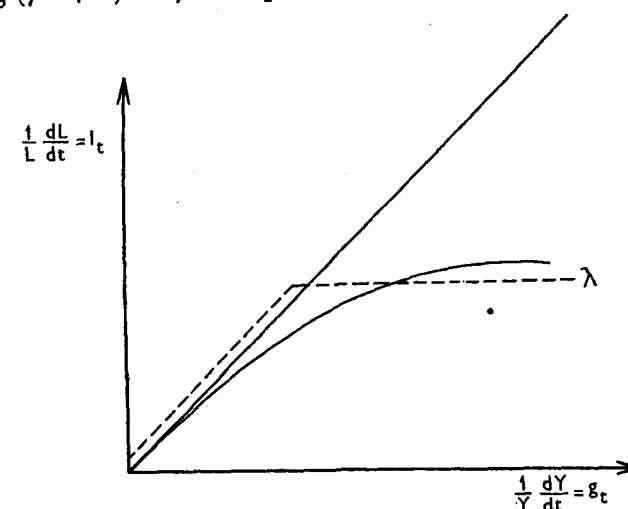


FIG. 6

If to start with, $g_t < \lambda$ (and hence $l_t < \lambda$) the rates of growth of income and population will continually accelerate until the latter approaches λ . In long-run equilibrium population must therefore grow at its maximum rate—*i.e.*, at that indicated by the horizontal section of the curve in Fig. 6.

The above assumes that the shape and position of the technical progress function—*i.e.*, the coefficients α'' and β'' in equation (3) above, and hence γ'' —remain unaffected by population changes. This implies in economic terms that there are constant returns to scale to equi-proportionate increases in labour and capital; in other words, that an increase in numbers, given the amount of capital per head, leaves output per head unaffected. This assumption may be valid enough in the case of a young and relatively under-populated country¹; in the case of over-populated countries, however, the

¹ In general, the density of population in any given area will in itself be conditioned by the availability of natural resources, which means that the density will normally be sufficiently great for the stage of diminishing returns to have been reached. When, however, a new population possessing radically different techniques invades a territory (as in the case of the white settlers in America and other areas in the New World) the point of optimum density, corresponding to the new techniques, may be so radically different that there may occur a manifold increase in population density without encountering diminishing returns.

scarcity of land will cause diminishing returns, which means that, with given techniques and capital per head, an increase in numbers will cause a fall in productivity.¹ Given the rate of the flow of new ideas, the curve denoting our technical progress function will be lowered by an extent depending on the rate of increase in population. It is then possible that instead of the curve intersecting the income-axis in the positive quadrant, as shown in Fig. 1 above, it will cut the capital-axis positively, as in Fig. 7²—which means that it will require a certain percentage growth in capital per head (C_t) even to maintain output per head (O_t) at a constant level. It will be evident that the maintenance of an equilibrium of growth is much more precarious in this case; instead of a single point of intersection of the curve

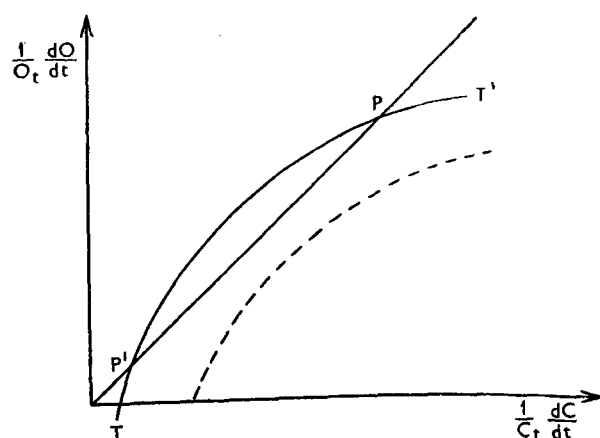


FIG. 7

with the diagonal line, we have two points of intersection, P' and P , of which only the latter is stable, while the former is unstable; if the economy happens to be in a position (or come to a position) which is to the left of P' the rate of growth of income and capital will steadily diminish until—after an intervening period of falling output per head—the growth of capital and income come to a complete standstill. It is even possible in this case that the position of

¹ It is assumed here that diminishing returns due to the scarcity of land are attendant upon an increase in the working population, rather than an increase in the volume of production as such. It is possible, of course, that the scarcity of natural resources would put increasing obstacles to the expansion of output, even when population is constant—in which case, given the rate of invention and innovation, the growth of productivity at any given rate of investment will be slowed down, and returns due to the scarcity of land are peculiarly associated with food supplies, while food requirements vary with the size of the population far more than with income per head, it is more appropriate to treat the problem of diminishing returns in the classical manner and associate it with the “widening” of capital due to an increase in numbers, rather than as restricting the scope of the increasing productivity through “deepening.”

² Since the assumption of a linear function is no longer adequate in this case for exhibiting the various possibilities inherent in the situation, we return to the non-linear mode of representation which was originally employed in Fig. 1.

the TT' curve should be below the diagonal throughout its length (as in the dotted line in Fig. 7), in which case no long-period equilibrium is attainable short of complete stagnation.

Whether an expanding population will be consistent with an equilibrium of growth or not will thus primarily depend on the relative magnitude of two factors: (i) the maximum rate of population increase λ , and (ii) the rate of technical progress, which causes a certain percentage increase in productivity, α'' in equation (3) above, when both population and capital per head are held constant. Since diminishing returns cannot cause the output of a larger working population to be smaller than that of a smaller population, the growth of population cannot lower the position of the TT' curve by more than the rate of population growth itself, so that if

$$\alpha'' > \lambda$$

the technical progress function must continue to cut the vertical (income) axis positively, and the possibility of a stable equilibrium of growth will be assured. The long-run equilibrium rate of growth will still be given by the formula

$$(6.2) \quad G = \gamma'' + \lambda$$

bearing in mind, however, that the value of γ'' is not here independently given, but is itself influenced by λ .¹ But when the value of λ is relatively large, and the forces making for technical progress are weak, the formula (6.2) may no longer apply because of the inability of income to grow at a steady rate of λ or above. For example, if we suppose that, as a result of diminishing returns and rapid population growth (made possible by the high value of λ), α'' in equation (3) became negative—which implies that in Fig. 5 the point of intersection G with the diagonal had moved down into the negative quadrant, making γ'' negative—the growth of population would exceed the growth of production when the population grew at the rate λ . In this situation an equilibrium rate of growth is conceivable only when population and income grow at the same rate, and this can be attained only at that particular rate of population growth (lower than λ) which makes γ'' equal to zero. Thus, if we denote by $L(\gamma)$ the rate of population growth which causes γ'' to take the value γ , then in place of equation (6.2) we have

$$(12) \quad \begin{aligned} l_t &\rightarrow L(0) \\ g_t &\rightarrow l_t \\ \therefore g_t &\rightarrow L(0) \end{aligned}$$

¹ The available data for the more advanced capitalist economies over the last century suggest that the value of γ'' varied between 2 and 4% per annum, for the different countries, which is consistent with a value of β'' of, say, 0.5, and for α'' of 0.01–0.02 or 1–2%. According to Professor Kuznets' investigations (cf. “The Quantitative Aspects of the Economic Growth of Nations,” *Economic Development and Cultural Change*, Vol. V, No. 1, October 1956, p. 42), the value of γ'' in the more advanced economies remained relatively unaffected by changes in the rate of population growth. In the under-developed areas, according to the evidence of the same source, the value of γ'' must have been very much lower.

In other words, for economies which are capable of only slow technical progress, and whose potential rate of population growth is relatively large, and which are subject to diminishing returns, the long-run equilibrium rate of growth and income (and capital) is determined by a different set of conditions. It has to be that rate of population growth which allows output per head and capital per head to remain constant over time. (Income and capital per head must be low enough to restrict the rate of population growth to that rate; and the higher the degree of medical knowledge which determines infant mortality, the lower this constant level of income per head will have to be.) This again is a stable position, since there is only one particular rate of population growth which enables the rate of growth of income to be equal to it; at any lesser rate productivity per head will rise, and the growth of income will exceed the growth of population (causing the latter to increase and income per head to cease rising); at any higher rate, productivity will fall and the growth of income will fall short of the growth in population (causing the latter to contract and income per head to cease falling). Long-run growth with a rising standard of living necessarily presupposes that there is some check to the rate of population growth which operates before it reaches the maximum attainable rate of growth of the national income.

THE TWO STAGES OF CAPITALISM

The historical emergence of capitalist enterprise involved a tremendous increase in the "technical dynamism" of the economic system. The most important characteristic of capitalist business enterprise is the continuous change and improvement in the methods of production, as against the relatively unchanging techniques of peasant cultivation and artisan production. In terms of our model, the growth of the capitalist sector in the economy involved a dramatic rise in technical progress function, and hence in the equilibrium rate of growth of productivity, γ' —the increase in savings, investments, both as a proportion of income and of capital, and the great acceleration in the rates of population growth, were consequences of this, and not its initiating causes.¹

¹ In the same way the important differences in long-period growth rates between different capitalist economies—which manifested themselves, e.g., in the fivefold increase in income per head in the United States in the last 100 years as against a near threefold increase in Britain over the same period—can only be ascribed to the various social factors which cause differences in the degree of "technical dynamism"—in the speed of adaptation to new techniques—rather than to differences in savings propensities, in national environment, etc. Again, the causes of the relatively low rates of progress in the under-developed areas of the world are mainly to be sought in the social and institutional factors which impeded the spread of "technical dynamism," particularly in the agricultural field, and thereby inhibited progress in those sectors of the economy also in which capitalist enterprise could establish itself and where the sociological obstacles to continued technical change were removed. Thus the absence of a progressive agriculture has been the most important factor inhibiting industrialisation in the under-developed areas. (This latter problem is treated in more detail in another paper by the author, "Characteristics of Economic Development," published in *Atti del Congresso Internazionale di Studio sul Problema delle Area Arretrate* (Milan: Giuffrè 1955).)

In the early stage of capitalist development the growth in productivity was not attended by a rise in the standard of living of the working classes. The stationary trend in real wages in Britain despite considerable improvement in production per head during the first half of the nineteenth century was the feature of capitalist evolution which so strongly impressed Marx and forms one of the main themes of Volume I of *Das Kapital*. The same has been true of other capitalist countries: in the case of Japan, for instance, real wages increased very little between 1878 and 1917, despite a one-and-a-half-fold increase in real income per head over the period.¹

This suggests that in the first stage of capitalist evolution, productivity, though rising, is not large enough to allow for a surplus over the subsistence wage which permits the rate of investment to attain the level indicated by equation (2.2); in other words the profits which would result from equations (1) and (2.2) are inconsistent with the restriction indicated by equation (4).

Since equation (2.2) will be replaced by

$$(4a) \quad P_t = Y_t - W_{\min.}$$

this combined with (1) yields

$$S_t = (\alpha - \beta) P_t + \beta Y_t$$

so that

$$(13) \quad S_t = I_t = \alpha Y_t - (\alpha - \beta) W_{\min.}$$

So long as (13) holds $\frac{I_t}{Y_t}$ will be steadily rising with the increase in the productivity of labour so that if, initially, $\frac{Y_t}{K_t}$ is rising (i.e., the situation is to the left of G in Fig. 5) $\frac{I_t}{K_t}$ will be rising also. This movement will not be brought to a halt by approaching G , for while the (current) rate of growth of capital will approach the (current) rate of growth of income (as the rate of investment approaches that corresponding to G), there will be a backlog of investment from previous periods due to the growing divergence between actual capital and desired capital (since the rate of investment at each period was *ex hypothesi* insufficient to bring actual capital into line with desired capital). Hence the increase in the rate of capital accumulation will pass the point G , and the economy will settle down to a steady decrease of $\frac{Y_t}{K_t}$. In this first stage of capitalism therefore the capital/output ratio (at any rate after some initial period) will show a steady increase, in accordance with both the Marxian and the neo-classical models. Since, however, the share of profit in income will also increase continuously, the rise in the

¹ Cf. Mataji Umemura. "Real Wages of Industrial Workers" in the volume *An Analysis of the Japanese Economy*, edited by S. Tsuru and K. Ohkawa (Tokyo, 1953). In the period 1918-42, on the other hand, the rise in real wages fully kept pace with the growth in output per head.

capital/output ratio will not necessarily imply a falling rate of profit on capital, and may be consistent with a rising rate.

This first stage of capitalism, however, must sooner or later be brought to an end when the capital stock attains the level of "desired capital," indicated by equation (2.1). From that point onwards the rate of investment will no longer be governed by equation (13), but by equation (2.2) and the reaction-mechanism of the system becomes a totally different one. Profits are no longer determined in the Marxian manner, as the surplus of production over subsistence wages; on the contrary, the share of wages becomes a residual, equalling the difference between production and the share of profits as determined in a "Keynesian" manner, by the propensities

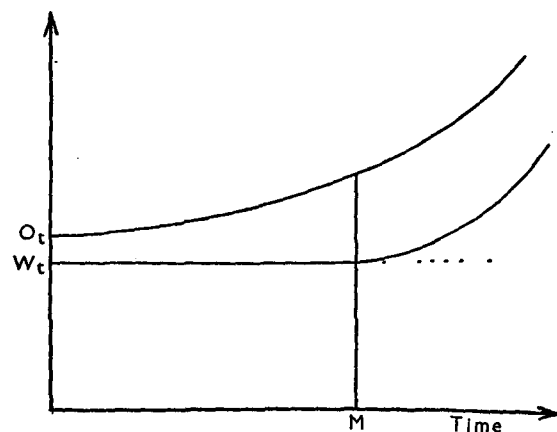


FIG. 8

to invest and to save. From then onwards, and assuming that the parameters in our equations (1)–(3) remain constant, real wages will rise automatically at the same rate as the productivity of labour, so that distributive shares remain constant through time; and since the system will tend to settle down to an equilibrium where the rate of growth of capital is equal to the rate of growth in income, the capital/output ratio, and the rate of profit in capital, will also tend to remain constant over time.

The process of changing-over from Stage I to Stage II is illustrated in Fig. 8 (measuring time horizontally, and productivity, O_t , and wages, W_t , vertically). The dividing line M is at the point of time when the stock of capital attains the "desired" level, indicated by equation (2.1) and the share of profits ($O_t - W_t$) yields savings that are sufficient to finance a rate of investment corresponding to equation (2.2). Once this stage is reached, any further increase in the "surplus" will not be fully absorbed in increasing investment and/or capitalist consumption; a growing share of the increase

in the "surplus" will accrue to labour automatically, through the constellation of prices in relation to wages.

This second and more cheerful stage of capitalism in which production and employment continue to grow, and real wages are steadily rising with the growth in production, was quite unforeseen by Marx. Marxist economists would probably argue that its emergence is prevented by the growth of "monopoly-capitalism," for not only the productivity of labour, but also the degree of concentration of production can be expected to rise steadily with the progress of capitalism. This causes a steady weakening of the forces of competition, as a result of which the share of profit would go on rising beyond the point where it covers investment needs and the consumption of capitalists. Hence, on this argument, by the time the restriction implied in equation (4) is lifted the restriction implied by equation (5) should become operative, and that means that the system will cease to be capable of generating sufficient purchasing power to keep the mechanism of growth in operation.

The plain answer to this is that so far, at any rate, this has not happened. Though the growing concentration of production in the hands of giant firms proceeded in much the same way as Marx predicted, this was not attended by a corresponding growth in the share of profits.¹ On the contrary, all statistical indications suggest that the share of profits in income in leading capitalist economies such as the United States have shown a falling rather than a rising trend over recent decades, and is appreciably below the level of the late nineteenth century; and despite the extraordinary severity and duration of the depression of the 1930s, the problem of "realising surplus value" appears no more chronic to-day than it was in Marx's day.

TREND AND FLUCTUATIONS

Our model is intended to be a "long-run" model—i.e., a model exhibiting long-run tendencies operating in the economy—and as such it deliberately rules out all kinds of complicating features of the real world which have to be taken into account before the methods of reasoning and the conclusions can be applied to actual situations. In this paper we can do no more than indicate briefly some of these limitations and the influence they are likely to exert, particularly during shorter periods.

(1) One of these is that the theory of distribution underlying this model—which makes the share of profits in income entirely dependent on the ratio of investment to output, and the propensity to save out of profits and wages

¹ Moreover—and this is more significant—empirical investigations concerning the ratio of profit to turnover in different industries do not lend any support to the hypothesis that the differences in profit margins are to be explained by differences in the degree of concentration of production. Typically monopolistic industries, where output is largely controlled by a few firms, have in many cases lower profit margins than industries where the degree of concentration is small.

—is only acceptable as a “long-run” theory, since changes in these factors exert only a limited influence in the short period. As was indicated in my earlier paper,¹ in the short period profit margins are likely to be inflexible, in both an upward and a downward direction, around their customary level—which means that they are largely historically determined. What is suggested here is that long-term investment requirements and saving propensities are the underlying factors which set the standard around which these customary levels are formed, and which are responsible for the gradual change of these levels in any particular economy, or for differences as between different economies. This means that in the short period: (i) when investment falls significantly *below* some “normal” level, profit margins will not fall sufficiently to set up a compensating increase in consumption; instead, total income and employment will be reduced, in accordance with the Keynesian multiplier theory; (ii) when investment demand rises significantly *above* some “normal” level profit margins will not rise sufficiently to allow a corresponding increase in real investment; instead, some kind of investment rationing will take place by the lengthening of order books, and/or a tight credit policy, etc., or simply by the rise in the prices of investment goods in relation to consumption goods.² The short-period rigidity of profit margins, due to entrepreneurial behaviour, will be reinforced also by another factor: the downward inflexibility of real wages around their customary or attained level. Though over a longer period the *share* of wages is flexible in both an upward and downward direction through *real* wages rising more or less than in proportion to the rise in productivity, in the short period an *absolute* cut in real wages is likely to entail a severe inflationary wage-price spiral; and hence an increase in investment which would entail such a cut is likely to be prevented, if by nothing else, by measures of monetary policy. The speed with which an increase in the proportion of current production devoted to investment can be brought about will therefore be limited by the rate of increase in productivity, as well as by other factors, such as the limited capacity of investment-goods industries.

(2) A second important qualification relates to the hypothesis of a constant flow of invention and innovation over time, which underlies our assumption of a technical-progress function with constant parameters. To the extent that technical progress consists of a great multitude of minor changes and improvements, one may rely on the operation of the law of large numbers

¹ Cf. “Alternative Theories of Distribution,” *loc. cit.*, pp. 99–100.

² This is in any case part of the mechanism through which a rise in investment demand will cause in the long run a rise in the proportion of resources devoted to investment and a corresponding fall in the proportion devoted to consumption. In the short period, investment in real terms is limited by the capacity of the investment-goods industries; a rise in the demand for investment goods must therefore raise first their relative prices, and thereby the relative profitability of investment in these industries; this in turn will entail a gradual rise in the capacity of these industries, relatively to the capacity of the consumption-goods industries.

to ensure that the rate at which improvements are invented and introduced in the economy as a whole remains fairly steady. But in addition there are major innovations due to the discovery of basic new principles; these occur at irregular intervals, and their exploitation opens up vast new avenues of profitable investment. The effects of such major discoveries (such as the invention of electricity, the internal-combustion engine, etc.) are superimposed on the “normal” rate of progress due to minor improvements, and their effect is to raise the TT' curve above its “normal” level during the period of their initial exploitation (which may be spread over several decades). Hence we can expect periods of rising and falling technical progress: periods in which the growth of production and real income runs ahead of the growth of capital, to be followed by other periods when capital investment catches up and the stock of capital increases faster than income.

The effect of the short-period rigidities of profit margins referred to in the earlier paragraph is to slow down the rate at which capital investment is rising in response to an upward shift of the TT' curve; and also to slow down the rate at which actual investment is falling in response to a downward shift of the TT' curve. To a certain extent, therefore, these short-period rigidities act as a stabiliser on the economy; they make it capable of absorbing the shocks created by the unequal incidence of new discoveries without major upheavals—merely by varying the rates at which income and capital are growing.¹ However, these same short-period rigidities may cause “over-saving” (owing to the failure of income distribution to adjust itself promptly enough to the fall in investment) and thus bring about a major breakdown in the process of investment and economic growth, such as occurred during the great depressions of the 1880s or the 1930s. For when rising capital/output ratios and falling profit rates cause the rate of investment to shrink at some critical speed (or below some critical level) the fall in income generated in the investment-goods industries will react unfavourably on the level of demand in the consumption-goods industries, causing a cumulative process of contraction in incomes, investment and employment.

The mechanics of our model are thus consistent both with minor fluctuations in growth rates and with major breakdowns in the process of growth, involving heavy unemployment and temporary stagnation. If the latter occurs, net investment might even become negative, so that eventual revival will be facilitated by the gradual erosion of capital as well as by the rise in

¹ On the basis of our model, we should expect an acceleration of the rate of growth of income to be followed by an acceleration in the rate of growth of capital, so that relatively fast and relatively slow rates of growth of income and capital are correlated but the movements in the latter are more sluggish than those in the former. Hence periods of accelerating growth are likely to be periods in which the capital/output ratio is falling, and periods of decelerating growth are those in which the capital/output ratio is rising. Owing to the short-period rigidities, etc., mentioned, there may, moreover, be a rising backlog of investments during periods of accelerating growth which might cause the rate of investment to continue to accelerate for some time after the rate of growth in income had begun to slow down.

the TT' function due to the cumulative effect of unexploited new inventions. The system is liable to such major breakdowns in the wake of exploitation of major discoveries when the economy geared to a higher rate of progress needs to be "switched back" to a more moderate rate of growth; and they should be heralded by a period during which the growth in income lags behind the growth in capital, and the capital/output ratio is rising. But on the assumptions of the model presented here the occurrence of such major breakdowns is neither regular nor inevitable—the most that one can say is that the same forces that are capable of maintaining continued growth at full employment when the underlying factors making for technical change are reasonably stable are liable to break down in their operation when, as a result of instability of these factors, the situation demands a slowdown in the growth of income and capital.

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MONEY, PRICES AND THE THEORY OF INTEREST DETERMINATION¹

I. INTRODUCTION

THE Keynesian-classical debate produced substantial agreement on the comparative statics of interest theory. Saving and investment, the classical determinants of interest, were joined with the supply and demand for money—the Keynesian variables—in a general system in which either pair of schedules could determine the long-run rate of interest. Under conditions of full employment, price flexibility and linear homogeneous spending functions, saving and investment are fixed. They determine a natural rate of interest to which the liquidity market must conform. But the liquidity market plays a more strategic role in fixing the interest rate if resources are unemployed. The demand for money determines the quantity of money available for spending, which, in turn, generates real income, the level of saving and the rate of interest.²

There is much less unanimity, however, on the dynamics of interest determination. Indeed, there are at least three widely held views of the mechanism by which movements in the market rate of interest occur. The neo-Keynesian³ typically argues that in the time interval relevant for dynamic analysis the large stock of existing assets swamps increments to the

¹ I would like to express my gratitude to Sir Dennis Robertson, Phillip Cagan (Chicago) and David Meiselman (National Bureau of Economic Research), all of whom have been extremely generous in their efforts to improve the article's content and style. Eugene Lerner (Federal Reserve Bank of Chicago) criticised an earlier draft. Lloyd Metzler and Lloyd Mints (both of Chicago) have provided guidance and criticism over a long period of time.

² See the authoritative summary and analysis of the debate by Franco Modigliani in "Liquidity Preference and the Theory of Interest and Money," *Econometrica*, January 1944, pp. 45–88 (reprinted in *Readings in Monetary Theory*, ed. by F. A. Lutz and L. W. Mints (Philadelphia, 1950), pp. 186–239). The major integrator of the old and the new, and himself a formulator of the new, was D. H. Robertson in "Some Notes on Mr. Keynes' General Theory of Employment," *Quarterly Journal of Economics*, November 1936, pp. 168–91; "A Survey of Modern Monetary Controversy" in *Essays in Monetary Theory* (London, 1940), pp. 133–53 (reprinted in *Readings in Business Cycle Theory*, ed. by G. Haberler (Philadelphia, 1944), pp. 311–29); and "Mr. Keynes and the Rate of Interest" in *Essays in Monetary Theory*, *ibid.*, pp. 1–38 (reprinted in *Readings in the Theory of Income Distribution*, ed. by W. Fellner and B. F. Haley (Philadelphia, 1946), pp. 425–60). Significant contributions were also made by J. R. Hicks in "Mr. Keynes and the Classics; A Suggested Interpretation," *Econometrica*, April 1937, pp. 147–59 (reprinted in *Readings in the Theory of Income Distribution*, *op. cit.*, pp. 461–76); Oscar Lange in "The Rate of Interest and the Optimum Propensity to Consume," *Economica*, February 1938, n.s., pp. 12–32 (reprinted in *Readings in Business Cycle Theory*, *op. cit.*, pp. 169–92); E. S. Shaw in "False Issues in the Interest-theory Controversy," *Journal of Political Economy*, December 1938, pp. 838–56; F. A. Hayek in *The Pure Theory of Capital* (London, 1941), Chapters 26 and 27; and Arthur Smithies in "The Quantity of Money and the Rate of Interest," *Review of Economic Statistics*, February 1943, pp. 69–76.

³ "Neo-Keynesian" has reference to present-day followers of Keynes' *General Theory of Employment, Interest, and Money* (New York, 1936).

supply and demand for securities resulting from current flows of saving and investment.¹ This is the explicit basis for the assertion that saving and investment do not directly influence the rate of interest. Regardless of the equilibrium determinants, therefore, the direct function of driving the interest rate from one level to another must be attributed to other variables. There are two views in this regard:

(1) Metzler² and Patinkin³ place causal emphasis on the price level. An excess of total demand over output, for example, raises commodity prices and reduces the real value of cash balances. If liquidity demand is negatively sloped with respect to the interest rate, the public now considers its supply of cash to be inadequate at the prevailing rate of interest. The community therefore offers securities for sale in an effort to acquire cash. But the only result is that security prices fall, or interest rates rise, until the public is willing to hold the reduced quantity of real balances. Patinkin defines the real supply and demand for liquidity in money units, in terms of which there is a different liquidity demand schedule corresponding to each level of prices. Accordingly, a decline in real cash balances causes an upward shift in the demand for money.

(2) The most prevalent viewpoint holds that income, rather than the price level, is the initiating variable. A rise in investment, for instance, raises money income, which raises the "demand for money" and so the rate of interest. Keynes originally defended the doctrine in answer to Robertson,⁴ but the argument is implicit in the *General Theory*.⁵

¹ This point of view seems to originate in Keynes' *Treatise on Money*, Vol. I: *The Pure Theory of Money* (London, 1930), 249. See also: Hugh Townshend, "Liquidity-Premium and the Theory of Value," *Economic Journal*, March 1937, pp. 157-69; T. Scitovsky, "A Study of Interest and Capital," *Economica*, August 1940, n.s., p. 296; L. R. Klein, *The Keynesian Revolution* (New York, 1947), p. 123; B. F. Haley, "Value and Distribution," in *A Survey of Contemporary Economics*, Vol. I, ed. by H. S. Ellis (Philadelphia, 1948), p. 41; L. A. Metzler, "Wealth, Saving, and the Rate of Interest," *Journal of Political Economy*, April 1951, pp. 102 and 115; H. G. Johnson, "Some Cambridge Controversies in Monetary Theory," *Review of Economic Studies*, 1951-52, No. 2, p. 92; and T. Balogh, "Dangers of the New Orthodoxy," *The Banker*, June 1956, p. 351.

² *Ibid.*, pp. 104-5 and 110.

³ D. Patinkin, "Keynesian Economics and the Quantity Theory," in K. Kurihara, ed., *Post-Keynesian Economics* (New Brunswick, 1954), pp. 138, 139, 143 and 148.

⁴ Robertson, "Some Notes on Mr. Keynes' General Theory of Employment," *loc. cit.*, pp. 180-3, and Keynes, "The General Theory of Employment," *Quarterly Journal of Economics*, February 1937, p. 210.

⁵ *Op. cit.*, pp. 171-2, 197, 199, 248-9. In each of these passages Keynes says that a rise in income raises liquidity preference. With a fixed stock of money, the higher liquidity demand must raise the rate of interest, given Keynes' own assertion (p. 167) that liquidity supply and demand are made, to my knowledge, in the *General Theory*. It remained for Robertson to draw that acknowledgment out of Keynes.

This view of interest determination is also advanced by Lange, *op. cit.*, pp. 17-18; Scitovsky, *op. cit.*, pp. 302-3 and 308; A. P. Lerner, "Interest Theory—Supply and Demand for Loans or

The neo-classicist, finally, ignores considerations as to old securities or other impediments, and insists that:

(3) Increments in saving and investment act directly on the market rate of interest.¹

In this paper I will construct a model, representing the Keynesian-classical synthesis, from which the process of adjustment linking different levels of the interest rate can be deduced. This model, described in Part II, integrates the stock-flow capital-market analysis of Scitovsky,² Clower³ and others⁴ with a stock-flow analysis of the supply and demand for money. Within this framework Part III describes the impact of an open-market operation by the central bank, and the path by which the system returns to equilibrium. Two equilibrating mechanisms with respect to the interest rate emerge: a "transfer effect" and a "wealth effect." Part IV analyses shifts in saving and investment, and Part V qualifies the analysis for a model not distinguishing active and idle balances. The case of underemployment is discussed in Part VI, and the three viewpoints of interest determination described above are critically examined in Part VII. In this final section I shall argue that the first neo-Keynesian position is valid only within a model that divides money into active and idle portions. I shall demonstrate that the second neo-Keynesian explanation involves a serious confusion in the causal relation between money and income. I shall conclude by showing that saving and investment can act directly upon the interest rate, in spite of a large existing stock of securities.

Supply and Demand for Cash?" *Review of Economic Statistics*, May 1944, p. 91; Mabel F. Timlin, *Keynesian Economics* (Toronto, 1942), p. 156; James Tobin, "Liquidity Preference and Monetary Policy," *Review of Economic Statistics*, May 1947, p. 126; Alvin H. Hansen, *Monetary Theory and Fiscal Policy* (New York, 1949), pp. 81-2; H. G. Johnson, "Some Cambridge Controversies in Monetary Theory," *op. cit.*, pp. 98, 99 and 100; and others.

¹ The adherents to this position include Robertson, "Some Notes," *loc. cit.*, pp. 176-8, and "Mr. Keynes and the Rate of Interest," *loc. cit.*, pp. 18-19; R. S. Sayers, *Modern Banking*, 3rd ed. (Oxford, 1951), Chapter 10; E. S. Shaw, "False Issues in the Interest-theory Controversy," *op. cit.*, pp. 846-50; Hayek, *op. cit.*, Chapter 26; Modigliani, *op. cit.*, pp. 72-3; L. W. Mints, *Monetary Policy for a Competitive Society* (New York, 1950), pp. 33 ff.; A. C. Pigou, *Employment and Equilibrium*, 2nd ed. (London, 1949), pp. 223-9, and Keynes' "General Theory" (London, 1952), Chapters 10 and 11; Jacob Viner, "Mr. Keynes on the Causes of Unemployment," *Quarterly Journal of Economics*, November 1936, pp. 147-67; F. H. Knight, "Unemployment: And Mr. Keynes's Revolution in Economic Theory," *Canadian Journal of Economics and Political Science*, February 1937, pp. 100-23; N. Kaldor, "Money Wage Cuts in Relation to Unemployment: A Reply to Mr. Somers," *Review of Economic Studies*, June 1939, pp. 232-5; and H. M. Somers, "Monetary Policy and the Theory of Interest," *Quarterly Journal of Economics*, May 1941, pp. 488-507.

² Scitovsky, *op. cit.*

³ R. W. Clower, "The Dynamics of Investment," *American Economic Review*, March 1954, pp. 64-81; and "Productivity, Thrift and the Rate of Interest," *Economic Journal*, March 1954, pp. 107-15.

⁴ See Kaldor, *op. cit.*, and G. Horwich, *Open Market Operations, the Rate of Interest, and the Price Level* (University of Chicago dissertation, March 1954), Chapters 1 and 3.

II. THE MODEL

A closed economy may be viewed in the aggregate in terms of the factor, output and existing-asset markets. Each of these will be described.

The factor market consists in the supply and demand for all productive agents. We shall assume that this market independently determines a level of output perpetually employing all resources. In the labour market supply is accordingly a function of the real wage, and money wages are perfectly flexible. Taking full-employment output as fixed, we can hereafter ignore the factor market, limiting the analysis to the markets for current output and existing assets.

The output market is the supply and demand for finished goods and services. The supply may be classified into consumer and investment goods.

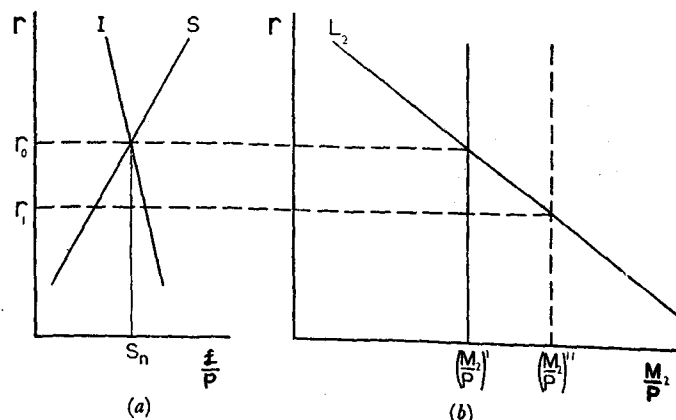


FIG. 1

In fact, since total output is constant, the only non-monetary decision made in this market is the division in production between the two types of goods. But let us first make explicit the role of money. Aggregate demand is the product of the quantity of active money, M_1 , and its income velocity, V_1 . The demand for active money, L_1 , follows the classical monetary theory in which each individual holds a constant ratio of cash to money income. If Y is total money income, M_1/Y equals $1/V_1$, which is akin to Marshallian k . Given M_1 , V_1 and real output, y , the general price level, P , equals $\frac{M_1 V_1}{y}$.

We define saving as unconsumed income. In Fig. 1 (a) the S schedule indicates the monetary amounts of saving forthcoming out of current full-employment income during a given time interval. S represents intended quantities, and in that sense is a positive function of the interest rate, r . Although output is assumed fixed, we shall note that saving and real income

are also positively related. A complete model requires an explicit position on the desired disposition of savings. Accordingly, we define saving as a demand for real capital. Assuming, further, that the claim to capital is a marketable security, saving becomes a demand for securities. One would expect saving, in reality, to be allocated between cash and non-cash assets. But the assumption of some hoarding out of current income would complicate the model considerably without altering the basic argument.

The I curve in Fig. 1 (a) is the familiar investment schedule. For a given time interval, I shows the demand for investible funds as a downward function of the interest rate. We shall assume that all financing is carried out through the issuance of securities in an impersonal market, and that entrepreneurs immediately spend the proceeds on capital goods. I is thus the supply of new securities. Both S and I in real terms are independent of movements in money income for which output is constant. We shall therefore express saving and investment in constant commodity prices.

The existing-asset market is the supply and demand for the community's wealth, produced or issued in the past. The supply consists in two types of assets—first, real idle money, of which the quantity is M_2/P , and second, securities representing all capital units. If M is the total supply of money, $M_2 = M - M_1$. The M_1 balances are excluded from consideration in this market, since their only use is in facilitating the flow of income. We shall simplify the model by supposing that all capital units are identical, as are the securities corresponding to them. We shall suppose, too, that the securities are perpetuities of constant risk and are independent in real value of the price level. The instruments meeting these requirements are equities and consol-type debt, whose interest payments are tied to the price level by "escalator" clauses. If X is the aggregate fixed income from real capital, then S_n , the total value of securities, is X/r .

For a given stock of wealth, we need discuss either the demand for cash or the demand for securities, since one determines the other as a residual from total wealth. Accordingly, the demand for real idle balances, L_2 , is drawn in Fig. 1 (b) as an inverse function of the interest rate. We shall assume that any shifts in L_2 or the demand for existing securities occur instantaneously.

A final point regarding the existing-asset market needs to be made explicit. Since asset demand is derived from total wealth, independent changes in wealth must impinge on the existing demand for money, securities or both. A rise in the price level, for example, destroys wealth by devaluing idle balances. Will the public respond by reducing one or both of its asset-demand schedules? In the absence of empirical evidence on this question, we shall make two assumptions: (1) The demands for *both* types of asset shift in response to *any* independent change in wealth. (2) An independent movement in wealth is allocated between the asset-demand schedules as follows: each schedule receives a relative share of the total movement equal

to the ratio of the existing quantity of the particular asset to total wealth. For example, suppose that securities are 90% of wealth. A loss of £100 in the stock of real cash through inflation would result in leftward and parallel movements of both demand schedules, L_2 shifting by £10, and security demand, expressed in real monetary units, by £90. The first assumption can be justified *a priori* by reference to a map of curves of indifference between cash and security holdings. We are assuming that a parallel shift in the budget line results in a corresponding shift in the amounts of both assets desired. If, however, the community holds considerably more securities than cash—as would a modern industrial society—then, by the second assumption, security demand will experience most of any wealth-determined shift. The liquidity curve in such an economy will not move a great deal on this account.

The dependence of asset demand on total wealth violates the usual assumption of independence between supply and demand schedules. But this is not surprising, since the market consists in only two commodities—cash and securities. In traditional price theory an uncompensated change in the supply of a single commodity is unlikely to alter significantly the total budget or any single demand schedule. In the existing-asset market this is obviously not so.

In Fig. 1 the stock and flow markets are in joint equilibrium at interest rate r_0 . This means that S_n (or its quantity-of-capital equivalent) is added periodically to both the quantity demanded and the existing stock of capital. *Ceteris paribus*, therefore, such a rate of interest remains constant over time. But what determines the rate of interest? Saving and investment are given exogenously to this model. Their equilibrium rate of interest is a unique and constant value to which the existing-asset market must conform. And if liquidity holders are concerned, as rational beings will be, with the purchasing power of their cash balances, the natural rate of interest will be imposed on this market by appropriate values of both nominal idle money and the price level. *I.e.*, for a fixed money supply, there will be some division between M_1 and M_2 such that the resulting price level gives M_2 a real value exactly equal to that demanded at r_0 . We noted on p. 629, however, that L_2 is not really independent of the price level—and neither, for that matter, is the stock of capital. The allocation of money between idle and active uses strikes deeper into the system than is immediately apparent.

Rather than dwell on the static equilibrium, let us turn to the process by which the natural and market rates of interest are brought to equality following a monetary disturbance. A description of the time path between equilibria will convey the substance of interest and price-level determination much more readily than would a detailed consideration in static terms. Such an account, though founded on static relationships, will also provide the framework for a short-run dynamic theory of interest and prices.

III. A MONETARY DISTURBANCE

Suppose that the central bank, the only money-creating agency, decides to purchase securities from the private sector. We shall assume that the purchase is executed instantaneously, so that we can isolate the various steps in the adjustment process. This limits the bank to a purchase of old or existing securities, since, in a very brief interval, the new securities market is non-existent. The bank executes the purchase by bidding up security prices, thereby lowering the rate of interest. At higher prices asset holders relinquish some of their securities, replacing them with new idle balances provided by the bank. This is shown in Fig. 1 (b), where the interest rate and idle balances are, respectively, r_1 and $(M_2/P)'$ after the operation, as compared with r_0 and (M_2/P) before the purchase. Since an adjustment in stocks has taken place, the lower market rate of interest tends to endure beyond the bank's departure from the market.¹

What are the forces driving the interest rate back to r_0 —the equilibrium natural rate? In addition, can we anticipate an impact of the monetary injection on the price level? The new cash is initially held on wealth account, but are there forces converting these balances to a demand for goods and services? ² Consider a subsequent period during which the S and I schedules in Fig. 1 (a) are relevant. At r_1 , intended investment exceeds intended saving. But neither the reduction in desired saving nor the increase in the quantity of investment demand, in themselves, entail an addition to the supply of active balances. Savers, in response to the lower interest rate, divert expenditures from new securities to consumption goods, merely rechanneling active money from one sector of the income flow to another. Entrepreneurs, on the other hand, express their greater investment demand by increasing the supply of new securities. However, in the face of a declining demand by savers, the new issues tend to fall in price. But

¹ If the bank remains in the market for some interval of time, then new securities will be available along with the old. The new issues will consist in additional securities offered by entrepreneurs in response to the lower rate of interest, plus securities which had been going to current savers who have moved into consumption goods. Such security purchases will lead to a direct increment in active balances and the price level, and will furnish no tendency to a lower rate of interest after the operation is completed. Cf. Robertson, "Some Notes," *loc. cit.*, p. 178. Transactions in new securities only is the "classical" or Wicksellian view of banking operations. In particular, see Wicksell's *Lectures on Political Economy*, Vol. II (London, 1935).

² We must assume that the monetary authority returns to the community the earnings on its new security holdings. Otherwise, both income and the money supply will fall continuously (see Metzler, *op. cit.*, p. 109, n. 15). The simplest course would be the reduction of personal income taxes, since no repercussions on asset demand and the interest rate would follow. If property taxes are lowered, wealth holders would enjoy a capital gain on securities equal to the bank's security purchase. This would increase both liquidity and existing-security demand. To the extent that security demand rises less than does the new "supply," asset holders move out of securities into cash. This drives the rate of interest up, until supply and demand are again equal. But if the increase in security demand is substantial—as it may well be—the interest rate will not rise much in response to the tax relief.

asset holders cannot permit new securities to bear a higher return than existing ones. An arbitrage movement aimed at equalising their prices is initiated, and the public shifts from old to new securities. As they do so, the general market rate of interest rises, because security holdings cannot be reduced in the aggregate. The rise in the interest rate, in turn, creates a willingness to hold the excess new securities in addition to, and not merely in replacement for, existing ones.¹ In fact, since the excess securities are themselves the cause of these events, the existing-asset market must absorb all that are forthcoming in any period. The significance for the price level is the fact that excess new securities replace idle money, which is expended against them in the arbitrage operation. These funds are swept up by entrepreneurs, who now have at their disposal balances not previously in the income stream. In the absence of offsetting leakages the price level rises.²

Let us name this equilibrating tendency in the interest rate, which results from the conjoining of stock and flow markets, the *transfer effect*. It is simply the direct impact of excess investment demand on the market rate of interest. The subsequent increase in the supply of investible funds is simultaneously a reduction in idle money holdings. In terms of a securities market, the quantity of new securities added to the existing stock in the period following the bank's purchase was greater than the increment to demand. The process of aggregation thereby lowers the equilibrium price.³ An excess of new security supply over demand will continue to be added to the existing-stock schedules until the market and natural rates of interest are equal.⁴

A second upward tendency in the interest rate emerges later when the added flow of active balances (due to the transfer) drives the commodity price level up, reducing the real value of idle money held. This constitutes a loss of disposable wealth in the eyes of the community and leads, on our assumptions, to a diminished (real) demand for both securities and idle cash.

¹ We assume that excess new securities of any period are only a fraction of the number purchased by the bank. The interest rate therefore climbs gradually to its former level. As the interest rate rises, it will reduce the excess supply of securities—both by curtailing the volume of investment and by stimulating saving. If the demand for securities out of current saving rises during the flotation interval entrepreneurs tap money directly from the income stream.

² Leakages occur when cash flows from the income stream to idle balances. One possibility is that inventories fall during the inflation, forcing entrepreneurs to retire outstanding securities (receipts) to the idle realm. In general, if entrepreneurs fail to realise their capital expenditures in real terms, they might retire outstanding securities and deactivate cash balances. Also, any increase in the savings schedule would increase cash hoards (see p. 635 below). But such leakages can only be temporary, since real saving is assumed to be fixed.

³ Cf. Clower, *op. cit.*, Kaldor, *op. cit.*, and Horwich, *op. cit.*

⁴ Keynes' *Treatise* (*op. cit.*, pp. 226-7) contains a reference to new security flotations as the link between banking operations and the price level. Robertson ("Some Notes," *loc. cit.*, pp. 176-8) appears also to describe banking policy in these terms. And more recently, in "More Notes on the Rate of Interest," *Review of Economic Studies*, 1953-54, No. 2, p. 137, he chided Patinkin for overlooking the rise in the supply of bonds as the mechanism restoring a displaced interest rate.

The decline in the demand for money is less, therefore, than the total loss of real balances, so there remains a net reduction in the real supply of idle money. At the prevailing rate of interest, asset holders move out of securities into money in an effort to replenish the cash deficiency. The attempted mass liquidation of securities cannot fail to raise the market rate of interest, however, and in doing so, it reconciles asset holders to the lower quantity of real balances. We shall designate this additional force on the interest rate the *wealth effect*.¹

The process of adjustment consists, thus, in a constantly falling real idle money supply in response to both nominal transfers and movements of the

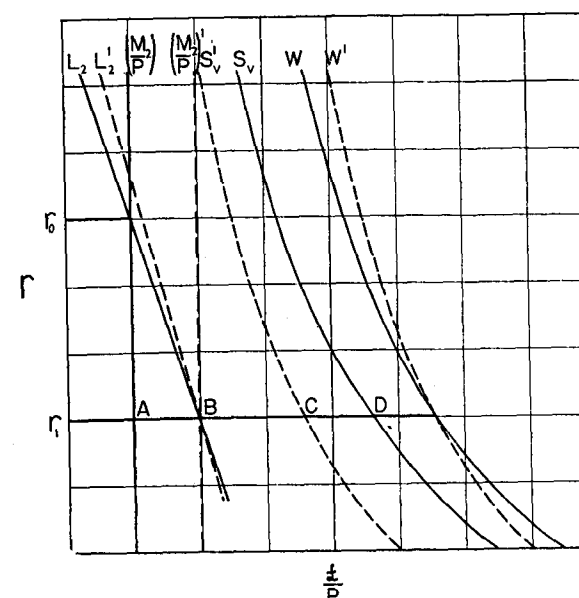


FIG. 2

price level. The interest rate rises until it is once again at r_0 . At that point intended saving and investment are equal, and there is no further inducement to transfers of idle balances or movements in the interest rate and the price level.

It appears that in the final equilibrium L_2 will lie to the left of its pre-operation position, owing to leftward movements during the inflation. If money is a small proportion of asset holdings, the total shift in L_2 will not, by assumption, be significant. But whatever the response of L_2 to changing wealth, there are compensating forces tending to shift that schedule to the right. This can be shown by reference to Fig. 2, where the wealth components, measured in pounds of constant purchasing power, are plotted as

¹ In Fig. 1 (b) the wealth effect would be shown as a decline in $\frac{M_2}{P}$, accompanied by a smaller leftward shift in L_2 . The equilibrium interest rate in the liquidity market therefore rises.

functions of the interest rate. S_0 , the total value of existing securities held by the public, is drawn as a rectangular hyperbola in r and S_0 . L_2 and $\frac{M_2}{P}$ are the demand and supply of real idle money, while W , the total wealth function, is the horizontal sum of S_0 and M_2/P . The pre-operation wealth market is represented by unprimed solid-line schedules, while primed broken-line schedules are those prevailing immediately after the security purchase. r_0 is the natural rate of interest, and r_1 is the rate at which the purchase is executed. CD is the reduction in the value of securities held by the public at r_1 . AB , which equals CD , is the money expended against securities by the central bank. But the lower ratio of securities to cash alters the functional relation between total wealth and the rate of interest. Varying interest rates react on the value of wealth by imposing capital gains and losses on securities. After the purchase, interest rates above r_1 reduce the value of a smaller portion of wealth. Thus, the new wealth function, W' , lies to the right of the old one. At interest rates below r_1 , fewer securities are on hand to enjoy the capital gains, and so W' falls to the left of W . At r_1 the two wealth functions coincide, since the bank exchanges money for an equal value-amount of securities.

Such a rotation in the wealth function must produce sympathetic, though lesser, rotations in each of the asset demand schedules. Accordingly, L_2 rotates clockwise through r_1 . But the adjustment process partially reverses this rotation by increasing securities and reducing idle balances. The higher security-cash ratio creates, conversely, counterclockwise rotations in L_2 . But the latter rotations cannot fully offset the initial one, since the transfer adds fewer securities to wealth than are taken by the bank. Part of the return of the interest rate is due to the wealth effect, whereas its downward displacement is due entirely to a security purchase. On net, therefore, L_2 is steeper than before the disturbance, and farther to the right at interest rates near r_0 . The rotational tendencies in L_2 may thereby counterbalance its leftward shifts in the range of the natural rate.

IV. SAVING AND INVESTMENT

The model of Part II can be readily applied to the case in which a movement in saving or investment is the initiating disturbance. For this purpose, let us again assume full-employment income and the absence of a private banking system. Consider, first, a shift in investment, the supply and demand for money remaining fixed. An increase in investment is an increment to the supply of new securities, which flows on to the existing-asset market. After depressing security prices, the excess supply is exchanged for idle balances.¹ The transfer swells the stream of income and

¹ The increase in interest immediately induces some additional saving, reducing the purchases of new securities by asset holders.

raises the price level, which creates a wealth effect on interest. The rate of interest rises until intended S and I are equal at a higher level. In equilibrium the interest rate, M_1/M_2 , total V , and the price level are also higher.¹

A reduction in investment creates an excess demand for securities by savers. Since the supply of new securities has fallen, savers bid up the prices of existing issues. But as old securities are purchased, we have leakages from the income stream into the stock of idle balances. Complementing the transfer effect on interest is the subsequent price-level decline and wealth effect. Equilibrium consists in a lower interest rate and reduced levels of saving, investment, velocity and commodity prices.

A reduction in saving is merely a diversion of funds from new securities to consumer goods. But the excess supply of new securities raises the rate of interest and activates idle balances by the customary arbitrage operation. Commodity prices rise and the interest rate continues to climb until I equals the lower quantity of saving.

The analysis of an increase in saving is identical to that of a reduction in investment. The outcome differs only in the equilibrium level of investment which rises in this case, instead of falling.²

V. A NON-DICHOTOMISED MONEY SUPPLY³

Some writers object to the division of money into active and idle components.⁴ They argue that it is not a necessary theoretical tool, but serves merely to dramatise phenomena having an exact counterpart in the average velocity of a non-dichotomised money supply.⁵ Is the dichotomy crucial to the analysis? Does it imply a different adjustment process than would a properly constructed non-dichotomised system?

The foregoing analysis can, in fact, be expressed in terms of a money

¹ Robertson, in "A Survey of Modern Monetary Controversy," *loc. cit.*, pp. 134-5, refers to the activation of idle money in response to a higher interest rate offered by entrepreneurs. Chapter 10 of Sayers' *Modern Banking*, *op. cit.*, is an excellent account of the direct impact of investment on the interest rate, and the ensuing transfer of idle balances to the income stream. First published in 1938, this work is pre-*General Theory* in spirit. Sayers holds firm to traditional interest theory, but at the same time he captures the essence of liquidity preference (L_2), which is to extend to investment a share in the determination of income as well as of interest. His acknowledgment to the *Treatise* is, I think, too generous. Hayek's description (*op. cit.*) of the impact of investment on liquidity and income is also very lucid.

² Cf. also Robertson, "Some Notes," *loc. cit.*, pp. 187-9; "Alternative Theories of the Rate of Interest, II," *Economic Journal*, September 1937, p. 435; "Mr. Keynes and the Rate of Interest," *loc. cit.*, pp. 18-19; Kaldor, *op. cit.*, p. 234.

³ I am particularly indebted to Phillip Cagan and David Meiselman for criticisms of this section.

⁴ See W. S. Salant, "The Demand for Money and the Concept of Income Velocity," *Journal of Political Economy*, June 1941, pp. 405-6; and H. M. Somers, *op. cit.*, p. 503.

⁵ The objection to idle versus active money is sometimes based on its elusive statistical character—it has so far defied identification and measurement. But this consideration is no more relevant than it is when applied to the demand, supply and indifference curves of partial analysis. No one insists—or ought to insist—that the usefulness of the central tools of economic analysis depends on their precise quantification.

supply, the units of which are not functionally specialised. But two conditions must be met by the non-dichotomised model: (1) the velocity of money varies directly with the interest rate; *i.e.*, the general public turns its balances over more rapidly at higher than at lower interest rates; (2) increments in saving and investment exert, as before, a direct impact on the market rate of interest. In Pigou's *Keynes's "General Theory,"* for example, a rise in investment raises the interest rate which raises velocity and money income.

The analysis in terms of our own framework is more complex. In order to see the process clearly, suppose that the "public" excludes entrepreneurs who, like the central bank, stand outside the main stream of economic activity. Consider, again, a rise in investment expenditures financed by issuing securities. The excess new issues of a given period raise the rate of interest, which elicits two reactions from the community: (1) on wealth account the public wants to hold more securities and economise in the use of cash balances—*i.e.*, to carry on a given volume of expenditures with lower average balances; (2) on income account the public wants to consume less and save more. Thus, the total demand for securities rises both as a result of additional quantities of saving and the drawing down of money balances. The transfer of cash from consumption expenditures to saving exerts a depressing influence on the price level. On the other hand, the drawing down of cash balances does not have any tendency to lower commodity prices, since the velocity of remaining balances rises to compensate the loss. Thus, if entrepreneurs were to hoard the proceeds of security sales, the price level would drop less than proportionately to the total transfer of balances. But, in fact, entrepreneurs soon respond borrowed funds, and prices rise proportionately. Since the price level tends to fall only in response to the loss of cash on income account, while it rises in response to the expenditure of the total transfer, commodity prices on net will increase.

The crucial difference between this account and that of the dichotomised model is the absence of a wealth effect on interest in the non-dichotomised system. The wealth effect fails to materialise in the latter model because the rise in prices has no impact on real balances. In the eyes of the public the reduction in real cash occurs via the transfer, during which money balances are exchanged for securities issued by entrepreneurs. The entire transaction is exactly analogous to a continuing open market sale by the central bank. Apart from capital losses imposed on existing securities by the higher interest rate,¹ the public gains in securities what it loses in cash. When entrepreneurs return the borrowed money via capital expenditures, money and prices rise equally, leaving intact the real value of

¹ The effect of capital losses resulting from a higher interest rate is already incorporated in our schedules. One of the likely reasons that the liquidity function is negatively sloped is the fact that total wealth is also a declining function of the interest rate (see Fig. 2 above).

cash balances held by the public. Thus, we may compare the final stage of adjustment to a fiscal deficit, financed by printing money. The ensuing rise in the price level is a reflection of additional money holdings, and has no impact on wealth or the interest rate.¹ In the dichotomised model, on the other hand, the inflation following the transfer creates an unintended devaluation of idle balances that are isolated from the income stream. Since the real value of active money is unaltered by nominal increases, the loss of real idle balances is a net reduction in wealth which reacts on the demand for assets and the rate of interest.²

Whether cash is, in fact, dichotomised is an empirical question beyond the reach of *a priori* analysis. Ultimately the choice of models will depend on their predictive power. The point of this discussion is that the adjustment process contains a wealth effect if, and only if, the money supply is dichotomised.

VI. UNDEREMPLOYMENT

Let us return to an open-market purchase in the dichotomised model. We shall assume, however, that labour is unemployed, and that output, as well as prices, can respond to aggregate demand. The operation lowers the market rate of interest and increases idle balances. The quantity of desired investment rises above saving, and excess new securities at once raise the interest rate and activate idle funds. The increase in expenditures raises employment, output and real saving. Thus, the natural rate of interest falls, and eventually meets the market rate at some intermediate point. If the price level also rises, the wealth effect contributes to the upward course of the interest rate. If money is not dichotomised, the adjustment is essentially the same, except that the wealth effect, in any case, is absent.

¹ We can express the various stages algebraically as follows. The pre-disturbance equilibrium in terms of the equation of exchange is $M_0 V_0 = P_0 T$. Then, investment demand rises, and during some finite period entrepreneurs borrow an E quantity of cash balances, of which E_w is taken from wealth holders and E_s from current savers. If V_s is the average velocity of the balances withdrawn from savers, then total payments and receipts will fall on this account by $E_s V_s$. Assuming that velocity rises to, say, V_1 , offsetting the effect on payments of the loss of E_w balances, we have at this stage, $(M_0 - E) V_1 = P_0 T - E_s V_s$. Finally, entrepreneurs "return" the borrowed funds, raising total payments by $E V_1$. The final equilibrium is thus $M_0 V_1 = P_0 T - E_s V_s + E V_1$. The value of money directly before and after the entrepreneurial injection is $\frac{M_0 - E}{(P_0 T - E_s V_s)/T}$ and

$\frac{M_0}{(P_0 T - E_s V_s + E V_1)/T}$, respectively. In order to show that these two terms are equal, substitute $V_1(M_0 - E)$ for $P_0 T - E_s V_s$ in both denominators.

² Before the disturbance we have $M_1 V_1 = P T$, where the subscript, 1, refers to active balances. If ΔM_2 is the quantity of idle balances converted into active money, the final equilibrium is $(M_1 + \Delta M_2) V_1 = P' T$. The real value of all balances before the disturbance is $\frac{M}{P} = \frac{M T}{M_1 V_1}$, where $M = M_1 + M_2$. In the final equilibrium real balances are $\frac{M}{P'} = \frac{M T}{(M_1 + \Delta M_2) V_1}$, which is clearly a smaller quantity.

VII. ALTERNATIVE THEORIES RECONSIDERED

(i)

We are now prepared to examine critically the three views of interest determination described in Part I. The first neo-Keynesian position, held by Metzler and Patinkin, attributes interest movements to the revaluation of cash by the price level. This corresponds roughly to our wealth effect (see pp. 632-3). But Patinkin's view of interest determination is best discussed in the context of his total analysis of a monetary disturbance. His model will therefore be described in more detail.

Patinkin¹ aggregates the spending functions into a total demand-for goods schedule which varies directly with income and inversely with the interest rate. He is not explicitly concerned with the components of demand—consumption, or saving, and investment—although he acknowledges their existence. In the liquidity market there is a demand for real (non-dichotomised) cash balances, varying inversely with the interest rate and directly with income. He expresses this function in money units, so that it also varies directly with the price level. Although aggregate product demand is initially dependent on real cash balances, Patinkin later drops that assumption.² Employment is full, there is no banking system and in all essential respects this model is the same as mine, except that money is not dichotomised.

Patinkin analyses the following disturbance: the Government increases its public works expenditures for one period only, financing the deficit by printing new money. In terms of my framework the fiscal deficit involving money creation corresponds exactly to the second half of the adjustment process described in Part V. In fact, on p. 637 the "return" of borrowed funds by entrepreneurs in the non-dichotomised model was compared to governmental expenditure. The sequence is very simple: new money received by the community as current income, is spent on commodities whose prices rise proportionately; real saving, investment, cash, wealth and the rate of interest, are all constant, except for possible temporary deviations. However, Patinkin's account is quite different. In his own words:

"... the effect of an increase in the amount of money does not act directly through aggregate demand, but indirectly, through the liquidity-preference function. The increased holdings of money increase the demand for bonds, and thus cause the rate of interest temporarily to decline. This shifts the expenditure function upward, creating an inflationary gap, and a consequent rise in the price level. As a result of the increased price level, the demand for money shifts to the right. This eventually puts an end to the decline in the interest rate, which now begins to rise. Clearly this process must continue until the rate of interest rises once again to its original level. For at any lower rate

¹ See Patinkin, "Keynesian Economics and the Quantity Theory," *op. cit.*, pp. 125-32.
² *Ibid.*, pp. 148-9.

an inflationary gap will still exist, causing prices to rise more, and the demand for money to shift over still further to the right."³

As Patinkin observes in a previous footnote,² this analysis is adapted from p. 200 of Keynes' *General Theory*. Keynes initiated the view that an increase in money by a fiscal deficit raises income or prices only by lowering the rate of interest. Is this a valid or self-consistent proposition? As an empirical fact, additional cash flowing from a deficit is an increment to wealth and may, indeed, be expended on bonds. Since expenditures out of wealth are instantaneous, the interest rate would fall⁴ and, by assumption, aggregate demand would rise. But how is the rise in demand financed? Without further monetary injections, there are only two possibilities: a reduction in the demand for money (dishoarding), or security flotations by entrepreneurs in excess of current saving. While dishoarding is certainly a possibility, there is no *a priori* reason why spenders should coincidentally choose this moment to unload cash holdings. In fact, for Patinkin, security flotations are the only admissible source of funds, since the main conclusion of his article requires a fixed real demand for money.⁴ What then? Keynes and Patinkin conveniently assume that expenditures induced by the lower interest rate are treated by their recipients as current income, available for responding on goods and services. Thus will commodity prices rise. But this whole analysis implies rank discrimination by income earners between their sources of funds: money acquired as additional income in public-works employment is diverted wholly to the bond market; money paid out as wages by private enterprise is passed on in the purchase of current production. If Keynes and Patinkin retained their initial view of the monetary injection, they would assume that money flowing from either source is regarded as an increment to wealth, available only for security purchases. This would create an impasse in which money is forever transferred back and forth between income recipients and entrepreneurs via the bond market; the interest rate is permanently lower and the price level does not stir.

The way out of this difficulty is to acknowledge that the increase in cash resulting from the deficit is itself a rise in income, and a sufficient cause of additional expenditures on goods and services. If funds are initially treated as wealth, the liquidity market may provide a route to the price level. But this requires an explanation of why entrepreneurial injections are suddenly regarded as income rather than wealth.

Finally, Patinkin argues that the rise in commodity prices raises the

¹ Patinkin, "Keynesian Economics," *op. cit.*, p. 148.

² *Ibid.*, p. 146, n. 29.

³ If the additional money were treated as income, that part of it earmarked for savings would be turned over at the usual finite velocity, and could lower the interest rate only if the money value of investment failed to rise equally. The distinction between money as wealth and as income is thus crucial for the course of the interest rate.

⁴ Patinkin shows that an increase in money raises prices proportionately, even though the (fixed) demand for money is a function of the interest rate.

demand for money and the rate of interest. If the inflation occurs as a result of excess security flotations, then, by our previous analysis (Part V), Patinkin's non-dichotomised model precludes this source of interest movement. If the inflation is a direct consequence of the deficit, without benefit of liquidity-market causation, then prices and money move proportionately from the beginning, and real balances are unaltered. Again there is no impact of the price level on the interest rate by way of a reduction in real balances and wealth.¹

Patinkin's fundamental error is his neglect of saving and investment in the adjustment process. Granted that funds go initially to the liquidity market, an earlier assumption (*op. cit.*, p. 126 n. 20,) that the capital stock is fixed throughout the analysis is incompatible with the very possibility of an adjustment. Thus, it is not sufficient to describe the cause of inflation as an excess of expenditures over output. The analysis must also take account of underlying security issues, real capital formation and monetary transfers, all of which form the link between the liquidity market and the price level.

(ii)

The second neo-Keynesian opinion attributes interest movements to the change in the demand for money induced by income. This view will not, in general, withstand scrutiny. There is only one interpretation of the "income theory" that is logically acceptable. In that version money is dichotomised and the change in income is a change in the price level only. The "demand for money" is a demand for nominal cash which varies directly with commodity prices. Thus, the change in the demand for money corresponds to the change in the supply of real cash by which the wealth effect in our own formulation operates.² Presumably, the demand will rise or fall proportionately less than the movement in prices, owing to the change in wealth. But this is not the dynamic inter-play usually implied by the income explanation of interest. Consider, for example, the following quotations from Lange, Hansen and Tobin—in that order:

"... for the reaction of the rate of interest to these [the marginal efficiency of investment and the propensity to consume] is due to the influence which the change of income caused by them exerts upon liquidity preference."³

¹ Patinkin, *op. cit.*, p. 139, n. 20, identifies his account of movements in the interest rate—first down, then up—with the classical tradition. He cites passages in Ricardo, Mill, Marshall and Wicksell, all of which describe a similar course of the interest rate. But Patinkin and the classical writers are not writing about the same thing. The latter are concerned with a change in the money supply induced by the banking system. Then, indeed, will the interest rate initially fall, and rise later. Patinkin, on the other hand, is writing about a deficit in a bank-free non-dichotomised model. In that case the interest rate will fall only if additional cash is regarded as wealth, or if, for some reason, real saving rises above investment during the adjustment process.

² See Patinkin, *op. cit.*, p. 129.

³ Lange, *op. cit.*, p. 18.

"It is clear that productivity and thrift have very much to do with the rate of interest. A change in thrift will affect the consumption function and in this way influence the level of income; and the level of income will in turn affect liquidity preference and so the rate of interest. It is not true that an increase in the marginal efficiency of capital (caused, for example, by a higher level of technique) will have no effect on the rate of interest. An upward shift in the marginal efficiency schedule will affect the rate of interest through its effect on income, which in turn will affect the liquidity preference schedule and so the rate of interest."¹

"Similarly on this set of assumptions [*i.e.*, that the liquidity preference function is interest-elastic, and so is either saving or investment], an increase in spending without any increase in *M* can succeed in expanding income. The additional transactions demand for money will raise the interest rate, and this rise in the interest rate will induce the community to hold smaller idle balances. Greater working balances are thereby made available to support a higher money national income."²

In each case income is obviously not identified as the price level, and so we must accept at face value the terminology used. Is there some means, then, by which movements of income, whether real or monetary only, act upon the interest rate?

Suppose that a rise in money income is due to an expansion of investment activity not immediately matched by an equal increase in saving. The initiating entrepreneurs must secure additional funds either by spending given active balances more rapidly or by activating idle cash or bank reserves. In any case the increment to money income for each individual is *ipso facto* an increase in active balances received. And to bring average money holdings to the appropriate higher level, the receiving units need only continue to spend at the prevailing (and presumably unchanged) velocity. There is no further independent action that needs to be taken with respect to active or, for that matter, inactive balances. The additional transactions demand for cash is provided for by the rise in income that motivates it, and apart from the price level, there is no mechanism remaining for a direct effect on the rate of interest.³

I have argued that the rise in interest is caused directly by the rise in investment which is not self-financed. This reacts on liquidity demand and releases idle balances for expenditure. Accordingly, the rise in the supply of active money is not a consequence of the rise in income, but is rather its cause, and this is the fundamental difference between the Keynesian version and my account. In all of the quoted passages there is the clear implication

¹ Hansen, *op. cit.*, pp. 81–2.

² Tobin, *op. cit.*, p. 126.

³ The rise in transactions demand is thus a movement along the demand curve for *M*₁, expressed as a function of income. This is completely analogous to the simple case of an increase in the supply of a commodity which, through lowering price (in our case, raising income), induces a movement along the fixed demand schedule.

that the rise in income occurs, somehow, independently of the quantity of money. The increase in income generates a greater (transactions) demand for cash, which in turn raises the interest rate and depletes idle balances. The sequence is thus from higher income to higher active balances—rather than the other way around. Admittedly, productive activity may anticipate the actual receipt of cash,¹ but any impact on interest occurring thereby is only temporary, pending monetary payment. Where the pre-Keynesian neglected the impact of money on the interest rate, there is no doubt that on occasion the Keynesian loses sight of the fact that money is also a medium of exchange.²

(iii)

The entire analysis has supported the contention that changes in saving and investment react directly on the market rate of interest. Can this position be reconciled with the neo-Keynesian argument that the old securities market, by dint of superior size, dominates the new security schedules, and so the rate of interest? The quantitative comparison between new and old security markets is, in fact, an unreliable indication of the direct ability of either market to dominate the interest rate. This is because the impression of what saving and investment might do to interest depends on whether they are viewed as security or monetary schedules. For example, an increment in new security demand is also a rise in money saving whose potential impact on the interest rate may be gauged by reference to the magnitude of existing idle balances (or total balances, if money is not dichotomised). This is not to say that the entire saving increment will become idle money (or held on wealth account)—only that one may compare the rise in money saving with idle balances as an alternative means of anticipating the impact on interest. If the supply of money is dwarfed by the stock of securities, then the rise in saving promises to be much more impressive when compared with idle balances than with existing securities. Even though the increment to the security market were relatively infinitesimal, the concurrent rise in money saving could be a substantial fraction of the existing supply and demand for money. Thus, the comparison of market sizes yields contradictory evidence on the direct importance of saving and investment to the interest rate.

A more fruitful consideration bearing on the interest impact of new supply and demand is the absolute *slope* of the existing-security demand

¹ Cf. Gardner Ackley, "The Multiplier Time Period," *American Economic Review*, June 1951, pp. 350-68.

² Robertson, in "Some Notes," *loc. cit.*, pp. 187-8, and "Mr. Keynes and the Rate of Interest," *loc. cit.*, p. 19, offers the correct alternative to the second neo-Keynesian account. He attributes to an increase in saving a direct impact on the rate of interest and a subsequent lowering of income. While Robertson regards the Keynesian explanation as "misleading," he does not question its internal consistency. In "Comments on Mr. Johnson's Notes," *Review of Economic Studies*, 1951-52, No. 2, pp. 107-8, Robertson explicitly grants logical, if not empirical, plausibility to the Keynesian account.

schedule. The greater is that slope, the more effective is any increment in altering the rate of interest. The evidence that existing-security demand is, in fact, a schedule of substantial slope is as follows. The demand schedules for existing securities and money are complements with respect to total wealth, their slopes tending to mirror each other.¹ Moreover, the slope of L_2 is in general appropriate to a market the size of M_2 rather than existing securities.² If M_2 is small relative to existing securities, and L_2 is not highly elastic, the complementary security demand schedule will have an inappropriate slope—one much greater than is ordinarily found in a market of such considerable magnitude. The freedom to move between cash and securities is limited, as it were, by the preponderance of securities held. An increment to existing-security demand is added thus to a schedule of considerable slope, and the opportunities for altering the interest rate and retaining saved funds for the income stream are significantly enhanced.

(iv)

We can summarise our criticism of alternative theories by two propositions: (1) The quantity of money is the efficient agent—*i.e.*, the direct cause, in income determination. (2) Macro-static analysis cannot disregard the role of capital accumulation in the process connecting different levels of equilibrium. Both Patinkin and the Keynesian writers were guilty of detaching income from the quantity of money. For Patinkin, income could rise in response to a fall in the interest rate, but not to an increase in the money supply as such. Lange, Hansen and Tobin saw income rising in response to consumption or investment "expenditures," in terms of which the quantity of money was at most an afterthought. Nor was there any direct connection between the expenditures and security issues. Patinkin, finally, attributed interest movements to a decline in the real value of cash balances. This position could be defended only on the assumption that the stock of capital did not rise equally during the adjustment process.

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¹ The complementarity pertains to liquidity preference and existing-security demand in *value* terms; *i.e.*, the latter schedule shows the number of dollars wealth holders are willing to have embodied in securities at each rate of interest. The value schedule is constructed by taking the product of price and quantity-of-securities-demanded at each price (in our case, at each interest rate). The slopes of the total value and quantity-demanded curves are, of course, related. A very steep negatively-sloped value curve (drawn with respect to price) implies a similarly inclined demand schedule. If the value function is positively-sloping, the demand curve is very flat, though negatively inclined. The relation between L_2 and the security-demand value curve is not, incidentally, a simple 90° complementarity. The curves sum horizontally to the wealth function, which is a rectangular hyperbola removed from the origin by the value of money held (see Fig. 2 above). If L_2 increases very rapidly for low interest rates, as it well may, then, in fact, the complementarity is not far from 90°.

² See James Tobin, "Liquidity Preference and Monetary Policy," *op. cit.*, pp. 130-1, and "Monetary Velocity and Monetary Policy: A Rejoinder," *Review of Economic Statistics*, November 1948, pp. 314-17.

EXPENDITURE TAXES, IMPORTS AND GROSS DOMESTIC PRODUCT AT MARKET PRICES

This article is concerned with: (i) drawing attention to the new United Kingdom definition of gross domestic product at market prices, which first appeared in the 1954 *National Income and Expenditure Blue Book* in terms of the statistics for 1948; (ii) discussing the implications of the new definition; (iii) questioning its validity, and (iv) pointing out that with the new definition there is a small gap in the *Blue Book* statistics which needs to be filled so that the private investigator can calculate the aggregates appropriate to the new definition for years other than 1948.

I

Descriptive and analytical studies based on national-income statistics are likely to be concerned with any or all of several main national aggregates, some of which the private investigator might have to derive for himself. It would be unreasonable to expect the official statisticians to prepare estimates of every aggregate that might be of use to the private investigator, or to present the data in as many forms as there might be purposes for which it could be used. In general, the most we expect of the officials is the provision of so much detail that the user can calculate certain aggregates for himself, or rearrange the material to suit his own particular purpose. But it is desirable that a system of national accounts should conform with international practices and conventions, unless there are very good reasons justifying national idiosyncrasies or for believing that an international practice or convention is wrong. Through the efforts of the United Nations,¹ the Organisation for European Economic Co-operation² and authors of relevant articles in the academic journals, a large measure of uniformity has been achieved in the presentation of national economic accounts and in the definitions of the concepts used in such accounts. Such uniformity of practice is especially evident in terms of the definitions of the *national* and *domestic* product aggregates at market prices and at factor cost. Most economists, familiar with national-income statistics, without hesitation would: (i) define the *national* and *domestic* aggregates so that the difference between them consists of net income from abroad, and (ii) define their values at market prices and at factor cost so that their difference consists of taxes on expenditure net of subsidies.

The national-income *Blue Books* do not contain estimates of the gross national and domestic-product aggregates at market prices (with the

¹ *A System of National Accounts and Supporting Tables* (United Nations, 1953).

² *Studies in Methods*, Series F, No. 2 (1953) and No. 8 (1955), Organisation for European Economic Co-operation.

exception of 1948 in the case of gross domestic product at market prices), but they do, of course, contain estimates of these aggregates at factor cost (see Table 1 of the *Blue Books*). The difference between the *Blue Book* estimates of gross national product at factor cost (GNPf) and gross domestic product at factor cost (GDPf) consists of net income from abroad. With international practice the addition of taxes on expenditure net of subsidies to GNPf and to GDPf would produce gross national product at market prices (GNPm) and gross domestic product at market prices (GDPm), so that GNPm would also exceed GDPm by net income from abroad. Up to the publication of the 1953 *Blue Book* the official statisticians would not have quarrelled with this method of obtaining GNPm and GDPm from their values at factor cost, and evidently they still believe the method is appropriate to the *national* aggregates. For instance, in *Sources and Methods*¹ they write, "Some authorities prefer to express the aggregate national product and national expenditure at market prices. This can easily be done from the United Kingdom statistics by adding taxes on expenditure to, and subtracting subsidies from, the aggregate shown at factor cost" (p. 13). In 1953 the last sentence could also have applied to the domestic aggregates. The *Blue Book* of that year contains a new section entitled "Output and Expenditure at Constant Prices, 1946-1952" (pp. vii-x), and in the lower half of Table 1 of this section are given estimates of the components of gross domestic product at 1948 market prices. (The aggregate is actually called "Total gross domestic expenditure," but in the corresponding table of later *Blue Books*, that is the upper half of Table 12, this expression is replaced by "Gross domestic product," and the original expression is applied to the sum of the first three items of the table.) Since the estimates of Table 1 (lower half) are at 1948 market prices, the only estimate of GDPm is that of the base year. The relevant estimates for 1948, from the 1953 *Blue Book*, are presented below.

National aggregates.	£ million.	Domestic aggregates.	£ million.
Gross national product at factor cost	10,216	Gross domestic product at factor cost	10,024
+ Taxes on expenditure	2,020		2,020
- Subsidies	- 571		- 571
Gross national product at market prices	11,665	Gross domestic product at market prices	11,473

It is apparent from the above table that GNPm and GDPm exceed their values at factor cost by taxes on expenditure net of subsidies. It may also be seen that the national aggregates exceed the domestic aggregates by £192 million, which is the 1953 *Blue Book* estimate of net income from abroad.

In the 1954 *Blue Book*, however, the definition of GDPm is changed,

¹ *National Income Statistics: Sources and Methods* (Central Statistical Office, 1956).

causing the above relationships to exist no longer. So far the new definition of GDPm has attracted little attention, which is surprising since it: (i) constitutes a national idiosyncrasy; (ii) results in internal inconsistencies; (iii) appears to lack adequate theoretical justification, and (iv) cannot be calculated by the private investigator for years other than 1948.

In the remainder of this article the nature and implications of the new definition are examined, and some reasons are given for believing that its introduction was unwarranted.

II

The definitions of the relevant concepts and the relationships between them, and the inconsistencies which result from the new definition of GDPm, may be stated in terms of the following symbols.

Let C stand for total consumption expenditure at market prices (that is, consumers' expenditure and current expenditure by public authorities on goods and services);

I stand for gross investment expenditure (that is, gross capital formation) at market prices;

X stand for exports of goods and services;

Xi stand for property income received from abroad;

M stand for imports of goods and services;

Mi stand for property income paid abroad;

Te stand for taxes on expenditure;

Tn stand for subsidies (that is, negative taxes); and

Tm stand for that part of taxes on expenditure (Te) levied on imports (or on withdrawals from Bond).

With the exception of Tm, the numerical values of the above symbols appear in Tables 1 and 7 of the *Blue Books*. No estimates of Tm appear in the *Blue Books*, and this is the gap in the statistical data referred to in the introduction.

The definitions of the relevant concepts appropriate to international practice, and pre-1954 United Kingdom practice, are:

$$\text{GNPm} = C + I + X + \text{Xi} - M - \text{Mi} \quad (1)$$

$$\text{GNPf} = C + I + X + \text{Xi} - M - \text{Mi} - \text{Te} + \text{Tn} \quad (2)$$

$$\text{GDPm} = C + I + X - M \quad (3)$$

$$\text{and GDPf} = C + I + X - M - \text{Te} + \text{Tn} \quad (4)$$

Appropriate comparisons of these definitions (that is 1 with 2, 3 with 4, 1 with 3 and 2 with 4) clearly reveal the relationships already mentioned. The aggregates at market prices exceed their values at factor cost by $\text{Te} - \text{Tn}$, that is taxes on expenditure net of subsidies, and the national aggregates exceed the domestic aggregates by $\text{Xi} - \text{Mi}$, that is net income from abroad. These definitions and relationships are illustrated numerically, for 1948 and

1955, in Tables I and II. The upper section of Table I shows how GNPm and GDPm are derived, and the lower section shows how they exceed their factor-cost values by taxes on expenditure net of subsidies. Table II

TABLE I
*Derivation of Gross National and Domestic Products at Market Prices
and at Factor Cost for 1948 and 1955**
(£ million)

	1948.	1955.		1948.	1955.
Total consumption expenditure at market prices (C)	10,232	15,975	(C)	10,232	15,975
Gross capital formation (I)	1,610	3,165	(I)	1,610	3,165
			GROSS DOMESTIC EXPENDITURE at market prices	11,842	19,140
+ Exports (X) and income from abroad (Xi)	1,991 (3,892)†		+ (X)	1,991	3,892
	397 (591)				
	2,388	4,483			
− Imports (M) and income paid abroad (Mi)	2,197 (4,119)		− (M)	−2,197	−4,119
	210 (446)				
	−2,407	−4,565			
GROSS NATIONAL PRODUCT at market prices	11,823	19,058	GROSS DOMESTIC PRODUCT at market prices	11,636	18,913
− Taxes on expenditure (Te)	−2,020	−2,620		−2,020	−2,620
+ Subsidies (Tn)	573	346		573	346
GROSS NATIONAL PRODUCT at factor cost	10,376	16,784	GROSS DOMESTIC PRODUCT at factor cost	10,189	16,639

* Sources: Tables 1 and 7 of the 1956 *Blue Book*. Table 7 is used to obtain the separate estimates of the two parts of "Exports and income from abroad" and "Imports and income paid abroad." The method used to derive these national and domestic aggregates is that of the 1953 *Blue Book* and the United Nations' *Studies in Methods*, Series F, Nos. 2 and 8.

† The figures in brackets refer to 1955.

TABLE II
Net Income from Abroad and the National and Domestic Aggregates
(£ million)

	1948.	1955.		1948.	1955.
<i>At factor cost</i>			<i>At market prices</i>		
Income from abroad (Xi)	397	591			
Income paid abroad (Mi)	210	446			
Net income from abroad (Xi − Mi)	187	145		187	145
+ Gross Domestic Product at factor cost	10,189	16,639	+ Gross Domestic Product at market prices	11,636	18,913
Gross National Product at factor cost	10,376	16,784	Gross National Product at market prices	11,823	19,058

shows that the national aggregates exceed the domestic aggregates by net income from abroad.

The left-hand side of Table I closely resembles the top half of Table 1 of the *Blue Books*. The only differences are that our C and I items are given with more detail in the official table, and that property income from

(Xi) and to (Mi) abroad are shown as separate items in our table. Clearly the GNPm aggregate could be inserted in the official table in exactly the same position as it occupies in our table.

At this point it may be useful to comment on the relationship between national and domestic aggregates. The distinction between national and domestic aggregates isolates that part of income or product accruing to a country but not due to current economic activity within the domestic territory. It includes taxes paid by foreigners to the government of the domestic territory, but in the main it consists of rent, interest, profits and dividends received from overseas by residents of the domestic territory. An increase in the earnings of property owned abroad, due to increased efficiency abroad, cannot be said to be due to current economic activity within the domestic territory and, therefore, needs to be isolated from the domestic product which does result from current economic activity within the domestic territory.

In the 1954 *Blue Book* (Table 11, but Table 12 in the 1955 and 1956 *Blue Books*) GDPm is still defined as $C + I + X - M$, but M is valued to include taxes levied on imports or on withdrawals from Bond. With our terminology the new definition becomes $GDPm = C + I + X - M - Tm$. When this definition is compared with definitions (1) and (4), it is apparent that GNPm now exceeds GDPm by $Xi - Mi + Tm$, and that GDPm now exceeds GDPf only by $Te - Tn - Tm$. These results are illustrated numerically in Table III. Since, as already noted, *Blue Book* estimates of gross domestic product are only at constant factor cost or at constant market prices, the only *Blue Book* estimate of gross domestic product at current market prices is that for 1948, the base year. The question marks in the 1955 columns can be only removed when information of the value of taxes levied on imports (Tm) is made available.

It is evident, from Table III, that with the new definition of GDPm, GNPm now exceeds GDPm by net income from abroad (Xi - Mi) plus taxes levied on imports (Tm). But from Table II it is evident that GNPf exceeds GDPf only by net income from abroad. This is an illogical state of affairs, since there are now two widely differing measures for whatever is intended to distinguish a national from a domestic aggregate. There may be room for controversy on how the distinction between national and domestic aggregates should be defined, but only one definition and one numerical measure of the distinction is permissible in any single system of accounting. Furthermore, a value which includes taxes levied on imports, and which can vary with changes in the volume of imports or the rates of taxes levied on them, can hardly be a useful or reasonable measure of income accruing to a nation but not due to current activity within the domestic territory.

It is also evident, from Tables I and III, that there are now two measures of the difference between the values of aggregates at market prices and at factor cost. In Table I GNPm exceeds GNPf by taxes on expenditure net

of subsidies (Te - Tn), but in Table III GDPm exceeds GDPf only by taxes on expenditure net of subsidies and taxes levied on imports (Te - Tn - Tm). This is also an illogical state of affairs.

With the new definition of GDPm inconsistency with international practice is inevitable, but it is remarkable that the new definition was introduced in spite of obvious internal inconsistencies, or alternatively, it

TABLE III

*Derivation of Gross Domestic Product at Market Prices Using the Present Official Method**

(£ million)

	1948.	1955.		1948.	1955.
(C)	10,232	15,975			
(I)	1,610	3,165			
Gross Domestic Expenditure at market prices	11,842	19,140			
+ (X)	1,991	3,892			
- (M) †	-2,998	- ?			
GROSS DOMESTIC PRODUCT at market prices	10,835	?	GROSS DOMESTIC PRODUCT at market prices	10,835	?
+ Net income from abroad (Xi - Mi)	187	145	+ Subsidies (Tn)	573	346
+ Taxes levied on imports ‡ (Tm)	801	?	- Taxes on expenditure net of taxes on imports (Te - Tm)	-1,219	?
GROSS NATIONAL PRODUCT at market prices	11,823	19,058	GROSS DOMESTIC PRODUCT at factor cost	10,189	16,639

* Sources: Tables 1, 7 and 12 of the 1956 *Blue Book*.

† This estimate of M exceeds the estimate of M in Table I by the value of taxes levied on imports.

‡ This estimate is not obtained directly from the 1956 *Blue Book*: it is derived by deducting M of Table I from M of Table III.

is remarkable that further change was not introduced simultaneously to prevent the appearance of internal inconsistencies. Internal consistency can be secured quite easily. On the assumption that net income from abroad is a sensible measure of the difference between national and domestic aggregates, internal consistency can be secured by defining GNPm as $C + I + X + Xi - M - Mi - Tm$. So defined, GNPm would exceed the new GDPm by $Xi - Mi$, producing consistency with the difference between GNPf and GDPf, and both GNPm and GDPm would exceed their values at factor cost by $Te - Tn - Tm$. But advocates of this solution would have to justify the new definition of GNPm, and they would also have to show why $Te - Tn - Tm$ could be considered a satisfactory measure of the difference between aggregates at market prices and at factor cost.

III

Why did the official statisticians consider it necessary to change their earlier, and generally accepted, definition of GDPm by adding to $-M$ the value of taxes levied on imports? The *Blue Books* surprisingly offer no explanation at all, but a brief and inadequate explanation is given in *Sources and Methods*. There is a discussion of the relevance of valuation problems to welfare on pp. 13 and 14; a discussion of Output and Expenditure at Constant Prices on pp. 37-44, which manages to avoid explaining why imports must be valued to include taxes levied on them; and a paragraph on pp. 347-8 which gives the answer "... that the market prices of imports, as of other goods, must include any customs and excise duties which they attract, since it is the price including duty which the purchaser has to pay, and which therefore affects substitution at the margin between different commodities, whether home-produced or imported." For a more adequate explanation it is necessary to turn to two recent articles by J. L. Nicholson of the Central Statistical Office.¹

Since it is easy to come to grief in the chimerical worlds of welfare economics, it is fortunate that the new official definition of GDPm can be criticised without entering these worlds. It is in order, however, for us to observe that it is indeed a brave and surprising gesture by the official statisticians in defining what they believe to be a welfare concept and in expressing it in quantitative terms. This can be said without implying approval.² To many it has long been apparent that pure theory has produced models which postulate intricate relationships between highly idealised concepts, much in advance of the available resources of economic observation and statistical techniques necessary for verification and implementation in quantitative terms, and that this applies to national economic accounting in spite of the advances in the past decade.³ It is, for instance, still impossible to give a satisfactory definition of "maintaining capital intact" suitable for incorporation in national economic accounting and also consistent with capital theory. But if the official statisticians are to embark on an attempt to absorb welfare economics into their terrain the insoluble problems will multiply and national economic accounting will indeed become a controversial subject.

¹ "Some Problems in the Measurement of Real National Income," *Income and Wealth, Series IV*, pp. 145-66 (Bowes and Bowes, 1955), and "National Income at Factor Cost or Market Prices?" *ECONOMIC JOURNAL*, Vol. LXV, pp. 216-24, June 1955. (The same journal contains a review article by Nicholson, "The International Comparison of National Products," in which much of the argument of the other articles is repeated.)

² I see no reason for agreeing with Mr. M. H. Dobb (*ECONOMIC JOURNAL*, June 1956) that the solipsist (as he uses the word) must keep silent about national income. The various national accounting aggregates, and changes in them, may have no welfare meaning, but that does not mean that they have no meaning at all.

³ For some supporting evidence of this view see *On the Accuracy of Economic Observations*, by Oskar Morgenstern (Princeton University Press, 1950), and the author's "The Reliability of National Income Statistics," *Accounting Research*, Vol. 8, No. 3, July 1957.

To turn to the question posed at the beginning of this section, using the official terminology, why should GDPm be defined as $C + I + X - M$, with M valued to include taxes levied on imports? Gross domestic product is concerned with the product accruing to a nation as a result of economic activity within the domestic territory. In a closed economy the distinction between national and domestic aggregates disappears, since the two aggregates are identical. GDPf consists of the sum of factor incomes resulting from the production of $C + I$. Since subsidies (T_n) reduce the prices of products to the purchaser and taxes on expenditure (T_e) increase them, the value of $C + I$ at market prices (that is GDPm) is equal to $GDPf + T_e - T_n$. In an open economy some of current output is exported, but the goods and services remaining available for purchase within the domestic territory are augmented by imports. In defining GDPm, these international transactions have to be taken into account, and their values have to be measured. Some imports form a part of the value of exports, and the remainder are included in $C + I$. Expenditure on $C + I$, at market prices, constitutes *total domestic expenditure*, and includes the whole of $T_e - T_n$. But total domestic expenditure includes the expenditure at market prices on imports not included in exports, but excludes overseas expenditure on United Kingdom exports. To obtain the value of what is actually paid for GDPm, exports must be added to $C + I$ and imports must be deducted.

But how must exports and imports be valued? Both the old and the new definitions of GDPm value exports at the prices received for them by the exporting nation from the importing nation, since this measures the value of claims on foreign production earned by the exports. It seems equally reasonable to value imports at the prices received for them by the overseas supplier, since this measures their true supply price to the importing nation. With this reasoning $GDPm = C + I + X - M$, and exceeds GDPf by $T_e - T_n$. The new official definition of GDPm values imports not at their supply price to the importing nation but at the value which it chooses to attach to them by the addition of taxes levied on them. But this treatment eliminates from GDPm an equal amount of taxes on expenditure, since $C + I + X - M - T_m$ gives the same value as $C + I - T_m + X - M$. The latter formula makes it clear that the new definition of GDPm under-values what is actually paid for GDPm by the amount of T_m . *Sources and Methods*, as quoted above, argues that imports should be valued to include taxes on them, since taxes are included in the prices paid for them. One can agree that the valuation of imports at market prices should include taxes levied on them, but it is relevant to observe that imports and T_m have already been included in the formula in $C + I + X$, and that to include T_m again with negative sign appears to produce the opposite result to that intended by the official statisticians, that is the exclusion instead of inclusion of taxes falling on imports.

On the official equation $GDPm = C + I + X - M$, with M valued

to include taxes levied on imports, Nicholson remarks that the equation will not hold good "unless customs duties are included in the value of imports" because "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."¹ The truth of this proposition is not self-evident. What is being discussed is the value of gross domestic product at market prices, and market prices, in national economic accounting at any rate, include the total of taxes on expenditure net of subsidies. The value of GDP_m is a function of quantity and price. If prices rise, for any reason, so long as output does not fall by an amount offsetting the increase in prices, GDP_m must increase. For example, assume that the output of every domestic industry remains unchanged, that the levels of exports and imports remain unchanged, but that tax rates on home-produced goods are increased. Will the value of GDP_m increase? The answer is "Yes," by the amount of the increase in $T_e - T_n$. This increase will be shown as an increase in $C + I$, causing an equal increase in GDP_m. With the same assumptions, except that the increase in taxes falls on imports instead of home-produced goods, will GDP_m increase? $C + I$ will rise by the amount of the increase in $T_e - T_n$ and, since we are measuring GDP at market prices, it seems reasonable to think that GDP_m should rise by the same amount. But with the official treatment, $-T_m$ will rise by the same amount as the increase in $T_e - T_n$, so that GDP_m remains unchanged. But was the second case so different from the first case as to warrant this different treatment? That "No" is a reasonable answer may be apparent from a final example.

Assume that the output of every domestic industry remains unchanged, costs of production remain unchanged, but that changes in consumption demand cause a change in the composition of imports so that their value with taxes increases but their cost to the United Kingdom remains unchanged. What should happen to GDP_m? $C + I$ will rise by the amount of the increase in T_e (because of, and equal to, the rise in T_m), but with the official definition of GDP_m the rise in $C + I$ will not be reflected in an equal rise in GDP_m, because of the equal rise in $-T_m$. Now this seems to be unreasonable. The increase in T_m is not due to either an increase in tax rates or to an increase in the volume of imports, it is solely due to a shift in consumption. The significance of the shift in consumption, on our assumptions, is that it indicates that a higher price will be paid for a different collection of imports which cost the nation no more than the former collection of imports. It appears reasonable to think that the higher price paid in the form of taxes should be reflected in GDP_m. An alternative collection of imports) of a given volume and value of exports are valued more highly by the importing nation than the previous import earnings

¹ *Loc. cit.*, ECONOMIC JOURNAL, p. 223.

(the old collection of imports). If this is a reasonable view of the situation, then the higher valuation of the new collection of imports should be included in GDP_m, and GDP_m should be defined as $C + I + X - M$ and not as $C + I + X - M - T_m$.

IV

Though the argument is now completed, this final section may be of interest. The Central Statistical Office has very kindly supplied me with estimates of taxes on expenditure levied on imports (or on withdrawals from Bond). These are as below:

Year . . .	1948	1949	1950	1951	1952	1953	1954	1955	1956
T_m (£ million)	826	811	871	996	1,017	1,049	1,092	1,134	1,182

It will be observed that the estimate for 1948 is different from the estimate of £801 million in Table III. The Central Statistical Office writes that this discrepancy arises from the fact that the series of figures above "relate

TABLE IV
*Derivation of GDP_m, GNP_m, GNP_f and GDP_f with Current
United Kingdom Practice
(£ million) **

	1949.	1950.	1951.	1952.	1953.	1954.	1955.	1956.
(C) . . .	10,808	11,419	12,508	13,480	14,301	15,106	15,983	16,891
+ (I) . . .	1,648	1,490	2,468	2,164	2,493	2,625	3,155	3,288
+ (X) . . .	2,305	2,785	3,470	3,604	3,397	3,608	3,925	4,366
- (M) . . .	-2,410	-2,809	-4,066	-3,531	-3,442	-3,596	-4,140	-4,268
- (T _m) . . .	- 811	- 871	- 996	-1,017	-1,049	-1,092	-1,134	-1,182
GDP _m . . .	11,540	12,014	13,384	14,700	15,700	16,651	17,789	19,095
+ (X _i - M _i) . . .	162	337	217	93	163	225	160	178
+ (T _m) . . .	811	871	996	1,017	1,049	1,092	1,134	1,182
GNP _m . . .	12,513	13,222	14,597	15,810	16,912	17,968	19,083	20,455
- (T _e) . . .	-1,981	-2,060	-2,272	-2,228	-2,375	-2,485	-2,626	-2,822
+ (T _n) . . .	525	474	468	418	364	423	346	369
GNP _f . . .	11,057	11,636	12,793	13,940	14,901	15,906	16,803	18,002
- (X _i - M _i) . . .	- 162	- 337	- 217	- 93	- 163	- 225	- 160	- 178
GDP _f . . .	10,895	11,299	12,576	13,847	14,738	15,681	16,643	17,824
+ (T _e - T _m) . . .	1,170	1,189	1,276	1,271	1,326	1,393	1,492	1,640
- (T _n) . . .	- 525	- 474	- 468	- 418	- 364	- 423	- 346	- 369
GDP _m . . .	11,540	12,014	13,384	14,700	15,700	16,651	17,789	19,095

* Sources: 1949 and 1950 estimates from 1956 *Blue Book*, and estimate for 1951-1956 from the Preliminary Estimates White Paper, April 1957.
Estimates of T_m obtained from the Central Statistical Office.

to customs duties paid on imports arriving in the country—that is the Trade and Navigation figures for imports. The figure for 1948 given in the *Blue Book*¹. . . purports to relate to the customs duties payable on imports paid for in 1948—that is the Balance of Payment figures. The adjustments we made to the 1948 figures to get them on to a payments basis is very rough and we do not know what the adjustment would be for other years.”

Accepting the above series of figures at their face value, the estimates for GDP_m, with the official formula, are as in Table IV.

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¹ The estimate of T_m for 1948 is not given in the *Blue Book*—it has to be derived as in Table III.

DEPRECIATION, REPLACEMENT AND GROWTH—AND FLUCTUATIONS

IN a note published in this JOURNAL in 1955 Professor Neisser demonstrated that the state of steady exponential growth derived in my gross growth model was merely a special case and that the relevant equation had other roots besides the one resulting in steady growth.¹ He did not, however, determine whether the general solution would converge to exponential growth with the passage of time when the longevity of capital exceeded three.

My special solution was not incorrect because I assumed that the same rate of growth had existed for the preceding m years.² But it is a restrictive assumption, and it is certainly interesting to explore the general case not bound by any special initial conditions. For the sake of completeness I shall present the whole proof. The following symbols will be used (in order of appearance):

- P , annual gross national product;
- t , time in years;
- G , annual gross investment;
- R , annual replacement expenditures;
- v , gross capital coefficient;
- m , life span of capital assets in years;
- β , gross propensity to save $= G/P$;
- $a = \beta/v$;
- ρ , root of the equation;
- u , the modulus of the complex root;
- θ , the amplitude of the complex root.

Expressed in finite differences (which are more appropriate for our present purposes), the original equation of my paper (7) can take the form of

$$(1) \quad P_t - P_{t-1} = \frac{G_{t-1} - R_{t-1}}{v}^3$$

and since $R_t = G_{t-m}$, and $G_t = \beta P_t$,

¹ Hans Neisser, “Depreciation, Replacement and Regular Growth,” this JOURNAL, Vol. LXV (March 1955), pp. 159–61. The gross growth model in question was presented in “Depreciation, Replacement and Growth,” this JOURNAL, Vol. LXIII (March 1953), pp. 1–32, to be referred to as the Article; the latter was reprinted in my *Essays in the Theory of Economic Growth* (New York, 1957), pp. 154–94, to be referred to as the Book.

I am grateful to Professor Robert M. Solow for helpful comments on this note.

There is an error in equation (9), p. 20 of the Article, p. 176 of the Book. Its correct form

$$s r = \left(\frac{\alpha}{v} + \frac{1-\alpha}{m} \right) \left[1 = \frac{1}{(1+r)^m} \right].$$

² The Article, pp. 14–15; the Book, p. 169.

³ The Article, p. 15; the Book, p. 170. Another alternative would be $P_t - P_{t-1} = \frac{G_t - R_t}{v}$. The form used above in the text seems to be more sensible.

$$(2) \quad P_t - P_{t-1} = \frac{\beta}{v} (P_{t-1} - P_{t-m-1})$$

For convenience, let $\frac{\beta}{v} = a$. Then

$$(3) \quad P_t - (1+a)P_{t-1} + aP_{t-m-1} = 0$$

with the characteristic equation

$$(4) \quad x^{m+1} - (1+a)x^m + a = 0$$

By Descartes' rule of signs ($a \geq 0$) there are two positive roots. One of them, $\rho_1 = 1$. Its elimination gives the reduced form of (4)

$$(5) \quad x^m - a(x^{m-1} + x^{m-2} + \dots + 1) = 0$$

If $x = 1$, $a = 1/m$, and it is clear from the nature of the problem that if

$$(6) \quad \begin{aligned} a &> \frac{1}{m}, & \rho_2 &> 1 \\ a &= \frac{1}{m}, & \rho_2 &= 1 \\ a &< \frac{1}{m}, & \rho_2 &< 1 \end{aligned}$$

It can also be easily shown that $\rho_2 \leq 1 + a$. ρ_2 is the root (reduced by 1 of course) which was the solution of my original equation and which produces growth when $a > 1/m$.

When m is even (4) has one negative root, ρ_3 , but since $f(0) = a$ and $f(-1) = -2$ in (4), $|\rho_3| < 1$.

Expression (4) will also have complex roots when $m \geq 3$. The following proof, worked out by Professor Bancroft H. Brown of the Department of Mathematics, Dartmouth College (in the summer of 1955), shows that the modulus of every complex root must be less than 1. At my request Professor Brown stressed simplicity rather than elegance.¹

By taking the derivative of (4) it can be shown that (4) has no multiple roots except for the already found $\rho_1 = \rho_2 = 1$ when $a = 1/m$ (and the trivial case $x = 0$ when $a = 0$).

For any given m and a very small a , all complex roots cluster around the origin (they all equal zero when $a = 0$). We shall show that no complex root can lie on or beyond the unit circle. Let the complex root be

$$(7) \quad u(\cos \theta + i \sin \theta)$$

Substitute (7) into (4):

$$(8) \quad u^{m+1} [\cos (m+1)\theta + i \sin (m+1)\theta] - (1+a)u^m (\cos m\theta + i \sin m\theta) + a \equiv 0$$

¹ For a more general but less simple proof see Robert M. Solow, "A Note on Dynamic Multipliers," *Econometrica*, Vol. XIX (July 1951), pp. 306-16.

Since (8) is an identity in θ and u , its real and imaginary parts must be separately equal to zero. Hence,

$$(9) \quad u^{m+1} \cos (m+1)\theta = (1+a)u^m \cos m\theta - a$$

$$(10) \quad u^{m+1} \sin (m+1)\theta = (1+a)u^m \sin m\theta$$

Square and add:

$$(11) \quad u^{2(m+1)} = (1+a)^2 u^{2m} - 2a(1+a)u^m \cos m\theta + a^2$$

Suppose now that a complex root is on the unit circle, so that $u = 1$. Then (after a few simplifications),

$$(12) \quad 2a(1+a)(1 - \cos m\theta) = 0$$

and

$$(13) \quad \cos m\theta = 1$$

Hence,

$$(14) \quad m\theta = 2c_1\pi$$

where c_1 is an arbitrary integer.

Also, from (9), with $u = 1$,

$$(15) \quad \cos (m+1)\theta = (1+a) \cos m\theta - a$$

but since $\cos m\theta = 1$ by (13),

$$(16) \quad \cos (m+1)\theta = 1$$

$$(17) \quad (m+1)\theta = 2c_2\pi$$

where c_2 is also an arbitrary integer.

From (14) and (17),

$$(18) \quad \theta = 2\pi(c_2 - c_1)$$

As $\sin \theta = 0$ by (18), the only place on the unit circle which the complex roots can reach is 1. But this is impossible because equation (4) has no other roots at 1 except ρ_1 and possibly ρ_2 (when $a = 1/m$). And since all roots are continuous functions of a (for any given m), they cannot penetrate beyond the unit circle. Therefore the modulus of every complex root is less than 1.

The general solution of the equations (2) or (3) is

$$(19) \quad P = k_1 + k_2 \rho_2^t + k_3 \rho_3^t + \dots + k_{m+1} \rho_{m+1}^t,$$

where the k s are constants, $\rho_1 = 1$, ρ_2 is the positive root resulting in growth (when $a > 1/m$ and $\rho_2 > 1$), ρ_3 is negative when m is even, but $|\rho_3| < 1$, and all other roots are complex, with absolute values less than 1. In the general case, P_t is subject to fluctuations, but they will die down as t increases, and P_t will asymptotically approach an exponential rate of growth when $\rho_2 > 1$ irrespective of any special initial conditions. If the latter happen to exhibit

a constant rate of growth for m periods, all coefficients except for k_2 will vanish, and P_t will grow exponentially from the very beginning as shown in my paper.¹

There is something puzzling about the solution (19). Since this puzzle is not concerned with the complex roots let us omit them and rewrite (19) as

$$(20) \quad P_t = k_1 + k_2 \rho_2^t + k_3 \rho_3^t$$

Now suppose that $a = 1/m$. Then $\rho_2 = 1$, and P_t should show no growth at all, the gross propensity to save (β) being just sufficient for replacement. But according to the well known rule, when $\rho_1 = \rho_2 = 1$, P_t becomes

$$(21) \quad P_t = k_1 + k_2 t + k_3 \rho_3^t,$$

i.e., the absolute rate of growth of P_t will approach a constant. Or suppose that $a = 0$, i.e., assets are not replaced at all. P_t should gradually decline to zero, but in (20) $\rho_2 = \rho_3 = 0$, and

$$(22) \quad P_t = k_1,$$

i.e., P_t becomes a constant.

P_t behaves in this strange manner because the mathematical expression of our problem as given in (1) (or in (2) or (3)) is not inconsistent with the presence in the model of some constant permanent asset which yields output and which need never be replaced.² Thus if $P_t = F(t) + h$, and hence $P_{t-1} = F(t-1) + h$, where h is such a constant, then $P_t - P_{t-1} = F(t) - F(t-1)$, as in (1). On the other hand, the difference equation corresponding to the reduced characteristic equation (5)

$$(23) \quad P_t = a(P_{t-1} + P_{t-2} + \dots + P_{t-m})$$

is free from such a constant; it expresses the economic intent of the model better than (1), but it is based on a stricter assumption than (1), and hence is less general. The presence of an extraneous root is not unusual in solutions of difference or differential equations, and its coefficient can be eliminated by a proper choice of initial conditions. In our case the presence of $m+1$ arbitrary initial conditions will not, as a rule, eliminate this coefficient. But if there are only m initial arbitrary conditions, that is, if output of to-day is a function of investments of the preceding m years and of no other assets, then the $m+1$ condition is derived from (23), and $k_1 = 0$ in (20) and $k_2 = 0$ in (21). While I did not intend to have a permanent asset in this model, it may perform a useful role in others, indicating the presence of land, financial investments, and so on.

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¹ The reason why m rather than $m+1$ initial conditions are required is explained below.

² This asset can be negative as well—a debt, for instance.

ODDS, POSSIBILITY AND PLAUSIBILITY IN SHACKLE'S THEORY OF DECISION

I WISH to consider Shackle's "focus-value" method¹ of appraisal of a particular venture in a decision situation in the light of the following example. A person (the speculator) is offered a choice between the following two gambles on a roulette wheel:

Gamble.	Prizes (in units of £1,000).			
	No. 1.	Nos. 2-18.	Nos. 19-35.	No. 36.
A	-10	-1	+19	+20
B	-9	-8	+1	+22

This situation is supposed to be a representation of an entrepreneur's decision problem, and I am making the assumption that such a representation can be used to illustrate Shackle's theory. The gambles A and B represent two different types of investment, the numbers 1 to 36 on the roulette wheel correspond to 36 mutually exclusive and exhaustive hypotheses regarding the possible outcomes of either venture, and the prizes (positive or negative) correspond to the face-values of the various hypotheses.

Let us first of all appraise gamble A. Each of the 36 possible outcomes has the same potential surprise. The focus values are therefore clearly 20 units focus gain and 10 units focus loss. Comparing this with the pair of focus values in gamble B, we are forced to conclude that B is a "better" gamble than A. According to Shackle's theory—or rather my interpretation of it—there is no escaping this conclusion. And yet this is surely contrary to common sense. Almost everybody would be glad to accept gamble A played for small stakes (say units of £1) and refuse gamble B played for any stakes, small or large. The source of the contradiction is, of course, the fact that the speculator lumps outcomes Nos. 19-35 together (in, say, situation A) to form a composite hypothesis whose plausibility is considerably greater than hypothesis No. 36. The "vividness" of the composite hypothesis that one of the numbers 19-35 will turn up, i.e., the value of the ϕ -function, is greater than the value of ϕ for the hypothesis that No. 36 will turn up; and this is so by virtue of the considerably greater plausibility of the composite hypothesis.

Now if I have understood Shackle's theory correctly, one must attach zero potential surprise to each of the 36 hypotheses about a particular

¹ *Expectation in Economics*, Cambridge, 1949, second edition 1952.

number turning up, since potential surprise of a hypothesis is independent of the number or plausibility of its rival hypotheses. Shackle states clearly and with emphasis that different mutually exclusive hypotheses cannot be integrated "to form a strong team" so long as each individual hypothesis has a lower ϕ -value than one particular hypothesis—in this case, the one corresponding to No. 36. I conclude from the above counter example that either:

(a) Shackle's theory is not concerned with this type of decision-problem, but only with the particular brand of problem that confronts entrepreneurs; or

(b) his theory is not valid in general, and requires modification so that in appraising a possible action the speculator surveys, not only the set of mutually exclusive simple hypotheses, but also the set of composite hypotheses (which are not mutually exclusive) formed by the disjunction of subsets of the set of simple hypotheses; such a modification would of course destroy the simplicity of the present theory; or

(c) I am misinterpreting Shackle's theory; or

(d) gamble B is in fact better than gamble A; I refuse to believe this.

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SOME REFLECTIONS ON MR. GOULD'S ARTICLE

Mr. Gould's luminous and generously-worded criticism seems to me extremely valuable in enabling some of the difficulties which a theory of decision under uncertainty presents to be exactly pinned down.

I think the core of the question is psychological. First, does the uncertainty which faces the business-man present itself to him, or is its essential nature such as to allow it to be formulated, as a clear-cut matter of the counting of cases? And secondly, if counting of cases does seem meaningful, where does that point lie at which unfavourable odds takes on the meaning, in an instance where the large scale of the ventures in question makes the occasion a manifestly unique or rare one, of lessened *possibility*? For it is possibility, the question of what *can* happen, I would still maintain, that is relevant in isolated occasions of deciding.

Nevertheless, I am bound to admit that if the odds are long enough, lack of probability must somewhere merge, psychologically, into lack of possibility, as no doubt it does in Mr. Gould's example. There, as he suggests, the speculator might attach higher potential surprise to gamble A's +19

prize than to its +20 prize, or to gamble B's +22 prize. Whether, if the experiment were truly and strictly unique, he would be justified, is a question that Charles Peirce himself left unanswered. The chief inference to be drawn is the importance of following up Mr. Gould's suggestion of constructing a modified theory where "in appraising a possible action the speculator surveys not only the set of mutually exclusive simple hypotheses, but also the set of composite hypotheses (which are not mutually exclusive) formed by the disjunction of subsets of the set of simple hypotheses."

All these questions, however, arise only when we have answered or agreed to leave aside the first question; Can we regard the raw material out of which the business-man constructs his expectations as lending itself to formulation in terms of odds? Mr. Gould has himself given prominence to this prior question, which he and I have referred to in correspondence as "escape route (a)" from his criticisms. Some critics, in particular Mr. J. de V. Graaff, have urged on me the view that it is the *kind* of uncertainty which envelopes the business-man's decisions, the confusion and fog, as Professor Carter has called it, of conflicting indications, the difficulty of interpreting his raw material, that I ought to lay stress on, and not the uniqueness of the experiment he makes. However, I think both are true.

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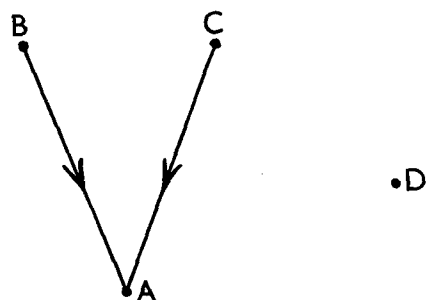
ODDS, POSSIBILITY AND PLAUSIBILITY: A FURTHER EXAMINATION

I agree with Professor Shackle that it is necessary to make a distinction between situations where the uncertainties involved can be described completely in terms of classical probability, and those where the uncertainties are of a vague non-numerical nature. For the sake of convenience I will call the former class of situations gambles.

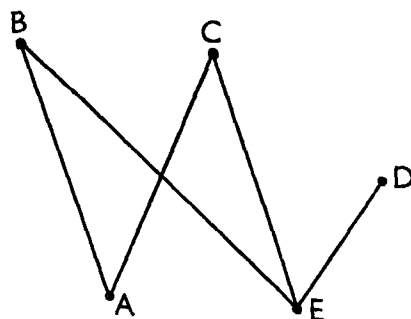
These two types of situation require completely different analyses. The gambling situation, even for a unique non-seriable trial, is more or less adequately dealt with by the von Neumann-Morgenstern theory of utility. (I shall have more to say about this presently.) But since this theory is based on the assumption that all the uncertainties can be represented by a numerical probability, it seems to me that it is entirely inadequate for dealing with situations where the uncertainties are vague and non-numerical. It is in this sort of situation that Shackle's theories are applicable. Thus "escape route (a)" seems to me more valid than ever. I cannot, in fact, quote my example based on classical probability as a counter-example to his theory unless he insists that his theory is intended to cover gambling situations. Let us look into potential surprise more closely.

In the realm of vague non-numerical uncertainty the potential surprises

form a partially-ordered set. Suppose, for example, there are four hypotheses A, B, C, D. The potential surprises may be partially ordered according to the following diagram:



Here A is more possible than B and also more possible than C, but no other pairs can be compared as to their degree of possibility. Now it is not difficult to find a realisation of this model for which the hypothesis E defined as "B or C or D" can be fitted in the diagram as shown below:



In this case, A and E remain incomparable, even though E is more plausible than D, which by itself is incomparable with A. In such situations, and I imagine that entrepreneur problems are typical of them, composite hypotheses (such as E) may carry no further weight than their individual components. There is in this type of situation no ground for contradicting Shackle's focus-value method of solution.

I should now like to strengthen my case that Shackle's theory is limited to the "non-gambling" type of situation by taking him up on a point made in his book. He says in essence that in a non-seriable, non-divisible trial probabilities based on frequency are utterly irrelevant. I disagree with him, because in my opinion I can find a very good reason for considering probabilities in such situations.

It is well known in the theory of animal behaviour that frequently occurring similar situations set up a conditioning. If a situation is invariably

repeated it can set up an invariable response in the animal (*i.e.*, the conditioned reflex). For human beings, the process is similar but more sophisticated. If A is followed by B 100% of the time, the conditioning creates an attitude of mind towards B on observing that A has happened. We can look on this attitude of mind in two ways, (a) as a psychological state, (b) as a disposition to behave in a certain way. What determines a person's behaviour in the face of the uncertain prospect of B, knowing A has happened, can be expressed in terms of either (a) or (b), but has nothing to do with anything else. Since (a) and (b) are determined largely by relative frequencies (corresponding to a classical probability p), how can Shackle say that frequency considerations are irrelevant? Consider the following example:

I offer Mr. Smith a choice of two gambles. Either I toss a coin and he receives £80 if he calls correctly (Gamble X), or I throw a die and he receives £100 if he calls the correct number showing face up (Gamble Y). Suppose he chooses gamble Y. How am I to judge the stupidity of this action? Clearly it is nonsense to judge a unique experiment by results. What criteria are left? Putting myself in Mr. Smith's shoes, I can say (at one level) that I have an attitude of mind which points to the implausibility of my winning £100. Since £80 is a *much more plausible* win and £80 is not proportionately less than £100, I choose X. If I want to interpret this statement at a behaviouristic level, I must say the following: "A combination of past experience with dice and coins, and analogical inference, has produced in me the tendency to act on the assumption that I may guess the fall of a coin but that I will definitely go wrong if a die is thrown. In choosing gamble X I would be exercising a natural disposition; this disposition is a biological necessity. In condemning Mr. Smith's behaviour as stupid, I am saying that either his conditioning is eccentric or he has failed to draw the proper inferences from his experience (*i.e.*, his conditioning)."

I think that maybe it is only from this point of view we can talk about "rationality" or "stupidity" of a person's behaviour in the face of risk. It is in more complex situations, where our experience provides no simple guide to the nature of the uncertainties and where there is the added complication of a wide range of face-values attached to various hypotheses, that an analysis such as Shackle has given in his book is invaluable as a guide to behaviour.

I should like as a sort of postscript to make a remark about the von Neumann-Morgenstern theory of utility. As I said earlier, that is only applicable to situations where numerical probability can be used. Even in this narrow context, the principle of maximisation of expected utility is merely a criterion for consistency of behaviour within a family of situations. The theory says nothing about *a priori* behaviour, nor is it meant to. This point is explained very well by Savage in his *Foundations of Statistics*.¹

¹ L. J. Savage, *Foundations of Statistics*, New York, 1954.

Shackle's focus-value approach, apart from its different domain of applicability, is concerned much more with *a priori* behaviour. Arrow in *Econometrica*,¹ in his review of the theories of behaviour in the face of risk, compares Shackle's theory with the von Neumann theory as though they were dealing with the same problem. This is only true from a very broad point of view, and his comparison is therefore misleading. What is missing in the general field of inquiry is a theory whose domain is the no-man's land between numerical probability and non-ordered non-measurable potential surprise.

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FURTHER NOTE

Mr. Gould's further pages leave me with no desire to do other than express admiration for an incisive and commanding argument. Decision-making is, perhaps, of all problems that the human sciences have thrown up, the richest and most central. I am sure that it is along such paths as Mr. Gould has indicated that progress must be sought.

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¹ Kenneth J. Arrow, "Alternative Approaches to a Theory of Choice in Risk-taking Situations," *Econometrica*, Vol. 19, 1951, pp. 404-37.

BRITISH-CANADIAN INDUSTRIAL PRODUCTIVITY¹

THE empirical study of international differences in the productivity of individual industries has not been pursued at all widely since the major work of Dr. Rostas was published in 1948,² and for studies covering many industries it remains almost alone in the field.³ Principally this has been due to the inherent difficulties of measurement, and therefore to the discouraging unreliability of results, but also because post-war interest has been largely concerned—in Britain at any rate—with the United States. For the present study Canada was chosen. It is a country in which output, in contrast to the United States, is considerably smaller than in Britain, in which much British equipment is used, and in which statistics are highly developed (although this aids measurement for the comparison it does not solve all the problems involved). The aim is not only to present (in Part I) the results of an empirical study of British-Canadian industrial productivity in 1948, and to examine some related data on costs and prices, but also (in Part II) to suggest when and how the observed differences may have arisen.

To avoid confusion, productivity will mean the use of various factors, taken singly or collectively, per unit of output; a high productivity will therefore refer to a low use. In Part I, four of these factors will be examined; the first three are the principal variable inputs, labour, materials and fuel, and the fourth input is fixed capital, together with a special aspect of it, mechanisation.

PART I. PRODUCTIVITY, COST AND PRICE STATISTICS, 1948

Because the method of measurement chosen may in some degree influence the results, it is relevant to remark on the procedure adopted.

¹ I would like to thank the administrators of the Conditional Aid Programme for having financed the project. My thanks are also due to Mr. W. B. Reddaway, Director of the Department of Applied Economics in the University of Cambridge, for guidance and assistance throughout the study, and to Professor E. Devons, Mr. E. Osborn, Dr. W. E. G. Salter, Dr. S. J. Prais and the late Mr. A. A. Adams for their helpful comments and suggestions. Various trade and other organisations, in particular the Canadian Dominion Bureau of Statistics, gave valuable assistance, for which I am most grateful. The broad debt to Dr. Rostas, on whose initiative this project and many others in the field were started, is also gratefully acknowledged. Errors and confusions which remain are, of course, my own responsibility.

² L. Rostas, *Comparative Productivity in British and American Industry* (Cambridge, 1948).

³ But see M. Frankel, "Anglo-American Productivity Differences: Their Magnitude and Some Causes," *American Economic Review*, May 1955, also *Produktivität und Produktivitätsmessung im nationalen und internationalen Vergleich*, by Günther Burgardt (Verkehrs- und Wirtschafts-Verlag G.M.B.H., Dortmund, 1954), which compares the post-war productivity of labour and some other factors in the iron and steel industries, iron-ore mining, coal, and agriculture between the United States of America and several European countries, including the United Kingdom.

Throughout the paper, interest is directed towards technological productivity, that is towards the way in which industries operate (but since economic and not engineering data form the basis of the study, "technological" must not be interpreted too narrowly). No attention is given to the welfare aspects of productivity differences. For this approach a global study may be misleading, since one needs to compare only industries which are using similar materials in the same stage of fabrication to produce similar products; with this restriction, the approach in measuring output was close to that described elsewhere by Miss Paige and Mr. Adler.¹ A brief outline may nevertheless be useful.

The method used to compare production between each industry in the two countries consisted essentially in taking the output of commodities from the Census of Production in physical units—tons, gallons, etc.—and assuming that a unit of the specified commodity produced in Britain was equal to a similar unit in Canada. Since the commodity may itself comprise many articles, *e.g.*, alloy steel castings, the assumption is hazardous, and if untrue may falsify the whole basis of the comparison. By examining the materials used it was sometimes possible to detect the absence of close comparability in output quality, as in the case of "brewing and malting," where the strength of beer was different in the two countries,² but usually there was little data with which to test the assumption.

Since all the industries produced more than one commodity, there was the further problem of adding quantities of different goods together to derive total output for each industry. The traditional method was used of combining by value on the basis, first, of the prices prevailing in Britain, and then of the prices in Canada, the price in each case being the average value from the Census. Although the two answers which this gave were sometimes different, they were not averaged, since this did not appear to make them more useful.

The assumption behind this is that the prices within each industry are transformation rates reflecting very broadly the quantity of resources of all kinds (including entrepreneurship) used to produce the various units of output in that industry. Of course, price is affected also by demand, monopoly position, official directives, etc., while some Census prices are mere book-keeping entries recording transactions between different sections of the same firm, so that no precise relationship can be expected. It is sufficient, however, if *relative* prices within each industry are broadly correct in representing the relative quantities of resources.

It is important to note that if commodities are produced in the same proportions (measured by quantity) in a particular industry in the two

¹ D. Paige and S. Adler, "International Comparisons of Real Product: an approach by Industry of Origin," *Income and Wealth*, Series IV (1955).

² The principal product, beer, was recorded in the Census in gallons; the quantity of materials input per unit of output was probably at least 50% higher in Canada than in Britain.

countries, then the price/transformation rate assumption is unnecessary, since the computed output ratios would be the same whatever prices were used to combine quantities.¹ If, on the contrary, the proportions are very different, the comparison is probably of little use, since the processes² may be different; it is therefore in intermediate cases that the truth of the assumption is of greatest importance, although where to draw the line between worthless studies (from the technological view) and those which may be of value (assuming valid transformation rates) requires empirical judgment and cannot be determined *a priori*.

An example may be quoted of the "paper and board" industry, in which, in 1948, newsprint comprised 73% of Canadian output; Britain specialised in higher-grade esparto, woodfree and rag papers, and devoted only 10% to newsprint. In this case one would have to rely heavily on the price/transformation rate assumption in computing relative output, and since newsprint is a product apart from other papers (it is made from a different combination of materials having different properties, and is generally manufactured on a special machine), one would be unwise to make such an assumption. There is no alternative³ but to exclude this industry from the comparison.

To measure the quantity of materials and fuel was essentially similar, the various commodities being combined on the basis both of British and Canadian prices,⁴ and the assumption made that quality was equal. Where the proportions of the various materials were very different, this indicated not only that the materials/output ratios were probably useless for a study of this nature, but also that the comparison of any other factor with output might be invalidated because the required "amount" of conversion from material to product may differ.

Fuel was treated as conceptually different from materials, and was viewed simply as an aid in converting materials to output; differences in

¹ But if the two answers obtained by taking the two prices in turn are about the same this may not mean that the comparison is reliable, since this may have come about because of similar price ratios.

² Taken by itself the use of a different machine or process is no reason for exclusion from this study. If the same materials produce the same output in the two countries by a different method, this is a perfectly admissible technological difference. But if different materials are used to produce the same output (*e.g.*, hydro- and thermal-electricity), then for present purposes the comparison is of little use.

³ But if one is concerned only with labour productivity, and if one could obtain the unit labour content for each grade of paper in one country, it would then be possible to calculate quite simply relative labour productivity for the industry as a whole between the two countries without using prices at all (by comparing the actual labour required in one country to produce a given total output of commodities with the labour which would be required to produce the same quantities of goods if the unit labour content of each commodity was that of the other country). It might then be possible to include this industry in at least certain parts of the present comparison.

⁴ Since materials and fuel are purchased from many industries, the price/transformation rate assumption may be less realistic than with output which emanates from one industry. Also a greater part of total value remains uncovered by quantity data than in the case of output, and a greater reliance is placed on the validity of the assumptions one makes about this (see Appendix A).

the proportions in which fuel was used did not therefore invalidate the comparison, although this placed considerable reliance on the price/transformation rate assumption. (Fuel use was also estimated in British Thermal Units.)

Altogether, out of twenty-three industries examined closely, nine were rejected from this study, principally for reasons of major structural difference in either output or materials input, but including some where the statistics were presented in such a way that uncertainty was felt about their comparability.¹ It must be admitted that those which remain are not perfectly comparable, but if the study is to be made at all a small degree of tolerance must be permitted.

When measuring labour input, the simplest approach is to compare numbers employed, but here some allowance was made for the differing proportions of males and females (on the basis of average earnings), although no adjustment for differing skills was possible (which in any case was probably small), nor for differences in effort. It was considered more logical to take total employment rather than operatives alone as the principal labour input, since both groups of workers are essential to the production process, but estimates were also made of operative hours.

Finally, it may be noted that most previous international productivity comparisons have concentrated on labour as the principal input; the emphasis here is on the total utilisation of factors. In particular, the analysis has ventured into the field of international costs and prices in order to help explain reasons for the results obtained. It is hoped that by thus broadening the comparison it will become more meaningful.

Labour Input per Unit of Output

In Table I, as elsewhere, the figures are percentages for Canada with Britain as 100. It shows the relative total employment per unit of output for those industries in which the commodity structure of both output and materials was not widely different between the two countries, and the relative operative hours per unit of output. In every industry it appears that in 1948 Canada needed fewer employees and operative hours per unit of output than Britain, *i.e.*, her labour productivity was higher.

¹ In addition to the *Paper and Board* and *Brewing and Malting* industries which have already been mentioned (in both of which there were also serious statistical difficulties in making a comparison), the following were examined in detail and similarly rejected from this study: *Cordage, rope and twine* (there were wide differences in the commodity structure both of materials input and output); *Cattle and poultry feed* (inadequate quantity data was available about materials used); *Manufactured gas* (the Canadian industry was very small and highly specialised since nearly half of the gas was "sold" to an associated chemical works); *Preserved fruit and canning* (structure of products was widely different, particularly between jam and fruit canning); *Woollen textiles* (in Canada 62% of worsted yarn (intermediate product) was sold to the hosiery trade, which was replaced by imported yarn of different quality to make final products); *Bread and other Bakery products* (insufficient data about output, and materials not comparable); *Dairy products and Ice cream* (statistical differences in coverage).

Differences between the total employment and operative hour figures arise because in almost every industry examined Canadian operatives worked fewer hours per week than their British counterparts, and in only two out of the fourteen comparable industries (soap and coke ovens) did Canadian operatives occupy a significantly lower proportion of total employment than the British. (But it is difficult to be certain about the accuracy of the latter result, since there were slight differences in classification between administrative personnel and operatives in the two countries.)

What do these figures imply? Labour productivity indices show

TABLE I
British-Canadian 1948 Labour Productivity^a
(All indices are for Canada: Great Britain = 100)

	(A) Relative employment per unit of output.		(B) Relative operative hours per unit of output.	
	(b)	(c)	(b)	(c)
Petroleum refining	46	42	43	40
Cotton spinning and weaving	53	51	52	50
Biscuits	56	57	69	70
Cement (not quarries)	57	59	59	58
Confectionery	60	58	69	69
Blast furnaces, iron and steel melting and rolling	60	60	60	60
Tobacco	65	75	71	86
Clothing	65	68	59	63
Soap, glycerine, candles	66	69	58	62
Rubber	67	81	63	77
Iron foundries, tubes	69	68	71	70
Sugar refining	71	70	68	68
Coke ovens	77	77	62	62
Footwear	82	83	74	75
Median	65	68	63	65
Upper quartile	70	76	70	73
Lower quartile	57	58	59	59

Sources: Compiled from Census of Production data.

- (a) Industries are presented in order of increasing Canadian relative employment per unit of output (at British prices).
(b) At British prices (see text).
(c) At Canadian prices.

nothing positive about *labour* except that unit labour requirements were different. If labour quality, that is the effort and skill of workers and management, was identical, then the entire difference in labour productivity must be due to a whole complex of factors other than labour, like capital equipment, materials, fuel, mechanisation, integration, organisation, intensity of operation, etc. Until labour productivity statistics are brought into relation with other factors, and with changes over time, they are interesting in themselves, but cannot be explained or made useful.

Materials and Fuel per Unit of Output

Besides labour, the other principal variable inputs are materials and fuel. It may be felt that these are best brought into the comparison by subtraction to form net output, but if—and only if—the structure of materials is the same in the two countries, i.e., individual commodities are used in the same proportions to produce the same structure of output, it is quite legitimate to consider materials as an input like any other, an input which, like fuel or labour, can be used wastefully or not. One frequently assumes in statistical analysis a fixed materials input-output ratio, yet in some industries, although not of course in all, it is possible to increase materials utilisation quite extensively while keeping quality constant. Indeed, a sub-committee of the Institution of Production Engineers “is convinced that the need for investigating materials economy is widespread.”¹

Table II (A) gives the empirical results. (The possibility of greater error in the estimation of the quantities of materials and fuel than of output must be recalled here.) It appears that the Canadian average use of materials and fuel together² was not widely different from the British, although there was variation between industries, and that Canadian fuel use, measured in two different ways, was generally below the British.

Similar arguments apply to materials utilisation as to labour; differences may be caused by the relative use of labour or capital, the degree of integration, organisation, etc., as well as by possible differences in the quality of materials³ or fuel (as perhaps in the case of petroleum and cotton textiles).

To be more explicit, in general, care may be taken to avoid wastage of materials and fuel by employing more labour, by better organisation or by instrumentation.⁴ Full use can be made of by-products; machines may work more efficiently as a result of technological change;⁵ equipment

¹ “Materials Utilisation in the Metal Working Industries,” Institution of Production Engineers, August 1955, p. 4. It is the intention of the sub-committee to examine materials utilisation in several industries.

² In some industries a clear distinction cannot be made between materials and fuel. The materials data which could have been shown separately in the above table differ hardly at all from the combined figures given. “Cement” was excluded, since it was clear from the British Census that some materials must have come from “own quarries”; as these were not purchased, no details were given.

³ Iron ore for blast furnaces, where quality differs widely, has been included statistically as the tonnage not of ore but of iron content; this is only a partial solution, since to process the lower-grade British ore demands relatively more labour per ton of iron produced.

⁴ For example, until recently many British open-hearth steel furnaces burning producer gas were still without instrumentation, with wastage through lack of precise knowledge of control conditions. G. R. Bashforth, *Journal of the Iron and Steel Institute*, May 1953, p. 56. The importance of instrumentation in coke ovens is pointed out by J. J. Bailey in the *Yearbook of Coke Oven Managers Association*, 1955, p. 360.

⁵ “The new technique of shell moulding offers economies both in castings which are dimensionally more accurate, with consequently smaller machining allowances, and also in the lack of sand inclusions in the surface, which greatly improves tool life.” Both materials and capital are thus saved. *Materials Utilisation Report*, p. 7.

may operate at above capacity, which often wastes materials; savings may result from better design, with effective quality constant;¹ there may be benefits from shift-working in that steam-raising plant, hence fuel, is better

TABLE II
Relative Productivity of: (A) Materials and Fuel; (B) Total Employment,
Materials and Fuel Combined^a

(All indices are for Canada: Britain = 100)

	(A)				(B)	
	Quantity of materials and fuel per unit of output.		Quantity of fuel per unit of output.		Combined quantity, of employment, materials and fuel per unit of output.	
	(b)	(c)	(b)	(c)	(d)	(e)
Petroleum refining	110	101	—	—	—	—
Cotton spinning and weaving	108	107	96	66	53	53
Biscuits	108	101	90	65	64	64
Confectionery	94	91	69	61	51	50
Blast furnaces, iron and steel	85	80	103	92	78	78
Tobacco	97	108	70	73	52	59
Clothing	105	102	—	—	—	—
Soap, glycerine, candles	94	101	96	97	92	98
Rubber	101	120	74	82	69	83
Iron foundries, tubes	88	88	90	84	61	61
Sugar refining	91	94	137	106	97	96
Coke ovens	81	81	—	—	—	—
Footwear	84	85	94	97	107	108
Median	94	101	92	83	67	71
Upper quartile	107	106	99	97	95	97
Lower quartile	86	86	72	66	53	56

Sources: Compiled from Census of Production data.

(a) The order of industries is the same as in Table I.

(b) At British prices.

(c) At Canadian prices.

(d) Fuel in British Thermal Units per unit of output at British prices.

(e) Fuel in British Thermal Units per unit of output at Canadian prices.

utilised. (There may also be cost saving through the substitution of a less for a more expensive material yielding identical output, although the more extreme cases have been avoided as far as possible in this study² because of the difficulty of estimating the precise effect on productivity.)

Fuel-utilisation data alone are more instructive.³ In most industries

¹ In this case the commodities would not be physically identical. That product design is also important is stressed in *Materials Utilisation Report*, p. 7, which also emphasises minimum functional characteristics. See also “Cost Design,” *Institute of Cost and Works Accountants*, 1956, which makes the same point.

² But not completely avoided. For example, in the cotton industry it is generally accepted that in the high-wage country better-quality cotton is purchased than in the low-wage country, since this demands less processing by labour, and thus reduces variable (materials plus labour) costs. See also below.

³ In some industries there may be a bias in the data which raised the ratios in Table II. Coal stocks in British industry as a whole fell by 25% during 1948, and since the Census in general showed only fuel purchases without indication of stock changes, British use may have been underestimated.

Canada used more purchased electricity per unit of output than Britain, in many industries more oil fuel, and generally less coal and coke. The relative price of one grade against another, through costs, was an important determinant of relative use, notably with electricity.¹ Another factor was the general efficiency, both in producing heat or power and in saving labour (as, for example, between the use of fuel oil and coal).

To use more coal as against purchased electricity or oil, as in British industry generally in 1948, probably demands more labour per unit of energy produced, and may therefore lead to a lower labour productivity than with other fuels. Moreover, to use purchased electricity in manufacturing encourages the installation of direct motor drive as against a belt system from a single or a few primary units, which may reduce overall power consumption.

Variable Factors per Unit of Output

One may wish to know the combined use of labour, materials and fuel per unit of output, since they are the variable factors, but also since the combined figures will approximately remove the effect of any substitution between labour and materials (with fuel).

Since the quantities of all three inputs are expressed in value terms at constant prices, they can easily be aggregated. The ratios are given in Table II (B), which shows that Canada used a smaller amount of variable factors per unit of output than Britain.

As a slight digression, it can be shown by using data from this study that there may have been some materials/labour substitution within each industry, in response to relative advantage in price. Each pair of industries can be visualised as the same industry in two different economic environments. The price ratio of one factor to another (*e.g.*, as used here, materials to labour) may differ between the two environments. By correlating this price ratio in each industry with appropriate quantities, the existence may be discovered of any consistent relation (*e.g.*, between a relatively high price and a relatively low use) throughout all the industries. In the present case, the materials/labour price ratio was obtained by taking

¹ The table below shows the price ratio and purchased-quantity ratio per unit of output for the major fuel commodities in the ten comparable industries for which separate fuel data are available (Table II). The figures are fairly heavily weighted by the iron and steel industries. Indices are Canadian percentages, Great Britain as 100 in each case.

*Purchased Fuel Used in Production:
Average of Ten Comparable Industries, 1948*

	Price ratio.	Quantity ratio per unit of output.
Coal	89	37
Coke	93	74
Fuel oil	84	202
Electricity	43	214

the ratio of the relative price of materials and fuel to the relative average wage of all employees (Table III, Col. 3), both calculated using the current exchange rate. This was then correlated¹ with:

- (1) relative employment per unit of output (Table I, Col. 1), which gave the answer of +0.66, and
- (2) relative materials and fuel per unit of output (Table 2 (A), Col. 1), which gave the answer of -0.63.

These suggest that when the price of materials is high relative to the price of labour, (1) the use of labour is relatively great, and (2) the use of materials and fuel is relatively small.² Where labour is dear relative to materials greater efforts may be made to save labour per unit of output than to save materials, so as to minimise variable costs, and one suspects that as a contribution towards saving labour, the materials themselves may be of higher quality, as in the case of the cotton industry quoted above. Unfortunately in practice it is usually difficult to distinguish from the summarised statistics in Censuses of Production the quality factor in materials used.

Costs per Unit of Output, and Prices

When considering competition, one becomes interested in the effects of differences in the utilisation of resources on costs and prices. The relevant statistics are given in Table III. It shows first the relative price of materials and fuel input, and the relative earnings of labour (together with the ratio of the two); these are based on the current exchange rate. Then, by combination with the quantity data in Tables I and II, relative unit costs are shown, together with unit gross margins; and finally, the relative price of output.

It may be useful to summarise these results together with those obtained previously. It appears that in the industries examined, in 1948: (1) Canada used considerably less labour per unit of output, although with variations between industries (average 65%), but wages were consistently higher (by 60-70%), with the result that Canadian total labour costs were on the average slightly higher (9% or so) than in Britain; (2) on the average Canada used a slightly smaller quantity of materials and fuel per unit of output, and less fuel (much less fuel when based on British Thermal Units), but because their prices were lower in Canada, materials and fuel costs together were also lower (about 13%); (3) Canada had an almost consistently lower combined labour, materials and fuel use, and on the average

¹ Product moment correlation.

² Perhaps the main reason why the correlations are not higher is that the possibility for substitution differs for different industries. One would also expect to find, as Professor Melman has pointed out, that where materials and capital are the two most important cost inputs, and where labour is unimportant, as in petroleum refining, there would be some substitution between these two also.

the cost of these items per unit was also lower (about 7%), *i.e.*, variable costs were lower; (4) output prices¹ (at the pre-devaluation exchange rate)² were nevertheless about the same, though with some variations between industries; on the average they were a little higher (about 4%) in Canada; (5) unit gross margins were generally much higher in Canada than in Britain, as implied from (3) and (4).

TABLE III

Relative Prices and Costs per Unit of Output^a

(All indices are for Canada: Great Britain = 100 (British weights throughout))

	(1) Relative prices of materials and fuel.	(2) Relative average annual earnings all employees.	(3) Materials- labour relative price ratio.	(4) Wage and salary cost per unit of output.	(5) Material and fuel cost per unit of output.	(6) Total variable cost per unit of output.	(7) Gross margins per unit of output.	(8) Relative price of output.
Petroleum refining	89	170	52	78	97	96	55	85
Cotton spinning and weaving	75	174	42	91	82	85	79	82
Biscuits	82	157	48	89	83	84	226	104
Cement (not quarries)	—	160	—	95	—	—	—	98
Confectionery	88	150	56	90	82	83	158	94
Blast furnaces, iron and steel	102	172	59	102	84	90	179	106
Tobacco	91	169	53	112	87	92	96	105
Clothing	109	163	67	105	106	106	162	118
Soap, glycerine, candles	91	174	51	113	89	93	226	119
Rubber	82	169	45	113	81	90	151	124
Iron foundries, tubes	110	169	69	115	97	105	95	103
Sugar refining	111	159	71	112	106	106	35	84
Coke ovens	108	177	62	137	88	93	213	106
Footwear	100	138	72	113	85	93	67	89
Median	91	169	56	109	87	93	151	104
Upper quartile	109	173	68	113	97	103	205	112
Lower quartile	84	158	49	91	82	86	70	87

Sources: Compiled from Census of Production data.

^a Relative prices, hence costs, calculated at the current exchange rate. The order of industry presentation is the same as in Table I.*Capital Equipment and the Degree of Mechanisation*

We now turn to consider the principal fixed factor, capital equipment. Capital measurement is an insoluble problem. The extreme heterogeneity of capital goods makes it virtually impossible even in principle, except under simplifying assumptions, for one concept to cover all the properties it would be desirable to incorporate.³ Even so, the attainment of some more limited objective may be informative.

¹ This is an average price from the Census for all goods made for sale outside each industry, weighted by their respective quantities. In one sense this may be more representative than "list prices," since it includes the result of differential home and export pricing (as in the steel industry in Britain) and compares directly a very large part of total production. But it is influenced by different quantities of each commodity sold (the larger bulk order secures the lower unit price), and of course by quality differences. See also Appendix A for differences in the treatment of transport costs.

² Cf. R. G. Hawtrey, *Cross Purposes in Wage Policy*, p. 67.

³ See Mrs. J. Robinson, *The Accumulation of Capital* (1956), p. 117. My views about capital have also been influenced by the work of Dr. W. E. G. Salter, shortly to be published, which he was kind enough to show me.

When considering causes of productivity difference the recency of equipment is important; because of technological change the more up-to-date plant and machinery will generally be the more effective in lowering the use of *all* factors, including capital. Since the present stock of equipment is the result of year-by-year purchases, it might be a fruitful approach to estimate whether more has been invested in plant and machinery in one country than in another over the past, say, ten years. To do this the real gross investment in these assets can be aggregated over the period in each country, and to remove scale differences these totals can be related to the relative outputs to-day. One needs to measure investment gross and not net, since equipment for replacement is seldom an exact replica, but usually incorporates the result of technological change during the period between the manufacture of the old and the new; the installation of equipment both for replacement and addition will therefore affect productivity.

Full data for these calculations are available by industry in Canada from 1926,¹ but the only British pre-1948 plant and machinery data cover "manufacturing and distribution" as a group from 1924 to 1938.² A comparison can therefore be made for the decade or so preceding 1938, which may be of value, even though this does not cover the period one would like for this study, nor is manufacturing and distribution as a group closely related to these fourteen industries.

Two methods were used to convert dollars to pounds sterling in each year: the current exchange rate and an estimated commodity exchange rate based on price indices for plant and machinery.³ Since the wide definition of manufacturing and distribution in Britain prevented the accurate assessment of relative output in 1938, relative employment was used; it appears that Canadian real gross investment in plant and machinery aggregated 1926-38 per head of numbers employed in 1938 was about double the British over the same period, 100:227⁴ using current exchange rates, and 100:212 using the estimated commodity rates. (Crude estimates "per unit of output" indicate that Canadian investment was perhaps

¹ *Public and Private Investment in Canada 1926-1951* (Dominion Bureau of Statistics, 1951), also individual industry Census of Production reports.

² P. Redfern, "Net Investment in Fixed Assets in the United Kingdom 1938-1953," *Journal of the Royal Statistical Society, Series A* (General), Volume 118, Part 2, 1955.

³ It was assumed that British and Canadian equipment prices were about level in 1948. Price indices, particularly for the "iron and steel" and "iron foundries" industries in Table III suggest this, and confirmation is given in the *Report of the United Kingdom Engineering Mission (to Canada) 1948* (H.M.S.O., 1949), p. 35. The price indices over time were taken from *Public and Private Investment in Canada 1926-1951*, Table 13, and P. Redfern, *op. cit.*, p. 171.

⁴ If rates of growth of output are about the same, an alternative approach may be to compare the *annual average* investment in equipment per employee over similar periods. This condition was broadly satisfied, and the calculated ratio was also 100:227 on the basis of current exchange rates. But if the effect of the difference in industrial structure between the two countries is removed (*i.e.*, of the differing relative importance of the highly capitalised industries) the ratio falls to 100:198. This provides useful evidence that the higher aggregate investment in Canada was not due in the main to a difference in the importance of the highly capitalised industries. See Appendix A.

about 40–50% higher.) These suggest that by 1938 Canada possessed more modern plant per head than Britain. (And Canadian labour productivity was also higher; unit labour requirements in manufacturing industry as a whole were about 69% of the British in 1938; see below.)

Although British data are lacking for 1939–48, the advantage was clearly with Canada, since not only was war damage to equipment less, but her gross investment in machinery and equipment for non-war purposes declined only slightly during 1939–45 from the 1935–39 level, while Britain's was drastically reduced. Yet the War retarded British labour productivity in manufacturing only slightly relative to the Canadian, and cannot therefore explain the larger part of the observed differences in 1948. Hence the pre-1938 per head data assume some significance for the 1948 position.

This views capital equipment historically, and in a way not closely related to the industries in this study; is there no closer approach by measurement in 1948? For broad aggregates it may be permissible to indicate capital equipment by horse-power, providing industrial structure is comparable, although it is probably too hazardous to assume this industry by industry.¹

The degree of mechanisation—the use of machine power—being a special aspect of capital equipment, may reasonably be represented by horse-power, even though it ignores some types of mechanisation, such as the business accounting machine and the fork-lift truck, which may be important factors in determining labour productivity.

¹ It may be noted that between two periods close together *changes* in horse-power installed in certain industries are correlated with changes in a valuation of the net stock of capital, although horse-power does not indicate the level of capital, except in extreme cases. Thus in Canada 1948–53 figures for as many comparable industries in this comparison as could be shown separately are given below:

	Percentage increases 1948–53 in Canadian:		Canada in 1948	
	Capital.	Horse-power.	Capital, \$ million.	Horse-power, '000.
Petroleum refining	131	144	130	96
Cotton textiles	20	21	38	120
Confectionery	8	8	19	24
Iron and steel	18	52	117	381
Tobacco	26	35	6	6
Clothing	32	42	111	13
Rubber	28	25	32	114

Sources: Capital computed as indicated below from the *Annual Reports of Taxation Statistics*; horse-power from the 1953 *Census of Manufacturing Reports*.

(Capital movements were estimated as the gross book value of buildings and equipment, less depreciation, at constant prices, with a single deflator; a combined price index of non-residential building materials, and iron and non-ferrous metal products weighted according to gross expenditures on construction and equipment.)

However, when as many manufacturing industries as possible were taken, in twenty-eight groups, rather less interesting results were obtained.

Figures for relative horse-power in use per unit of output¹ and per operative, again for Canada with Britain as 100, are given in Table IV. They suggest that Canadian horse-power in use per operative was higher than in Britain, though per unit of output it was generally lower.

TABLE IV
Relative Utilisation of Horse-power^a
(All indices are for Canada: Britain = 100)

	(1) Relative horse-power in use per unit of output (United Kingdom, 1951 horse-power; Canada, 1948 horse-power).	(2) Estimated horse-power in use per unit of output (both countries, 1948 horse-power).	(3) Estimated horse-power in use per operative (both countries, 1948 horse-power).
Petroleum refining	42	110	202
Cotton spinning and weaving . .	55	62	119
Biscuits	45	91	130
Confectionery	76	112	182
Cast furnaces, iron and steel . .	68	74	124
Tobacco	65	67	93
Clothing	47	59	104
Sap, glycerine, candles	94	104	179
Rubber	75	87	137
Iron foundries, tubes	76	94	133
Sugar refining	104	98	144
Loose ovens	88	83	134
Footwear	70	63	85
Median	70	87	133
Upper quartile	85	103	170
Lower quartile	49	64	108

Sources: Compiled from Census of Production data.

^a For output data, British weights used throughout. Order of industries, as in Table I.

Attention is often drawn to horse-power per operative data as an explanation of productivity differences, although it is the per unit of output data which are relevant. If the same horse-power is used to produce the same unit of output in two countries, then this cannot by itself result in higher labour productivity in one country unless the horse-power in that country is used more effectively either by better organisation or by incor-

¹ Two figures are given for horse-power in use per unit of output. Column (1) gives the ratio using United Kingdom horse-power from the 1951 Census of Production compared with Canadian figures from their 1948 Census; Column (2) uses estimates of the British 1948 figures based principally on changes in output 1948–51. This seemed the best assumption to make, since in Canada changes in horse-power in use 1948–53 in the present group of industries were closely correlated with output, +0.88 compared with +0.81 with employment, +0.71 with electricity used and +0.89 with all fuels. The latter was not used as an indicator, since the British individual industry data showed fuel purchased in 1948, and fuel purchased and used in 1951, *Census of Production for 1951*, Summary Tables, Part 11, 1956, Tables 13, 14. It may be noted that it would have been desirable also to investigate horse-power hours worked per unit of output, since this would take account of differences in shift working between the two countries. Complete data were not available to do this.

poration in different-quality equipment. Since the per unit of output figures do not seem to explain the higher Canadian productivity, the fact that Canadian equipment was probably more up to date than the British is a possible explanation of the observed differences, a modern unit of horse-power being more effective, both in power transmission and in saving labour, than a unit installed some time ago. But it is difficult to say just how far this quality factor rather than any other is responsible.

The Combined Use of Factors

The probability of some substitution between labour and materials has been mentioned; between man-power and mechanised power it is clearly vital to productivity. Since one might expect to find that less labour is associated with more mechanisation, to observe the combined effect may be a useful addition to the analysis, as also may the combination of the three factors together.

A different method will have to be adopted from that used with labour and materials, since the indicator of mechanisation is not expressed in value terms, nor would it be easy to assess on what an appropriate value figure should be based.

A suitable method is to fit a functional relation to the basic data which contains a constant term indicating the degree to which the input-output structure of one country is removed from the other: this will be a measure of productivity as explained below. A logarithmic relation is convenient for this purpose, and its use may be demonstrated as follows. Suppose that for each industry the following particular relation holds:

$$x = (a) l^\alpha \quad (1)$$

where x is the quantity of output, and l the quantity of labour. (a) is therefore the parameter which relates the use of output with the use of labour, and α is the elasticity of output with respect to labour. (a) and α can be estimated by taking changes in one industry over a number of years or, showing something different, by combining the data for many industries at one point of time, as in this study. The ratio of Canadian

output to the British in a particular group of industries will be $\frac{x_c}{x_b} = X$,

and the labour ratio in these industries $\frac{l_c}{l_b} = L$. Thus a particular function relating the ratio of Canadian/British output with the ratio of labour for these industries would be:

$$\frac{x_c}{x_b} = \left(\frac{a_c}{a_b}\right) \left(\frac{l_c}{l_b}\right)^\alpha \quad (2)$$

or

$$X = p L^\alpha \quad (3)$$

where p is the ratio of the two parameters connecting the use of output and labour. The assumption that the coefficient α is the same for this particular

group of industries in both countries is verified empirically below. Note that this ratio is of output/(labour) input, and that it differs slightly in concept from the reciprocal of the median of labour productivity as used in Table I.

It is straightforward now to combine labour with the degree of mechanisation H (as represented by horse-power):¹

$$X = p L^\alpha H^\beta \quad (4)$$

and also the relative use of materials and fuel, M :

$$X = p L^\alpha H^\beta M^\delta \quad (5)$$

For present purposes, the important number is p , the ratio of parameters defining the relationship between output and the various inputs in the two countries, *i.e.*, a productivity ratio. Its magnitude will depend on the precise determinants included; if all forces affecting productivity could be incorporated on the right side of the equation (including some non-inputs such as restrictive practices), p would equal unity. If only some forces are included, *e.g.*, factors of production, then p shows the output/input ratio due to the factors not included. Thus it will be shown that as more inputs are included the p ratio falls.

Applying equation (3) to the data for the comparable industries only (with output based on the British price weight series),

$$p = 1.92$$

$$\alpha = 1.13$$

This showed that Canadian output per head was about 92% above the British,² which is perhaps rather higher than one would expect from Table I. But the result is due, in part, to the somewhat unsatisfactory determination of the regression as a result of the rather small number of values for the variates combined with some unevenness in their distribution.³ These empirical results must therefore be regarded with some reserve.

¹ With H representing capital, (4) is the Cobb-Douglas production function. The convenience of using a logarithmic function of this type is clear: it gives a productivity ratio, elasticities of output, α and β are derived immediately and the constant-returns hypothesis can be tested. But one cannot be entirely satisfied about its validity, since the main justification for its use derives from empirical studies rather than theory. (C. W. Cobb and P. H. Douglas, "A Theory of Production," *American Economic Review*, Supplement, 1928, p. 139, and P. H. Douglas, *The Theory of Wages*, Chapter 5.) Moreover, precisely what these elasticities mean in practical economic terms, particularly for a heterogeneous factor such as capital (as used in the original formulation) or the degree of mechanisation (as used here) is not easy to say.

² The equation was fitted with the logarithms of the data $\log X = \log p + \alpha \log L$, the other equations being fitted in the same way. Here standard error of the coefficient $\alpha = \pm 0.20$, $R^2 = 0.9543$.

³ In particular, the "petroleum" industry is of considerable importance in determining the coefficients because of its different size and labour ratios from other industries. If "gas" and "cattle, poultry feed" are included in the analysis (these were the only two rejected industries which were considered as possibly comparable, and their size and labour ratios differed from all other comparable industries), they may be considered as giving a strong guide to the slope of the regression line. Now $p = 1.58$, $\alpha = 0.97$ and R^2 is 0.8506. This suggests that the parameter p as calculated above is rather higher than it would have been if more industries could have been included.

By taking labour together with the relative degree of mechanisation (equation (4)), the combined productivity (output/input) index places Canada 55% above the British.¹

$$\begin{aligned} p &= 1.55 \\ \alpha &= 0.73 \\ \beta &= 0.31 \end{aligned}$$

If materials are added to the function, as in equation (5), with the same values for relative output, labour and horse-power, then the following results are obtained:²

$$\begin{aligned} p &= 1.07 \\ \alpha &= 0.15 \\ \beta &= 0.15 \\ \delta &= 0.67 \end{aligned}$$

By the inclusion of materials, therefore, the unaccounted part of the output/input ratio has dropped from 55% to only 7%. This 7% indicates the magnitude of the net resultant of factors not so far included, like the quality factor in horse-power, differences in the organisation, effort, shift working, etc., as well as the effect of errors of measurement. It must be repeated that, because of the small number of variates which could be included, and their uneven distribution, all these results should be regarded with caution, in particular the residual 7% derived from the three-factor regression, for the calculation of which the data were clearly inadequate; probably the main interest in this derivation of a combined index lies in the methodology.

¹ Standard errors, $\alpha = \pm 0.20$, $\beta = \pm 0.13$, $R^2 = 0.9705$. In the original presentation of the function Professors Cobb and Douglas assumed constant returns to scale, such that $\alpha + \beta = 1$. No restraints were imposed here. The implication of $\beta = 0.31$ is that a 10% increase in horse-power is associated with a 3.1% increase in output, keeping labour constant but permitting mobility elsewhere. The coefficient for α has changed from 1.13 to 0.73; the former was the elasticity assuming mobility in all factors, and the latter was the elasticity if the degree of mechanisation was held constant.

It may be noted that these coefficients for α and β are close to many of those obtained by Professor Douglas and others with H to represent capital and not mechanisation. P. H. Douglas, "Are There Laws of Production?" *American Economic Review*, 1948. Many results for α were between about 0.6 and 0.8 and for β between 0.2 and 0.4.

In order to verify the truth of the assumption that the coefficients α and β were identical in the two countries, values for p , α and β were also calculated for each country separately. The three magnitudes respectively for Britain were 327.0, 0.44, 0.13, and for Canada were 173.9, 0.45, 0.15. The coefficients were very close, and it will be seen that the Canadian parameter was 53% of the British, which checks closely with the answer obtained by computation from the ratios.

² Standard errors: $\alpha = \pm 0.20$, $\beta = \pm 0.12$, $\delta = \pm 0.04$, $R^2 = 0.9977$. Although the standard errors for α and β are high in relation to the coefficients, one would expect these coefficients to be different from those obtained with equation (4), which excluded materials. The reason, as before, is that now the degree of mechanisation and materials are assumed constant in the determination of the labour elasticity, and for the mechanisation elasticity both the quantity of labour and materials are held constant. It may be noted that in each answer the sum of the coefficients was close to unity, which suggests constant returns to scale.

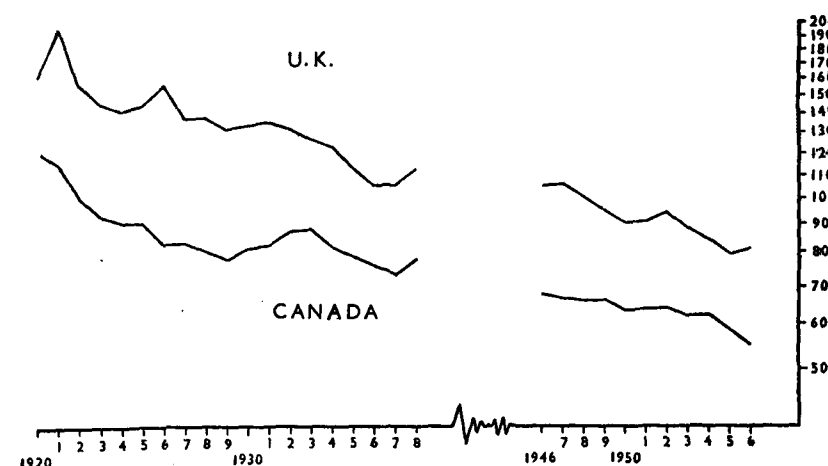
PART II. FUNDAMENTAL CAUSES OF DIFFERENCES IN PRODUCTIVITY

One of the more interesting results in Part I was that Canadian labour productivity in selected industries was above the British in 1948, yet wages were so much higher that the average of Canadian unit labour costs was slightly higher also. Was this peculiar to 1948, or had productivity been different and labour costs similar for some time? And, following from this, what were the more fundamental reasons for the observed differences? A pointer was given when discussing real investment, but further analysis is required.

Labour Productivity and Costs before 1948

Graph 1 shows that United Kingdom labour productivity for all manufacturing industries¹ during the period 1920-56 had been rising rather

GRAPH I
Employment per Unit of Output in Manufacturing Industries
1948 U.K. = 100



faster than the Canadian (this is also shown in line 1 of Graph 2, which is the ratio of the two countries from Graph 1), although the United Kingdom rate of increase, when viewed from the technological standpoint,² was probably less fast than that indicated.

¹ The rather sweeping assumption was made that the average labour productivity ratio from the comparable industries held for all manufacturing industries in 1948.

² One can divide increases in labour productivity in a particular industry over time between two causes: first, increases within individual firms; and second, the transfer of labour from low to high productivity firms, which raises the average level of productivity without any one firm necessarily having altered its methods. For present purposes the former cause is of greater interest. It is not possible to assess the relative importance of the two causes for each industry separately in

Graph 2, line 2, shows the relative movements in unit labour (wage and salary) costs at a constant 1935–38 exchange rate, and line 3 shows the same as line 2 but at current exchange rates. It appears that the exchange rate brought unit labour costs remarkably close in the two countries during the inter-war period, but that since 1946 Canadian labour costs have risen to about double the British, due principally to devaluation. Clearly the differences in labour productivity (and the similarity in costs) began before 1920, but when?

From broad estimates¹ it appears that from the beginnings of widespread industrialisation in Canada, in the 1860's, up to about 1900 Canadian productivity growth rates were considerably higher than the British. Then for more than a decade, productivity failed to rise in either country, although hours of work fell in both, while from 1913 to 1920 the rate of increase was probably faster in Britain. Calculating back from 1920, one arrives at the conclusion that Canadian productivity was almost certainly higher than the British even in the 1860s.

It is impossible to elaborate on this further in a short space by comparing conditions in the two countries, which in any case have received attention individually elsewhere,² and one suspects in any case that Canadian productivity was higher from this earlier date principally because a larger proportion of the equipment in use was new and embodying the latest techniques, whereas Britain at the same point of time would be in possession of much old equipment embodying earlier techniques. It is perhaps more important to concentrate on the later period, from 1920 to 1938, when productivity

Britain, neither are satisfactory statistics yet available for changes in output in individual industries back to 1924, but by taking industry groups crude calculations (following the method outlined by K. Borch, "Causes of Increases in National Productivity," *Productivity Measurement Review*, November 1956) indicate that rather more than 10% of the increase in British labour productivity 1924–48 was due to the better allocation of labour between groups, while in Canada 1926–48 a negligible proportion was due to this cause. (I am indebted to Mr. K. S. Lomax for allowing me to use some unpublished results from his study on British output indices in making the above calculations.) B. C. Brown notes that the increase in output per head 1935–48 (with output measured at 1935 prices) due purely to the redeployment of labour between individual industries was about 4%. "Industrial Production in 1935 and 1948," *London and Cambridge Economic Bulletin*, December 1954.

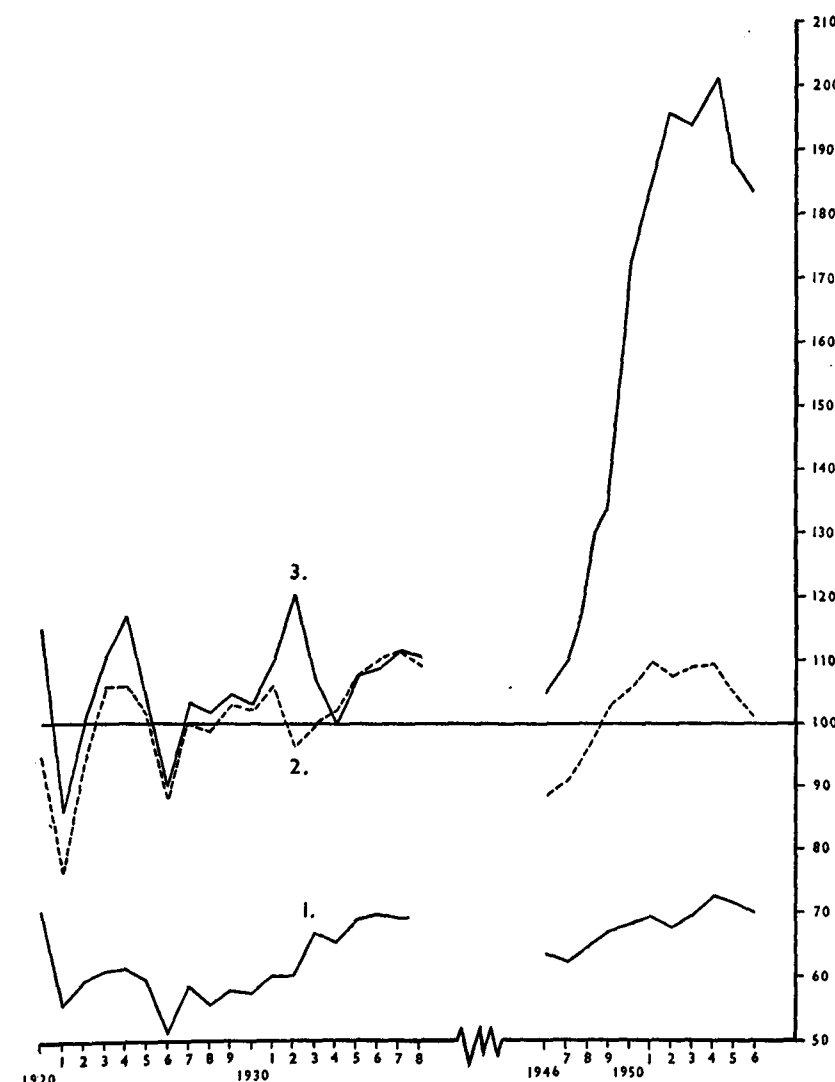
¹ O. J. Firestone in *Canada's Economic Development, 1867–1952* (shortly to be published: I am grateful to the author for allowing me to use results from the draft version given as a paper to the 1953 Conference of the International Association for Research in Income and Wealth) estimates that man-year labour productivity in manufacturing rose annually by 1.8% during 1870–1900, and that it remained practically stationary 1900–1920. For Britain D. J. Coppock, in "Climacteric of the 1890's: a Critical Note," *Manchester School*, January 1956, estimates that the average annual increase in industrial productivity (excluding building) was 0.5% during 1866/74–1900/7, and that from 1900/7 to 1908/13 it fell by about 0.1% per annum. Hours of work in Canada fell from 64.0 in 1870 to 56.7 in 1900; insufficient data are available for a man-hour comparison to be made with Britain (in 1906 hours of work in Britain were about 53.8). Rostas estimates that man-hour productivity rose by 27% 1907–24; *op. cit.*, p. 49.

² For Canada, see O. J. Firestone, *op. cit.*; also J. Viner, *Canada's Balance of International Indebtedness 1900–1931*. For Britain, see E. H. Phelps Brown and B. Weber, "Accumulation, Productivity and Distribution in the British Economy, 1870–1938," *Economic Journal*, June 1953.

GRAPH II

Indices for Canada

U.K. = 100 in each year



Line 1. Relative employment per unit of output in manufacturing industry.
Line 2. Relative unit labour cost at constant 1935–38 Exchange Rate.
Line 3. As 2 at Current Exchange Rates.

rates of change may not have been widely different after allowing for a greater "transfer of labour" effect in Britain.

It has been shown that for the twelve years prior to 1938 Canadian real gross investment per employed head in manufacturing and distribution in 1938 was about double the British (per unit of output it was higher also), and it is probable that this was a major factor in maintaining the disparity in labour productivity observed in the graphs. But the crucial and fundamental question is why Canada had this higher rate of gross investment.

Investment and Growth

Since the changes in manufacturing output in the two countries were similar over the period 1920-38 (although between 1926 and 1938 growth was slightly more rapid in Britain, and there were rather different cyclical fluctuations within the period), it seems unlikely that this can be related to the higher rates of Canadian investment. It is possible that *anticipated* future demand, leading to a higher investment rate, was consistently higher in Canada than in Britain, although this may have been true before the Canadian depression of 1929, it is unlikely to have been significant for many years after that date.

Special conditions may have been important in determining investment in both countries; in Britain over much of the period unemployment was high, profits were low and confidence in the future was lacking, while in Canada there was the major setback after 1929. But just how important these and other special factors were in determining relative investment rates is difficult to estimate.

It is possible, however, that there is a general tendency for a high productivity itself to lead not only to a high rate of investment but also, under certain assumptions, to the maintenance of this high productivity. Empirically, a high labour productivity is generally associated with a high labour price relative to commodities (relative wages approximately equal the relative average (and possibly marginal) product of labour, as between Britain and Canada in 1948), so that capital equipment, being a commodity like any other, is probably cheap relative to labour.¹ If demand is not expected to change, then the main purpose of capital investment is probably replacement. Where equipment is physically worn out it will be replaced by equipment which will tend to be more labour saving in the high-labour-price environment than where labour is cheap.² But much equipment is

¹ Although the ratio may well be different from the consumer-goods/labour-price ratio because of differential rates of productivity growth in a previous period, the existence of such a difference is irrelevant here, the important assumption is that the producer-goods/labour-price ratio between the two situations should not equal unity.

² In certain cases the length of life for which British equipment is designed appears to be longer than in the United States, so that replacement of this equipment with that more technically advanced will be more rapid in the United States; in so far as Canada uses American equipment or has adopted American habits the same will apply there.

replaced through obsolescence, of which an important determinant is whether or not the *additional earnings* achieved from the new equipment will be high.¹ Now where labour is or may become expensive relative to equipment, then the additional earnings from replacement with more modern *labour-saving* plant will be greater than where labour is cheap. And where labour is or may become cheap relative to equipment, there will be a tendency either not to replace or to install more *capital-saving* plant than where labour is expensive. Thus, *ceteris paribus*, even though the range of technical possibilities of production is the same in the two environments, replacement due to obsolescence will be more rapid, and the equipment will be more labour saving where labour is dear relative to equipment. This will lead to a higher labour productivity, and to a lower commodity price relative to the price of labour; and so the process is repeated. But whether this results in converging, parallel or diverging productivity growth lines between the same industry in the two environments is difficult to determine *a priori*.²

For this hypothesis to be important for the present study, it would be necessary to show that the earnings criterion was effective and that other determinants of investment were unimportant relatively between the two countries, which could not easily be demonstrated even if it were

¹ See, for example, P. W. S. Andrews and E. Brunner, *Capital Development in Steel* (1951), pp. 263, 356; also R. Eisner, *Determinants of Capital Expenditures* (University of Illinois, 1956), pp. 31, 47, 65, etc., which suggests that in many cases the earnings (or savings) criteria were important. In most small firms such calculations will not be made, so that the hypothesis is weakened, even though entrepreneurs may sense that the additional earnings due to replacement might be great.

² On the assumption that the earnings criterion is paramount in determining machinery investment, then in one country the productivity response can be defined in terms of the product of two elasticities: that between machinery investment with respect to the anticipated additional earnings and that between labour productivity and machinery investment. If this multiple is unity, then a specific labour/equipment price ratio will lead to an identical productivity difference; and if that marginal change in productivity itself leads to an equal marginal change in the labour/equipment price ratio in the machinery industry, then the productivity rate of increase will be maintained. The ratio of additional earnings between two countries, due to the introduction of an identical piece of equipment with the same capital costs, will be the same as the ratio of the labour/equipment price ratio. In practice, it is probable that the elasticity of productivity with respect to machinery investment will fall as productivity reaches the higher levels.

One sees that management may be equally skilled in two countries, yet because of different economic environments their actions may differ, although each acts as any skilled entrepreneur would think best in his own conditions. How far a difference in attitude towards the installation of equipment between Britain and North America has been conditioned by the different economic environments, and how far it has been due to the stock of the people, their philosophy, climate, etc., is unknown.

The most obvious implication for policy from this hypothesis is that productivity in the machinery-making industry should be encouraged to increase as rapidly as possible, so that equipment will become cheap relative to labour and its use encouraged.

See also Mrs. J. Robinson, *op. cit.*, Chapter 10. I am indebted to Dr. Salter for pointing out to me the possible significance of obsolescence in this connection. It may be noted that this general hypothesis is in broad agreement with the suggestion by Professor Melman that the dynamic factor in productivity adjustment is the relative cost of labour to machinery ("Dynamic Factors in Industrial Productivity").

true. What one can say is that the price of labour relative to the price of equipment was rather greater in Canada than in Britain during much of the inter-war period,¹ so that there may have been a rather greater incentive in Canada to invest in equipment.

Conclusions

From the statistical data which have already been summarised, it appeared that in those industries examined labour productivity was rather higher in Canada than in Britain in 1948. Whatever may have been the average difference if all manufacturing industries could have been included on the same basis, approximately the same difference had existed at least since 1920; assuming that the average of industries in this study was representative of all industries, it is probable that from the time when industrialisation in Canada became widespread her labour productivity was higher than in Britain. Labour costs per unit of output were remarkably close between the two countries in the inter-war period, but they diverged sharply after the Second World War, owing principally to the devaluation of 1949.

Although it was not possible in this study to discover precisely how the Canadians achieved this higher level of labour productivity in 1948, it was felt to be related in part to the type of fuel used (their greater use of oil and electricity), but more particularly to the greater modernity of Canadian equipment. It was possible to approach measurement of the latter for only a limited period between the wars, and then only for a group of industries much wider than those in this study; nevertheless, this period was clearly relevant to the position in 1948. Real gross investment in machinery and equipment in "manufacturing and distribution" aggregated over more than a decade and related to employment in 1938 was about twice as high in Canada as in Britain; related to output it was also clearly higher. Special circumstances which may have accounted for this were present in both countries, but it was suggested that, as a general principle, a high productivity may lead, through a high labour/equipment price ratio, to the installation of equipment which is more labour saving, and to the more rapid replacement of equipment through obsolescence than where labour is cheap relative to equipment, and that this in turn leads to higher productivity in the country where labour is expensive.

Manchester University.

J. B. HEATH

¹ If equipment prices were about level in 1948, as already suggested, then the labour/equipment price ratio was about 69% higher in Canada in 1948, in 1937 about 45% and in 1926 about 51%.

APPENDIX A

Sources and Methods

Gross Output

Using 1948 Census of Production data, the aim was to measure the quantity of goods produced for sale outside each defined industry, *i.e.*, sales of principal and other products, excluding items classified to other trades, adjusted for stock changes. This was calculated from quantity and value data at constant British and Canadian prices as already described. The "ring fence" method was followed (D. Paige and S. Adler *op. cit.*), sales between firms within the same industry were excluded (*e.g.*, sales of pig iron to steel furnaces). This involved some estimation due to lack of detail, particularly about "other products," although for Britain Board of Trade estimates were used wherever possible ("gross output free of duplication," Table 6 of the *Census of Production for 1951*, Summary Tables, Part II, 1956); in Canada both output and materials and fuel used were given in great detail in almost every industry examined, so that fair estimates could be made.

In every case a part of the value of production (on the average 14% in Britain and 12% in Canada) remained not identified ("all other products"), or not paired (by-products produced in one industry but not in the other), or not quantified. Occasionally it was possible to find a relative price for the latter two groups from other sources. In general, to value the "non-matching" part at the other country's prices it was assumed that the average price ratio for the paired products would apply also to the non-matching products—the "price assumption"—since all derived from the same industry.

This procedure gave two answers for relative output in each industry, one using British and one using Canadian prices. In most comparable industries the difference was small, but in rubber and tobacco it was significant. Where one series only was required, rather than taking the geometric mean, that reckoned to contain the least error was used. In all except two industries, iron foundries and cotton textiles, where the two figures for output were close anyway, it was found that that part of output value to which the "price assumption" was applied was greater in Britain than in Canada; in other words, the non-matching part was rather greater in Britain. Thus at British prices one is making an assumption, based on British data, about the (relatively small) non-matching part in Canada, and at Canadian prices one is making an assumption based on Canadian data about the (rather larger) non-matching part in Britain; assumptions made from one country's data about the other may therefore be reduced—and errors reduced—by using British rather than Canadian prices.¹

Net Output

Although gross measurements were preferred to the net, as explained, net indices using the Geary formula were also calculated. In all of the comparable industries the net and gross indices were very close, except for petroleum and coke ovens. Here the value of materials and fuel was over 90% of the value of gross output, hence small errors in either gross output or materials and fuel would be greatly exaggerated in the net measurement; the discrepancies probably stemmed from this.

¹ I am indebted to Miss D. Paige for pointing this out to me.

Materials Used

Like gross output, materials were calculated as materials used in current production purchased from outside the defined industry. The non-matching part of the total value (average 22% in both countries) was converted to the other country's prices at the current exchange rate and not at the average price of the paired commodities, since the materials were purchased from many diverse sources between which the international price ratios would best be represented by the average for all commodities as shown by the current exchange rate.

Fuel Used

The Canadian fuel and power Census in 1948 (and 1953) gave full details. The difficulty in the British Census about stock changes has been mentioned. The negligible uncovered part of the value of fuel used was converted to the other country's prices at the current exchange rate. Conversion rates into British Thermal Units were taken from H. M. Spiers, *Technical Data on Fuel*.

Employment

Males and females were classed separately, numbers being reckoned as the wage and salary bill at constant prices. The male-female earnings ratio was obtained from the British *Ministry of Labour Gazette* and the Canadian *General Review of Manufacturing Industries* and applied to the operative and administrative wage bills to obtain the total male and female earnings in the four categories.

In Canada no numbers were ascertained on Census forms for "retail and wholesale operations (including travelling salesmen)," while in Britain these employees were included whether or not the sales office was at the same address as the manufacturing plant, but any selling organisation for which separate accounts were kept was excluded. It is probable, therefore, that some sales staff were included in the British Census which were excluded from the Canadian, but the numbers involved are likely to be relatively small.

Transport employees were excluded from the British figures for comparability with the Canadian.

Canadian Census returns issued no specific instructions about the inclusion of canteen workers; in Britain they have been excluded from the comparison.

Working proprietors were included. In Canadian data their earnings were reckoned as "withdrawals during the year for normal living expenses of self and family . . . excluding withdrawals for payment of income tax." In the British Census their earnings were omitted, but here they were assumed to be the same as the average of the administrative group, with whom they were included.

Payment in kind was included in the Canadian figures, but excluded from the British.

Prices

Price ratios resulted directly from the comparisons. In Britain Census average values for individual commodities sold were based on the "amount charged to customers, whether on an ex-works or delivered basis,"¹ transport payments made by them to other firms for transport outwards were shown in total separately. In Canada Census forms specified "selling value at factory."

Similarly, the British value of materials and fuel included "transport charges to the works, other than transport carried out by the establishments' own staff."¹

¹ *Final Report on the Census of Production for 1948*, Introductory notes, pp. I-VIII.

Canadian data were consistent in including freight ("laid-down value at the factory").

Small Firms were excluded in Britain but included in Canada.

Calculation of Relative Real Gross Investment in Plant and Machinery

In Canada the figures for gross investment were from *Private and Public Investment 1926-1951*. They included new investment, with repair and maintenance shown separately, in machinery and equipment ("installed cost of machinery, motors, etc., and the delivered cost of office furniture and fixtures, motor vehicles and other transportation equipment," including small items of current expenditure such as small tools and office equipment, p. 213) in Manufacturing (Table 69), Trade (Table 67), Commercial Services (Table 69), Construction (Table 23) and Mining (Table 22). These were converted to pounds both at the current exchange rate and at an estimated commodity exchange rate, as described above, and inflated to 1948 prices using the series for current and constant-price dollars in machinery and equipment in Table 13. (The inadequacies of this inflation method are recognised.) Employment figures were from the D.B.S. series for manufacturing, trade, services, construction and mining given in the *Statistical Review*, 1955 Supplement, and in the 1955 *Canada Year Book*, p. 1336, etc.

For the United Kingdom, P. Redfern, Table 9, was used; plant and machinery, including vehicles, for manufacturing and distribution at constant 1948 prices (distribution included "Mining and quarrying other than coal, building and contracting, road goods transport, broadcasting and distribution and other service industries," p. 178). Employment was from A. Chapman, *Wages and Salaries in the United Kingdom 1920-38*, Tables 1, 40, 41.

To calculate aggregate real investment 1926-38 per head in 1938 was straightforward. Average annual real gross investment per head in Canada was calculated for each of six groups within manufacturing (animal and vegetable products, textiles and clothing, wood and paper, iron and non-ferrous metals, chemicals and non-metalliferous products, and miscellaneous) and for wholesale and retail trade, commercial services, construction and mining. These were then averaged using first the Canadian average employment figures 1926-38 for the respective groups as weights, and then the corresponding United Kingdom figures 1924-38, the latter being that which gives the closest comparison.

(Note: in the Canadian "Public and Private Investment," Table 39 (Miscellaneous Industries), an allowance was included for "capital items charged to operating expenses in all manufacturing industries." An estimated amount was distributed *pro rata* between the other five manufacturing groups.)

Mr. Redfern's figures excluded repair and maintenance, and, for comparability, they were excluded also in Canada. It is possible that major repair works might be included in "new investment" in one country and in "repairs and maintenance" in another, but it is difficult to assess the relative prevalence of this.

A. Aggregate Real Investment in Machinery and Equipment 1926-38 (Excluding Repair and Maintenance) per Head in 1938

	United Kingdom.	Canada.	
		(a)	(b)
Aggregate, £million (1948)	2,808	752	701
Aggregate per head in 1938, £ (1948)	216.1 (100)	491.4 227	458.6 212)

B. Average Annual Real Investment per Head in Machinery and Equipment (Excluding Repair and Maintenance)

	United Kingdom, 1924-38	Canada, 1926-38.
Average annual employment, '000	11,370	(a) 1,369
Average annual gross investment, £million (1948)	211.2	57.8
Ditto per employee:		
(a) at Canadian weights, £(1948)	—	42.2
(b) at British weights, £(1948)	18.6	36.8
(18.6:42.2 = 100:227)	(100)	(198)

(a) Canadian dollar converted to pounds sterling at current exchange rates.
(b) Ditto at estimated overall commodity exchange rates.

Calculation of Indices for Graphs 1 and 2

In Britain the output series for manufacturing industries was from *Industrial Statistics 1900-1955* (O.E.E.C., 1955). This index (with 1938 as 100) appeared to be based on 1935 prices (between 1938 and 1948 it corresponds almost exactly with B. C. Brown's estimates at 1935 prices in "Industrial Production in 1935 and 1948," *London and Cambridge Economic Bulletin*, December 1954). Employment and average annual earnings were from A. L. Chapman, *Wages and Salaries in the United Kingdom, 1920-38*, and for post-war years from the *Monthly Digest of Statistics* and the Blue Books on *National Income and Expenditure*.

In Canada the output series was from the same O.E.E.C. publication, and the employment and earnings series were from *Canada Year Books*, the revised figures given in the 1939 *Yearbook* and after.

It may be noted that the output series in both countries was based on pre-war price weights. If this had been based on post-war weights British output between 1935 and 1948 would have appeared to rise rather less fast (31% compared with 41% according to B. C. Brown's estimates), which would have given a lower rate of productivity increase between those dates. In Canada to have revalued the output index at 1947 weights instead of the 1935-39 weights actually used would have made little difference (the increase in production between the two dates was 107.7% at the pre-war weights and 102.8% at the post-war weights. "Revised Index of Industrial Production 1935-1951," *Dominion Bureau of Statistics Reference Paper*, No. 34, p. 17).

APPENDIX B

Basic data for those industries which form the subject of this study are given below.

	Value of output.			Value of materials and fuel.			Total wages and salaries.			Horse-power in use.	
	$\Sigma Q_p P_B$ £'000	$\Sigma Q_p P_e$ £'000	$\Sigma Q_p P_B$ £'000	$\Sigma Q_p P_B$ £'000	$\Sigma Q_p P_e$ £'000	$\Sigma Q_p P_e$ £'000	$\Sigma Q_p P_B$ £'000	$\Sigma Q_p P_e$ £'000	$\Sigma Q_p P_B$ £'000	Q_p '000	Q_e '000
Petroleum refining	43,500	370,970	148,484	100,690	36,001	326,210	2,944	21,524	20,238	35,000	89,179
Cotton spinning and weaving	262,541	185,764	865,333	55,022	146,737	102,016	61,903	47,609	435,313	870,592	113,344
Biscuits	36,788	51,409	154,856	12,213	24,019	26,525	7,494	8,942	47,309	26,660	8,103
Cement (not quarries)	27,628	30,562	108,725	7,766	—	—	3,552	3,825	22,888	—	—
Confectionery	85,262	99,686	323,813	25,422	55,225	54,331	14,136	15,227	85,188	66,000	21,945
Blast furnaces, iron and steel	312,130	290,566	1,332,039	68,561	174,375	130,200	85,288	77,358	589,903	2,085,045	361,410
Tobacco	98,335	107,077	416,487	28,454	52,464	53,262	13,071	17,127	89,113	29,262	5,833
Clothing	269,992	457,703	1,330,450	98,628	144,086	225,000	79,969	123,312	525,924	60,000	12,935
Soap, glycerine, candles	53,685	66,687	258,108	14,672	39,040	38,298	6,054	8,125	45,667	42,764	12,263
Rubber	123,773	194,112	618,259	47,008	70,526	87,113	27,815	48,273	189,994	310,360	109,549
Iron foundries, tubes	161,468	123,597	666,372	29,842	72,347	52,324	54,042	46,388	368,960	374,159	66,251
Sugar refining	127,595	113,510	430,446	33,500	81,054	90,785	6,447	7,662	41,214	109,366	31,946
Coke ovens	75,480	73,855	323,641	17,173	60,127	48,551	6,689	8,414	47,811	131,661	27,919
Footwear	123,446	105,340	440,653	29,751	68,824	56,608	29,527	32,513	164,236	75,098	12,008

Note: The Q_s represent quantities, and the P_s prices: suffixes denote Britain or Canada.

CLIVE BELL ON KEYNES

THE volume of personal recollections before us¹ contains an article about our former editor, J. M. Keynes, and a notice in these pages, therefore, seems appropriate. Mr. Clive Bell was an intimate friend of Keynes over a great many years, and future historians will accordingly, whether professional economists like it or not, assign high authority to his testimony.

His book makes agreeable and entertaining reading. It is written in a pleasant, easy and natural style. It is light, but there are many subtle touches and vivid pieces of portraiture. It provides a close-up and intimate view of a number of famous English people, most of whom constituted what used to be known as "Bloomsbury," and also fascinating sketches of life in Paris, and of various artists who were living there, both before and after the First World War. It reveals much which cannot fail to be of interest in relation to the culture of the early twentieth century.

I will first quote two passages in which Mr. Clive Bell pays his tribute to our great economist:

"Maynard was the cleverest man I ever met: also his cleverness was of a kind, gay and whimsical and civilized, which made his conversation a joy to every intelligent person who knew him. In addition he had been blest with a deeply affectionate nature. I once heard him say, humorously, but I believe truly, at dinner, before a meeting of the memoir club, 'If everyone at this table, except myself, were to die tonight, I do not think I should care to go on living.' He loved and he was beloved. He did not love, though he may have rather liked, me; and I did not love him. That should be borne in mind by anyone who does this sketch the honour of a reading.

"In great things he was magnificently generous; generous to his country, generous to his college, generous to servants and dependents, particularly generous to his less fortunate friends (I know two charming young men who may or may not know that they were educated—and highly educated—partly at his expense). In small things, however, like many who have enjoyed the advantages and disadvantages of a serious, non-conformist upbringing, he was careful" (p. 52).

and again:

"In spite of all the little annoying things that have stuck in my memory, my recollection of Maynard, vivid and persistent, is that of a delightful companion. I miss him; and I understand the feelings of those who more than miss, of those for whom the wound caused by his death never quite heals and may at any moment become painful. What I miss is his conversation. It was brilliant: that is an obvious thing to say but it is the right thing. In the highest degree he possessed

that ingenuity which turns commonplaces into paradoxes and paradoxes into truisms, which discovers—or invents—similarities and differences, and associates disparate ideas—that gift of amusing and surprising with which very clever people, and only very clever, can by conversation give a peculiar relish to life. He had a witty intellect and a verbal knack. In argument he was bewilderingly quick, and unconventional. His comment on any subject under discussion, even on a subject about which he knew very little, was apt to be so lively and original that one hardly stopped to enquire whether it was just. But in graver mood, if asked to explain some technical business, which to the amateur seemed incomprehensible almost, he would with good-humoured ease make the matter appear so simple that one knew not whether to be more amazed at his intelligence or one's own stupidity. In moments such as these I felt sure that Maynard was the cleverest man I have ever met; also, at such moments, I sometimes felt, unreasonably no doubt, that he was an artist.

"That Maynard Keynes was a great man is generally admitted; but in private life no one could have been less 'great-manish.' He was never pompous. His greatness no doubt revealed itself most impressively in economics—the work of his life—in organisation and negotiation; but of greatness in such matters I am not competent to speak. Nor yet, alas! am I entitled to speak of what to some was his most memorable quality: for me his cleverness was what counted most, but to a few privileged men and women who knew him through and through his supreme virtue was his deeply affectionate nature. He liked a great many people of all sorts and to them he gave pleasure, excitement and good counsel; but his dearest friends he loved passionately and faithfully and, odd as it may sound, with a touch of humility" (pp. 60–1).

These passages serve to indicate not only that there was a long friendship, but also that there was some slight element of lack of sympathy, between the two men.

Immediately on the publication of this volume I became aware of a rather strong vein of protest on the side of professional economists. Knowing, as they do, so much of the true greatness of Keynes, they were incensed that Mr. Bell should have written in terms that, despite the passages quoted above, are on the whole derogatory, and even slightly mocking. For their reassurance, and, more important, for the information of those future historians who will undoubtedly look to Mr. Bell for insight and knowledge about the character of the great economist, I would quote words from my *life of Keynes*, which were written some time ago:

"It has been erroneously held that Bloomsbury was in the nature of a mutual admiration society. This is very far from the truth. No doubt as friends they would give each other a helping hand towards material advancement. But within the circle they were keenly critical of one another. There was no question of molly-coddling. A sharp, biting wind of criticism blew through all the recesses of their habitations.

¹ *Old Friends*. By Clive Bell. (London: Chatto & Windus, 1956. Pp. 200. 21s.)

They did not give mercy nor expect it. Indeed, if you chanced to hear one member of Bloomsbury pull another to pieces, not leaving a shred, destroying him utterly, you might wonder what form their criticism would take when directed against an outsider" (p. 187).

Mr. Bell was a member of Bloomsbury, and it is important that the future historians aforementioned should, on reading his judgment of Keynes as a man, have in mind the settled and ineradicable habits of mutual criticism in Bloomsbury. The meaning of words of praise or blame depends on where one pitches one's standard; is one writing in terms of qualifications for a Professorship or for a Pass Degree? For instance, Mr. Bell describes Keynes as "provincial" and gives certain reasons which make the charge plausible. But then have not almost all the greatest Englishmen been provincial in the sense described? How many distinguished living Englishmen would be exempt from the charge of provincialism? We are not concerned here with cosmopolitan gad-about or mere social lights. Would the number be about half a dozen? I should find it difficult to name so many. To one habituated to the Bloomsbury style these strictures do not give offence. But to a wider audience they may be quite misleading.

The two main criticisms which occupy most of Mr. Bell's pages are: (1) that Keynes had a most irritating habit of cock sureness about matters on which he was not well informed, and (2) that he lacked æsthetic discrimination. Both these matters are dealt with in my *Life of Keynes*, where, I would suggest, they occupy the amount of space which is appropriate to their importance in their relation to the whole man.

The former point is dealt with as follows:

"Another failing may be mentioned in this connexion. He cultivated the appearance of omniscience. He held forth on a great range of topics, on some of which he was thoroughly expert, but on others of which he may have derived his views from the few pages of a book at which he had happened to glance. The air of authority was the same in both cases" (p. 468).

There is no doubt that this characteristic was irritating and set some people against him.

The other point I have also mentioned, even quoting Strachey's derogatory remark cited by Bell:

"Some hold, perhaps correctly, that his success in this field [picture collecting] was due to some uncanny extension of his intellectual power into the world of æsthetics, and that he was never deeply moved by visual, as he undoubtedly was by literary, beauty. Strachey indeed, is said to have remarked when in a peevish mood, 'What irritates me so about Pozzo¹ is that he has no æsthetic sense,'" (p. 120).

¹ I.e., Keynes.

Mr. Bell would amend this appraisal by deleting the third word—"perhaps." He also questions—wrongly I believe—his literary appreciation. I debated with myself for a long time whether I should write in this passage "probably" instead of "perhaps." Mr. Bell would claim certainty, but there, with due deference to his high artistic authority, I believe that he is wrong. People with great æsthetic sensibility are sometimes capable of howlers, such as those he cites in Keynes' case. But it strikes me that Bell is lacking in judgment in believing that one can be certain about the sensibilities of a man with so many facets as Keynes had, so many tentacles, such intelligence, such perceptivity about people, such depth, such intuition about unexpected matters, which often took one by surprise. On this point we, and future historians, should preserve some degree of agnosticism.

My main purpose, however, in writing this review is to set upon record for the benefit of future research workers that in my own judgment Mr. Bell is wrong on two points of substance:

1. The first point may merely be one of verbal interpretation; but none the less it is important. Mr. Bell writes: "I fancy it was about this time or a little earlier that he took to speculating." This was in the summer of 1914. It ante-dates his speculation by more than five years. He took to speculation in September 1919. This is not to say that he may not have had an occasional flutter, like anyone else, or perhaps a good many more than most people. He loved any opportunity to have a gamble. He was drawn to the gaming tables. But in relation to Keynes the words "took to speculation" have a more definite significance. His speculation was a very important ingredient in his life considered as a whole; through speculation he made himself a rich man, and this fact affected many other things. It was this important speculation, this systematic speculation, that started in the autumn of 1919.

My evidence is as follows. Keynes was a great hoarder of materials, and he kept massive files relating to all his speculations, which began at the date named. At that time also he wrote to his mother, telling her that he had begun to speculate, and wondering how his father would view the matter. It was his habit to confide all his private affairs, within reason, to his parents. There is no reference to speculation before this either in his letters to them or in other letters. When he began he was quite open to them about it. When writing his life, I went in some detail into his financial affairs. In 1919 he still had no capital, save for a few pounds in the bank. He borrowed small sums from members of his family, in order to give himself the where-with-all for his speculation. From that time forward he was a capitalist on his own account. If he had had some flutters at an earlier date, they could only have been occasional, and they led to nothing.

It is important that this should be clearly understood, since there were many ill wishers in his middle period who asserted that he took advantage

of inside information when in the Treasury (1915–June 1919) in order to carry out successful speculations. This allegation is entirely without foundation, and it is accordingly desirable that Mr. Bell's wrong dating should be corrected.

2. There is a second point on which I wish to challenge Mr. Clive Bell, for the sake of the "record." "It seems not generally to be known—though Mr. Roy Harrod has not attempted to conceal the fact—that Lord Keynes was a conscientious objector." It is true that Mr. Bell immediately adds:

"To be sure he was an objector of a peculiar and, as I think, most reasonable kind. He was not a pacifist, he did not object to fighting in any circumstances: he objected to being made to fight. Good liberal that he was, he objected to conscription. He would not fight because Lloyd George, Horatio Bottomly and Lord Northcliffe told him to. . . . As for his conscientious objection, he was duly summoned to a tribunal and sent word that he was much too busy to attend."

Readers of my *Life of Keynes*, where I have treated the subject of Conscientious Objection at some length (pp. 213–16), know that this was not the end of the story. Incidentally it was not when summoned to a "tribunal" that he pleaded that he was too busy, but when he received his ordinary calling-up notice. My *Life* proceeds:

"He did not carry this policy through to its final conclusion, for a year or two later the Treasury discovered a gap in its records. In the file there was no record of exemption against his name. And so to placate the Treasury Establishment Officer, he walked quietly round and went through the formalities of obtaining exemption" (p. 215).

I submit that there was not any sense, peculiar or other, in which Keynes was a Conscientious Objector in the First World War. In this respect I would place him with Lowes Dickinson, than whom there was no more passionate peace-lover. He held that it was the duty of Britain to intervene in 1914; that granted, there was nothing more to be said about "objection." I submit that, had Keynes not been doing work of supreme national importance and had he been physically capable of being an efficient soldier, he would have answered the call when it came to him. He was far too honourable a man to have reported for duty, as in fact he eventually did, had he really been a conscientious objector to it. I protest in particular against the reference in this context to Lloyd George, Horatio Bottomly and the like—as though it could have made the slightest difference to Keynes' notion of his duty what certain vulgarians and superficial persons advocated or ordered. His integrity, his independence of mind, his sense of history, his fine judgment, raised him on to an altogether different plane.

To suppose that Keynes was an Objector in any sense is to render his

attitude at the Paris Peace Conference unintelligible. The essence of that attitude was that he felt passionately to the core of his being about our duties at the peace-making. There were detractors at the time who held that he made such a fuss only to score some easy publicity. Such a view is made untenable by the letters that he wrote from Paris, and by the temper of the book itself, compared with all his other writing. His exasperation and bitterness at Paris are to be explained only by his having previously committed himself at heart to the policy of war—no doubt reluctantly and with misgivings. It was the duty of the nation, with which he had identified himself, to expiate the guilt of war by a just peace. A man who had been sceptical throughout and had not entered heart and soul into the conflict would have been much more blithe at Paris when things went in the bad old way. All this I have endeavoured to explain in my book.

How, then, do we account for the incident referred to by Mr. Clive Bell? The explanation is really quite simple. When he received the tiresome calling-up paper he was doubtless irritated and answered as Mr. Bell described. And then having done that, he made the most of it with his Bloomsbury friends. Surely a harmless ruse! They had pressed him hard in argument, and he on his side had respect for their views. He told them how he had scorned the calling-up notice. This was just a little gesture of appeasement to his Bloomsbury friends, which did no one any harm. But when pressed by the Establishment Officer, he submitted himself to the authorities in the ordinary way.

I should like to take this opportunity of making a gentle *riposte*. For when my *Life of Keynes* appeared, one member of Bloomsbury, *not* Mr. Clive Bell, (and one other Bloomsbury-briefed reviewer), wrote in terms that implied that he, unlike the biographer, had greater knowledge of the "real" Keynes. Of course to know a man when he is young is to know certain deep and important things which later become overlaid. But after reading the voluminous letters Keynes wrote to his father and mother I probably know things about the character of even the young Keynes which his Bloomsbury friends never appreciated.

In the 'twenties I had the honour of being elected to the Cranium Club, of which almost all the leading persons who composed the Bloomsbury group, together with certain less intimate friends, were members. Some hold that the heyday of Bloomsbury was before 1914. It had, however, a sort of second heyday in the 'twenties. After the death of Lytton Strachey in 1930, disintegration set in. Strachey was indeed the creator and essence of Bloomsbury, a rare and exquisite being, beyond description. And it was thus that Keynes rated him. There at the meetings of the Cranium Club in a Soho restaurant, once a month, I heard these men talking at their ease, in their familiar style, as friend to friend, of gossip or serious subjects, as they sat after dinner sipping their brandy. Later we often adjourned to some house of a member in the neighbourhood—in fact in

Bloomsbury!—to carry on the conversation. There I endeavoured, with such faculties as I had, to imbibe the essence of their point of view.

It so happened that during the first few years of my membership, Keynes had not been elected, perhaps because his marriage gave displeasure in that period. Then the time came when he was elected. I remember vividly the excitement of wondering how Keynes, who by that time had been my friend for a number of years—but I had seen him mainly in academic circles—would mix with these people, his own great friends, whose ways I had got to know through many evenings. I could not help feeling a slight premonitory sense of incongruity, and, when he came, surely enough I did perceive a certain sea-change in him. Oh, it was the subtlest thing in the world, nothing crude or unworthy, but yet distinctly discernible. And if I have to find a term for the difference, I would name a quality which I never later saw him display at meetings of Ministers and other big-wigs—I would say that he showed a certain deference. It was perfectly natural: these were people from whom he had learnt so much, who represented for him what is finest in the human kind, who were indeed his friends, but something more. Thus I endorse Mr. Clive Bell, when he writes “a touch of humility.” That being so, how natural, too, it would be for him to tell these friends, sincere Conscientious Objectors most of them, that he had received the calling-up papers from those devils and had merely written to say he was too busy. After all, it was rather funny; it was just a bit of nonsense; anyhow forgivable. It is given quite a wrong dress when it is solemnly stated—with my authority into the bargain!—that “it seems not generally to be known that Lord Keynes was a conscientious objector.”

When I came to write the *Life* I had many lengthy talks with various Bloomsbury figures. While they were all as kind as could be, I had the sense they were asking themselves the question how on earth an outside person could ever manage to write the life of their Maynard. But there was simultaneously borne in upon me a stronger, and more surprising, feeling, namely, that my interlocutors did not know what the “real” Keynes was like. With Mr. Clive Bell, “I understand the feelings of those old and intimate friends who say (of my book)—‘Maynard was not really like that, he was not like that at all’.” But I doubt if *they* will understand *my* feelings. There were many aspects that they did not see, which we of the younger generation could see. I suppose they thought that when Keynes talked to his younger academic friends he spoke only of economics or of college shop. They did not suppose that he could possibly unburden himself or bare himself to us. But the years passed by, and Keynes’ character evolved. And the type of mind that could best appreciate that character changed too.

There are various aspects of life, and character develops in relation to them. In the quest for scientific truth—and in this connection economics must be regarded as a science—certain rare and distinctive faculties are

needed. And in public affairs certain other faculties, different and not less important. And when I think of both these sets of faculties in relation to the outlook of Bloomsbury I cannot help uttering, “There is more in heaven and earth, Horatio.” Courage and integrity in the furnace of practical events—which are somewhat different from courage and integrity in thought and feeling—the power of compromise, unflagging resilience, judgment about the practicable, about men’s motives in action, fairness in thought to the views of one’s adversaries, these are some of the high qualities of statesmanship. Bloomsbury thought of politicians as a set of rascalians, and no doubt in one sense they often are. But they have their virtues too, and on the continuing presence of those virtues the fate of men depends. I felt that these friends did not really understand how remarkable, how really great, were the qualities that Keynes evinced in relation to such matters. Mr. Clive Bell modestly writes in reference to “economics, organisation and negotiation,” that “of greatness in such matters I am not competent to speak.” Incidentally, the words “organisation and negotiation” are rather too weak and pedestrian in relation to the range of higher qualities that I have in mind.

In one way I was consoled by my Bloomsbury conversations. It became plain to me that no surviving figure of that circle, Lytton Strachey being dead, would be able to write an adequate tribute to Keynes—not because of his economics, for a ghost could be found to supply that part—but because they did not understand many of the real elements of greatness in their friend. I at least knew what I had to try to depict. Whether I succeeded is another question.

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REVIEWS

Economy and Society. By TALCOTT PARSONS and NEIL SMELSER. (London: Routledge & Kegan Paul, 1956. Pp. xxi + 322. 35s.)

ECONOMIC theory, argue the authors of this book, is a special case of a more general theory of the social system, which has already been developed, primarily by Parsons, Shils and Bales. The authors claim that certain problems which economics fails to deal with can be satisfactorily solved by means of this general theory. More: "The line of theoretical work we are pursuing here can eventuate ultimately in a far more sophisticated classification and dynamic analysis of comparative economic institutions than is possible at present." This task "is sufficient to occupy a whole generation of theorists and research workers representing all the social sciences." Meanwhile the present book is devoted mainly to exploring the general theoretical relations between economic theory and the general theory of action, although at the latter end there are some tentative applications of the general theory to the trade cycle, the consumption function, the investment function and growth.

This is an ambitious programme, and the claims are high. Are they justified? The outline of the general theory of action provided in this book is extraordinarily abstract, and the style, especially in the earlier parts, clumsy and obscure. The frequency of very long words is daunting, the more so in that one is never quite sure whether the meaning attached to them is ordinary general purpose, or some specific technical meaning, and if so, which. Schumpeter's entrepreneur is characterised as an "integrator." The authors concede that most people would think of him as a disrupter of established patterns, but, from the standpoint "of a higher system level, he integrates new combinations into a new equilibrium position." One wonders whether the Kaiser and Hitler were integrators: after all, their wars were followed by peace. Again we are blandly told, in a footnote, that: "This final example indicates that the term encouragement extends for our purpose beyond its common meaning of 'persuasion,' or 'exhortation' to the realm of coercion and direct management." Like volunteers in the Army!

According to the general theory, any social system has to "solve" four "problems" if equilibrium and/or continuing existence of the system is to be maintained. First, a social system is characterised by an institutionalised value system, and it is imperative that the integrity of that value system be maintained. "Tensions" may arise from "strains" in any part of the social situation. The first functional imperative of a social system is thus "pattern maintenance and tension management," which is called *L* for

short. Second, any social system functions in a "situation" external to it. A goal state is a relation between the system and one or more (external) situational objects, which maximises the stability of the system. The system "seeks" goals by controlling elements of the situation. This is called *G*. Third, the seeking of goal states creates an interest in establishing and imposing control over the external situation. This is the "adaptive" process *A*. Finally, the system must "maintain solidarity" between the units (persons or groups) of the system (the basic unit is not in fact an actual individual or group, but a role: the same person may embody several, possibly conflicting, roles, for example as producer, consumer, tax-payer.) This is the "integrative function," *I*.

A, G, L, I are the four basic categories for describing and analysing any system of action. The rules of the game are now further elaborated to introduce the ideas of sub-systems and different system levels. Thus the "economy" is the sub-system of a society, which is differentiated with primary reference to the "adaptive" function of the society as a whole. The economy (and other sub-systems) can be broken down into further sub-systems, and much of the book is given to the elaboration of such further sub-systems and to the discussion of the "boundary" relations between them.

So far this is just a bigger and better set of empty boxes and, given a little terminological flexibility *à la* Humpty Dumpty, one is not inclined to dispute the authors' claim that the analytical elements they have distinguished can be found in *any* society, indeed in any social system. Their restatement of a simple trade-cycle model in *AGLI* language is indeed something of a *tour de force*, forcibly reminding one of Dr. Johnson's observation upon women preaching.

The *AGLI* framework applies indifferently, so it seems, whether the context is welfare economics or positive, value-free economics (in so far as there can be such). I am suspicious of *G* in the explicitly welfare case. The "optima" of welfare economists are accepted by the authors as analogous to their goal state. But, they say, the economists who have tried to get at optima in terms of simple aggregates, or logical constructions, of the optima of individuals, an approach which raises questions of cardinal and ordinal utility, and inter-personal comparisons, have been wasting their time. "The theoretical occasion for drawing such comparisons in the traditional sense does not arise at all, since the categories of wealth, utility and income are states or properties of social systems and their units, and do not apply to the personality of the individual except *through* the social system." This looks like the General Will all over again. "The goal of the economy is to produce income primarily for the satisfaction of consumer wants." Which consumers? And what would the authors reply to someone who said that the goal of an economy was to provide profits for the capitalists?

I was not convinced that the re-classificatory line will be any more helpful in "positive" economics. Among other examples the authors take up the consumption function. Their criticism of Keynes' "fundamental psychological law" is that its derivation is methodologically unsound, and they proceed to derive from *AGLI* an alternative "consumption function," which is a curve, convex as seen from above, with a kink in the middle. I found the reasons for adducing this shape no less, but no more, plausible than Keynes' own account of subjective and objective factors. Curiously the authors make no mention of the reasons why economists have abandoned the original Keynesian form (except as an expository device in simple model building), namely that it did not square with figures for the United States produced by Kuznets some years after the *General Theory* was published. The authors' hypothesis (because that is how it *ought* to be regarded) is insufficiently specified for one to say whether it might fit the facts, not better than Keynes, but better than any of the numerous alternative hypotheses which students of economic behaviour have been offering in recent years. Many of these economists (call them what you will, it does not matter) have introduced explanatory factors which are not "economic" in the traditional sense—age, sex, family size, colour, occupational status, etc. If the authors' object were merely to encourage economists not to stick too narrowly to their traditional lasts I should be with them. The classification of "sciences" is convenient for teaching, arranging syllabuses and examining. When it comes to research the important thing is to study problems, and to use the best tools one can find, or invent, without fussing about which box they come out of. But in the economic illustrations given by the authors, the restatement in *AGLI* terms seemed to me elaborately contrived rather than a natural or suggestive response to the problem in hand. There is all the difference between a fruitful hypothesis and a procrustean bed.

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The Theory of Wage Determination. Proceedings of a Conference held by the International Economic Association. Edited by JOHN T. DUNLOP. (London: Macmillan, 1957. Pp. 437. 36s.)

THE sixth Conference of the International Economic Association, held in Seelisberg, Switzerland, in September 1954, was devoted to a study of problems of wages and wage determination. The organisers had selected with care and skill a group of thirty-five economists from twelve different countries, of whom twenty-one presented papers to the Conference. The participants included economic theorists and representatives of the modern Keynesian school of thought, as well as a strong body of applied economists whose speciality was labour economics. It was thus a well-balanced team.

The title of this volume is perhaps a little misleading, as much of the contents is concerned with a thoroughly realistic treatment of wage determination in its contemporary setting in such countries as Sweden, France, the United States and Great Britain. On the other hand, a number of issues, such as questions of wages policy, did not come within the terms of reference of the Conference.

It would be difficult to find a better subject than this for an international conference of economists. As Professor Dunlop says in his Introduction to this volume:

"There is a deep-seated intellectual habit . . . for writers on wage determination to generalise from the experience of their own native institutions, be they American, British, Swedish or French. The Seelisberg papers clearly reflect this tendency. The varied descriptions and explanations of wages proffered by economists, puts one in mind of the conflicting impressions of the elephant developed by a group of blind men, each of whom explored a different sector of its anatomy."

The papers are divided under six main headings: I. An introductory survey by Professor J. T. Dunlop, entitled "The Task of Contemporary Wage Theory." II. The General Level of Wages. III. The Impact of the Labour Unions. IV. The Wage Structure. V. The Nature of Bargaining. VI. Labour Market and Labour Supply.

Many of the papers submitted are of high quality, and some of them are of outstanding interest, notably the introductory survey of Professor Dunlop and the contributions of Messrs B. C. Roberts and H. A. Turner (Great Britain), Professors Kerr and Reynolds (United States) and Mr. G. Rehn (Sweden).

The papers were discussed during sixteen half-day sessions, and a record of the discussions, summarised by Mr. D. Hague, is to be found in the last ninety-seven pages of the volume.

It is well known that in comparatively recent years trade unionism has developed apace in the United States, and a great deal of work has been done there by way of investigation into the impact of unions upon hitherto unorganised industries. Some of the results are touched upon in the papers of Professors Kerr and Reynolds. It is, however, extraordinarily difficult to isolate the effects of the unions; and it would be quite possible for two equally competent and impartial investigators to arrive at opposite conclusions on the same set of facts and other data. According to Professor Reynolds:

"Rees in a study of the fully unionised basic steel and bituminous coal industries, concludes that their wage levels probably rose somewhat less rapidly than they would have under non-union conditions. Sobotka, on the other hand, concludes that unionism in the building constructional industry has raised the wage level of the unionised workers by something in the range of 10 to 20 per cent."

There is, of course, no necessary conflict between the verdicts in respect of these different industries. In general there seemed to be a large measure of agreement amongst those taking part in the Conference that, important as trade-union organisation undoubtedly is for the determination of wages, it is the underlying economic forces which exercise the preponderant role.

Not only the papers but also the subsequent interesting discussions revealed how many important aspects of wage determination are still obscure. No further light was shed on the still unresolved problem of the relative (though by no means absolute) constancy of the proportion that wages bear to the national income. Again, the remarkable experiences of France, where this constancy applies to wages *plus* social transfers (wages seeming to stand in a certain inverse relationship to social transfers) remains unexplained.

Some of the participants appeared to be seeking a new "theory of wages" which would be all-embracing and would explain everything. But surely in the nature of things any such attempt must be doomed to failure. Whether it is a union considering the nature of a claim it intends to submit to the employers, or a workman making up his mind whether or not to leave his present job for a different one, or an employers' organisation deciding what line to take with regard to a particular claim by a union, there is normally a complex set of "endogenous" and "exogenous" factors which go to influence the decision, and which will vary with the attendant circumstances. Professor Shackle, in a very instructive paper on the Theory of Bargaining, was obviously hankering after a theory in this field which could be determinate, though one would expect that the psychologists to whom he would have us turn, would prove to be broken reeds. But what has most struck the present reviewer, in observing the actual process of collective bargaining for many years past, is the incalculability in a large number of cases of the final upshot of the negotiations—an incalculability which in the vast majority of cases has nothing whatever to do with any question of a possible strike. So much can depend upon the way in which spokesmen for the two parties put their case. Employers have been known to end up by agreeing to something which they had fully made up their minds to resist when they started the negotiations. Again, what theory of bargaining could cope with the possibility that the leader of one of the two sides might have had a very bad night just before a critical meeting, or that someone in discussion may make a remark which will violently put up the backs of the other side? If by "determinate" is merely meant that there is an upper and lower limit to the possible bargain and that in many cases the range between the two is quite small, there can be no reasonable ground for objection, except to say that this seems to be stretching somewhat the normal meaning of the word "determinate."

There is no necessity, however, for us to feel defeatist about the present state of wage theory, which by and large came quite well out of the proceed-

ings of the Conference. It would have come out even better if more of the contributors and speakers had stressed the importance of long-run considerations: the mills of long-term economic forces may grind slowly, but through time they grind considerably smaller than is commonly realised. On the other hand, it is also true that a great deal of work still remains to be done to clear up many issues that are still in doubt. Further collaboration between economic theorists and labour economists, along the lines so well initiated at Seelisberg, is badly needed.

Those responsible for contributing to and producing this volume have done a very real service to economics and economists the world over. There is nothing of comparable value that has been published hitherto in this field.

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International Economic Papers, No. 6. Translations prepared for the International Economic Association. (London: Macmillan; New York: The Macmillan Company, 1956. Pp. 211.)

It is an excellent thing that economists should be tempted, by a dish of such various fruits as are to be found in each volume of the *International Economic Papers*, to go outside their own specialisms and sample the work of other times and other nations in a way they might otherwise never get round to doing. No. 6 in the series is well calculated to jerk almost any reader out of his accustomed rut.

The first paper in this volume is about the early history of the "law of markets" usually ascribed to J. B. Say, but here shown by M. Paul Lambert to have been in the minds of many writers. The long shuffling of incomplete ideas by many different hands, that leads at last to the sudden emergence of a clear pattern, the formulation of an acceptable law that will stand fast, within the limitations of its context and frame of thought, against all critical scrutiny is illustrated by what has happened to the "law of markets" in the course of two centuries. Say's efforts in his contest with Malthus, we may well feel, were not wasted, since even a mistaken or misleading proposition is better than no proposition at all, if it stirs others to criticism and a search for the truth of the matter. In his article M. Paul Lambert shows Malthus as the victor and as one of the long-latent sources of Keynes' inspiration, but his explanation of why Say and all his predecessors were wrong is quite beside the mark.

"To dispose of the surplus the cobbler and the baker would each seek to alter the rate of exchange of his product in terms of all other products. . . . If, however, overproduction is general, how could all rates of exchange fall? The baker would offer three loaves instead of two for a pair of boots at the same time as the cobbler showed a willingness to exchange one pair of boots for one loaf. The old barter

rate would be re-established and both would be left holding their surpluses."

From this account of the matter everything important seems to be left out, and Say would surely be justified, if he could read it, in dismissing it without ceremony. Amongst the things it ignores are the distinction between stocks of goods already produced (production *ex post*) and plans to produce goods (production *ex ante*); the question in what sense a good is in "surplus" so long as there is anyone who is not completely satiated with it; and the tremendous gulf which separates the analysis of a system where knowledge is in every sense perfect (or else needless) from one where it is not.

In the pure static timeless system, part of whose essence is that everything is perfectly adjusted to everything else and there is general equilibrium, overproduction is evidently excluded by definition. Once we escape from that frame of thought, the question is one about the inconsistency of the plans of different individuals, an inconsistency made possible through their ignorance, that is, their uncertainty. In a barter economy this uncertainty might result in people preferring their *own* leisure to the products they could make; in a money economy it results in their preferring *other people's* leisure: instead of labour being withdrawn from the factor market, demand for labour's products, and so demand for labour itself, is withdrawn. Overproduction is possible because in a *money* economy people can dispose of their produce *without having to make up their minds what they want in exchange*. Money, above all else, is a means of putting off decisions, and hence its power to thwart the plans of suppliers. In a barter economy Say was perfectly right. It is in an economy where people can *save money* that there can be "general overproduction" or the appearance of it. It is money which makes it logically possible for people to sell goods without simultaneously buying them; and it is uncertainty which makes them desire to do so: they wish to wait for more illumination, for a clearer view of the future or for an opportunity to rush in and seize a quick profit, by technical innovation for example, before the fog closes down again. Keynes, perhaps, did not say this, but he took us much of the way towards such a formulation. M. Lambert seems to do Say, Trosne, James Mill and others a grave injustice. They were wrong; but their mistake lay, not in believing in the "law of markets" for a barter economy, where it is perfectly true, but in believing that a barter economy was not essentially different from a money economy.

Without wishing in the least to disparage the article by Mauro Fasiani, which quotes Barone's neat incisive proof, using Pareto's then recently invented indifference-curve construction, that income tax inflicts less hardship, pound for pound of revenue, than a commodity tax, one cannot avoid

the feeling that here is a touchstone for the true-blue economist. The man with economics in his blood will, I am convinced, need only to hear this proposition enunciated to declare it self-evident. It may be dangerous to trust to instinct or intuition in economics, but the man who has once got the "feel" of the subject does not really need any argument to convince him that, for example, free trade maximises world income (without necessarily benefiting every individual person, industry or country) or that all economic variables are inter-dependent.

When any question about the Austrian theory of capital comes up, the present reviewer is subject to the strangest mixture of feelings. Long ago the complexity and subtle difficulties of Böhm-Bawerk's construction, with the brilliant gloss characteristically put upon it by Wicksell and the no less exciting but intensely difficult developments by Hayek, wove a spell of fascination which even now I cannot quite cast off. Yet I am sure that it is not worth the modern student's while to spend time on capital theory in the old intricate Austrian sense. Economics depends essentially by its very nature on a certain looseness of ideas (however deplorable this admission sounds, or whatever penalties will fall upon me, I must maintain it). Marshall when he "knitted in wool" knew perfectly well what he was about. We do need such ideas as "capital," "income," "the general price level," which defy exact interpretation. And as to "capital" we need it more than ever in these days when the conditions for development of the under-developed countries are always under discussion. But we do not need the *Austrian* theory of capital. Still less, I think, have we any use for the stationary state, which is the basis of discussion of interest on Böhm-Bawerkian lines. Böhm-Bawerk's second "ground" of interest, discussed with the other two "grounds" in Guy Arvidsson's article, "On the Reasons for a Rate of Interest," was the "under-valuation of future goods." This idea is nonsense. If no man can be in two places at once, still less can he be in two *times* at once, and no objective comparison is possible between the *actualities* of enjoyment of goods now and enjoyment of them at some subsequent date. To-day we are in to-day, and to-day's judgments are all we can compare with each other. A year hence we shall be in a different day, and there will again be no going back in actuality to to-day to make comparison of *actualities*. All that we can compare is *to-day's* judgment of the utility of a good to-day with *to-day's* judgment of its utility another day, and these two judgments are comparable only when they are judgments made in one and the same moment. There can be no inconsistency; "under-valuation of future goods" is an utterly meaningless phrase. When next year comes and we have eaten up our patrimony, we may regret it. But we once judged it satisfying to eat it up. On which occasion were we right, which of the two mutually contradictory judgments was just? A meaningless question; one might as well ask whether it is Englishmen or Australians who walk about upside down.

A Study of Saving in the United States. Edited by RAYMOND W. GOLDSMITH. (Princeton, New Jersey: Princeton University Press (London: Oxford University Press), 1955 (Vols. I and II), 1956 (Vol. III). Pp. 1138 + 632 + 476. 308s. the set.)

THAT such a work as this should have been essayed by one individual is itself staggering. Within three volumes, comprising 2,250 pages, are to be found estimates of Personal and National Saving for the United States from 1897 to 1949 broken down by instruments of saving and types of savers, a point-by-point discussion of aims, difficulties and controversial matters involved in the preparation of the data, fresh estimates of national income, preliminary estimates of national wealth and analytic studies of observed variations in savings over time. The whole study is well printed with a minimum of typographical error and presented in lucid prose. The investigation was sponsored by the Life Insurance Association of America and executed by Dr. Goldsmith with the aid of research staff. All in all, it is a remarkable *tour de force*.

Volume I contains the main estimates of savings, together with descriptive commentary on the principal features of the time series. The definition of saving preferred and adopted in this study reads as follows:

"The current value of the change in earned net worth of all economic units in the nation (or of those forming a group within the nation) including all types of non-military assets with an expected service life of more than one year other than consumer semi-durable goods; excluding all revaluation changes from the calculation; using capital consumption allowances based on replacement cost and spaced equally over the expected life of the asset; excluding discovery values of natural resources and hence depletion allowances on such values; and including the costs of change of hands of existing assets" (Vol. II, p. 70).

This adumbrates many of the controversial issues raised in the conception of saving (and discussion in Vol. II) and the position taken up by Dr. Goldsmith. His approach is essentially eclectic, however, and those who desire to work with alternative definitions will find that Dr. Goldsmith has served them well.

Two distinctive features of the analysis are the preparation of capital consumption allowances based on replacement in lieu of original cost and the recognition that a sizeable portion of consumer durable expenditure should be regarded as saving.

Occasionally one may attack Dr. Goldsmith for his viewpoint, never for his frankness. For example, to this reviewer, one point where Goldsmith errs is in his treatment as saving of costs of redistribution of existing (as opposed to new) assets, but in no sense have the facts of the procedure been disguised from the reader. Nevertheless, he must proceed with care. The user of the statistics of Vol. I must always have cross-reference to the descrip-

tion of Vol. II. What is true for the user applies *a fortiori* to anyone who would manipulate the data to derive series more suitable for his immediate purposes.

The estimates are arrived at by a social-accounting approach. The development of social accounting has been an important one, but we must not allow its convenience to distract us from exploring fundamentals. There is a significant distinction between the search for perfection of measurement within a conventional framework and an assessment of the appropriateness of that framework itself. For example, saving is defined, under provisos, as the change in earned net worth. But what do we mean by net worth? Merely to state that it is assets minus liabilities does not take us very far. What are assets? Is the provision of education facilities which increase the future expected earning power of the saver or his descendants saving or not? In social accounting the conventional answer is "no"—but in theory at least it may well be "yes." This serves to emphasise that saving is in general related to the accumulation of non-human capital only, whereas it may be cogently argued that non-human and human capital should be treated on an equal footing. Such a broad definition could raise a number of further problems. For example, to whom is saving in the form of extra human capital to be attributed—the provider or the beneficiary? The former can never disavow the investment in human capital of another. This brings us to problems of motivation and questions such as whether we should associate saving with an individual or with a family tree.

Now many of these questions are not germane to Dr. Goldsmith's immediate inquiry, and in any event he is aware of them. Nevertheless, one cannot escape the feeling that the early chapters of Vol. II could suggest to the unwary that the foundations are much more secure than in fact they are. For there is little doubt that, in the text, Goldsmith is almost exclusively concerned with the securing of high standards within the convention, and in this his treatment of the difficulties is extremely thorough and well-nigh exhaustive.

The savings estimates have been built up by the aggregative balance sheet method, *i.e.*, by compiling estimates of savings from aggregative series measuring year after year the different forms of saving and dissaving for all saver groups with the exception of corporations, where practical difficulties necessitated an income-accounting approach (the difference between earnings and dividends).

As a check on his estimates, Goldsmith uses four procedures: (a) comparison with estimates of others; (b) comparisons with other estimates that can be directly related to savings; (c) evaluation of possible errors in estimates of savings components and their effects in and on the aggregates; (d) comparison with blown-up results of sample surveys.

With his customary candour Goldsmith emphasises the precariousness

of the estimates and "ventures the guess that the probable error for any one year in the estimate of total national saving, with the definitions used . . . cannot be expected to be less than 10% and is not likely to be above 30% disregarding sign and that the boundaries may well be as narrow as 15-25%' (Vol. II, p. 147). There is, in particular, considerable leeway in the derivation of the saving of corporations and unincorporated enterprise.

One further point, Goldsmith's contribution to the preparation of data lies principally in the regrouping and refining of basic source material often derived by others. In manipulating data or adjudging accuracy these sources will need to be drawn upon.

This study is obviously going to be a main source of historical estimate for many years to come, and countless scholars will be screening hypotheses in the light of the contents. Suffice it is to say that Goldsmith's results confirm the long-term stability of the personal saving-income ratio when durable are included and suggest a slow secular decline when these are excluded. But these ratios exhibit much short-term instability. There is also conspicuous evidence of the growing relative importance of saving in contractual form.

And so to Vol. III, which contains a number of special studies. The reviewer had high expectations, but was on balance disappointed. Three of the six parts contain important estimates of national wealth, income and aggregate value of non-operating assets of private non-financial, non-profit institutions. A fourth contains some experimental econometric studies of the savings function which, save on the score of presenting a well-rounded treatment, would have been better deleted. The two remaining parts are by outside contributors—Dorothy Brady and Horst Mendershausen. Mrs Brady's paper on Family Saving, 1888-1950, contains much useful empirical information drawn from cross-section studies and the 1935-36 survey in particular. Unfortunately the standard of the text falls far short of what one has been led to expect from Mrs. Brady. Even at a second reading this reviewer finds it difficult to discover exactly what she is trying to say. She stresses the need for a statistical theory of saving which gives considerable rein to random elements. Yet at other stages she emphasises the importance of age, family size, etc., and also that of income or social milieu in which the individual finds himself. In this sense one could say that Mrs. Brady's outlook is eclectic. However, in other ways one senses a closer affinity to the recent "permanent-income" hypothesis of Professor Milton Friedman wherein savings, income and other variables may be conceived economically as comprising both systematic and transitory components. It is to be hoped that Mrs. Brady will somewhere set out her analysis more explicitly, but in the meantime the grouping and selection of tables is such as to make them worthy of closer study in relation to current disputation on the form of the savings function.

In his paper entitled "The Pattern of Estate Tax Wealth," Menders-

hausen derives an estimate of the distribution of the wealth using the Federal Estate Tax statistics of estates passing at death. From these by multiplication by the inverse of age-specific mortality rates he attempts an estimate of the distribution of wealth among the living population subject to estate taxation. Surprisingly, while similar methods have been extensively employed elsewhere, lack of data has impeded their use in the United States. Mendershausen's study is well presented, with due attention to dangers of bias, though his attempts to obtain national-wealth distributions from these data are flimsily based.

In view of the size and cost of these volumes, it is a pity that Goldsmith's studies were not compressed into two volumes and Mendershausen's and Brady's published separately. The work as a whole is an indispensable source and reference book setting new standards in presentation, description of method and clarity.

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The Lognormal Distribution. By J. AITCHISON and J. A. C. BROWN. (London: Cambridge University Press, 1957. Pp. xviii + 176. 35s.)

In many fields of statistical application it has been noted that skew distributions tend towards symmetry if plotted on a logarithmic scale. It is from this tendency that much of the interest in the lognormal distribution derives. This distribution specifies more than symmetry, however, on the logarithmic scale. It is essentially the distribution of a variate whose logarithm follows the normal law.

Each time the research worker comes upon this problem, he must work out anew the properties of the lognormal distribution or search through a scattered literature, sometimes in fairly obscure locations, for these results. Messrs. Aitchison and Brown have rendered an invaluable service by bringing the whole theory together systematically in a single volume. They have made a very scholarly study of the literature and extracted the important outstanding results in addition to presenting some neat contributions of their own. Their bibliography in the book has turned up some choice selections of which this reviewer was wholly unaware.

The book analyses the mathematical properties of the lognormal distribution and stochastic processes that generate such a law. The lognormal has often crept into applied work as an empirical regularity, but they show how one can go a step further in developing it in specific context from a probability scheme.

A good share of the volume is devoted to the problems of statistical inference in connection with this distribution. These are problems of testing

empirical distributions against the lognormal hypothesis and the estimation of its parameters from sample data. The author's treatment of *truncated* and *censored* distributions is especially valuable in this connection. A major contribution is in the use of artificially constructed samples for explaining and studying the inference problems.

There is a brief discussion of numerous fields of application in which the lognormal distribution has been used. Extensive treatment is given to profit analysis, the distribution of income and the theory of consumer behaviour. These applications are of great importance to economists. Other applications in economics are associated with the name of Gibrat, who studied the distribution of industrial characteristics with the lognormal tools. The lognormal distribution is sometimes called the Gibrat distribution, but the original developments actually antedated this work by many years.

Economists will find the discussion of income distribution from the point of view of the lognormal hypothesis quite interesting. A word of caution, however, about the very approximate nature of the distribution in this area is needed. In many sample data which this reviewer has examined there are systematic and easily recognisable departures from lognormality. The graduation is fair, but there is a real question whether the closeness of fit is good enough for the applications to be made in statistical economics. It definitely appears to be worth while to search for refinements.

Some form of logarithmic transformation is often useful in Engel curve analysis; therefore a full use of the neat properties of the lognormal distribution is natural. The problem of aggregation of micro-economic Engel curves is facilitated in these situations. Aitchison and Brown go even farther in their work on consumer behaviour. They develop a system of *sigmoid* Engel curves represented by the cumulative lognormal distribution.

While the book is certainly of high calibre and a very welcome addition to our fund of knowledge, it is not without its faults. The authors apparently go astray on the matter of maximum likelihood estimation. They find it difficult to derive maximum likelihood estimation equations for the arithmetic mean and variance of arithmetic values of a variable following the lognormal law. Since they develop a pair of equations relating these two moments uniquely to the geometric mean and variance of logarithmic values, it is a very simple matter to derive maximum likelihood estimates of the former pair from the obvious maximum likelihood estimation equations of the latter pair. Aitchison and Brown have overlooked the important *invariance* property of maximum likelihood estimates. Their exposition could have been much simplified on this score.

When they come to maximum-likelihood estimation for the three-parameter form of the lognormal distribution they remark that "the maximum-likelihood estimators cannot be assumed to possess the desirable properties of consistence, asymptotic normality and minimum variance

without special investigation." Surely they do not want to deny the wide generality of the basic theorem on maximum-likelihood estimates.

In the aggregation of Engel curves of savings, Aitchison and Brown suggest that a log-log form would simplify the problem if a lognormal form of income distribution is assumed. This form of the savings function is, however, quite unacceptable and was deliberately avoided because of the fact that savings are frequently negative.

These minor faults are all on matters of detail that can easily be rectified and should not draw one's attention away from the obvious merits of this fine contribution.

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Introduction to International Trade and Finance. By LORIE TARSHIS. (New York: John Wiley (London: Chapman & Hall), 1955. Pp. x + 536. 48s.)

TRANSPARENTLY well-intentioned, fair minded and informed, the author of this *Introduction to International Trade and Finance* engages the sympathy of the reader from the start. But there are more than five hundred pages of text, and it is reasonable to ask in what sense do they constitute an introduction to the subject.

In his Preface Professor Tarshis says that he has written for undergraduates . . . a balanced though certainly elementary account . . . intended to teach one thing—a method, call it economic analysis—and not a conclusion.

The first sense, thus, in which Professor Tarshis conceives his book as an introduction is that it should be at an "elementary" level of exposition. An immense labour has been put in to accomplish just this. For the topics treated are all-embracing, and each is covered in simple language with a wealth of easy numerical example and some illustrative statistics. The foreign-trade multiplier appears early, and somewhat later the doctrine of comparative advantage; thereafter the balance of payments is interpreted, and the ambiguous notion of more or less "satisfactory" equilibrium is suggested. Variants of the mechanism of the foreign exchanges follow, and the limitations of usefulness of the concept of purchasing-power parity are set out. How cyclical fluctuations in employment and national incomes may be propagated, and what countervailing measures may be helpful or unhelpful, are discussed; and the discussion moves onward to considerations of longer term relative structural changes. The latest forms of international institutions concerned with trade and tariffs, with payments across the exchanges and with foreign investment, are then described. Finally, a short chapter gathers together the leading interests and obligations of the United States in the World Economy. Small wonder that such range of

content, translated for those with not much more than a secondary school education, results in an omnibus volume. The last word as well as the first word on the subject is said—well said at the chosen elementary level—for those readers who stay the course.

But what of the second sense in which Professor Tarshis conceives his book as an introduction—the thing, economic analysis, intended to be taught? The student will have been so overwhelmed by the kindness and fullness of the common-sense explanations given him that he would seem very unlikely to want to start all over again at a more intellectually exacting level. It is true that he has been presented with certain arresting symbolic expressions, but these are not formally derived or developed. Also he has been shown some free-hand graphs, chiefly of demand and supply coming together. But he has not been introduced to any method requiring strict definition; nor has he been forced to practise strict logic in sustained argument. He should have learnt that the issues are complex, and that circumstances alter cases in matters of policy. But it would seem quite possible, if he means to tackle the subject in earnest, that he would do better not to approach it replete with so vast a store of preconsidered knowledge.

M. T. HOLLOND

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Common Sense Economics. By L. ALBERT HAHN. (London: Abelard-Schuman, 1957. Pp. xvi + 244. 18s. 6d.)

DR. HAHN is something of a curiosity. While most economists of his generation were painfully or joyfully making the pilgrimage from a classical to a Keynesian position, he made it in reverse. In the 1920s he was anticipating Keynes; in the 1930s and 40s he was repenting and recanting; to-day, in *Common Sense Economics*, he states his present, neo-classical view of economic relationships. Beginning with Crusoe economics—the isolated producer “dealing” with Nature, labour against product—going on to the stationary state, thence to the changing economy with fixed money supply, he isolates the rôle of flexible money and credit and of the expectations which they engender and demonstrates the impossibility of pursuing full-employment policies without eventually paying for them with a resounding crash—or with hyperinflation. “Common sense,” as against “illusion,” demands an end to the modern obsession with effective demand, a Bank Rate responding repressively to the first indications of boom, a total renunciation of deficit finance, and lower wages to cure any consequent unemployment.

It is worth looking at the general nature, as well as the particular merits, of the arguments on which these familiar neo-classical conclusions are based. They are mostly a matter of simplified and selected psychological assump-

tions, such as every economist must initially make, but which the wise man carefully checks for realism before passing from elementary exposition to advice on practical policy. The difference between Keynesian and classical theory lies less in a switch of attention from particular to general analysis or in the use of new conceptual tools, important and transforming as these are, than in the recognition of a different and wider set of economic determinants among the facts of human behaviour; such as the fact that wage-earners will accept a cut in real wages in circumstances where they will resist a cut in money wages, the fact that individuals whose incomes are increasing tend to consume a lesser proportion of each increment, the fact that the possession of a handy store of liquid assets is felt by most people to be a good thing in itself. Dr. Hahn's attack consists for the most part in a denial that these facts either exist or, existing, are important. Wages pay, in real terms, for the disutility of labour; that is that. Higher incomes do not mean lower proportional consumption, except perhaps very temporarily. Liquidity preference is a useless concept; the keeping or spending of cash merely reflects the consumer's or business-man's estimates of the current and future price-and-cost situation. Supporting these arguments, he scores some undeniable hits. Sad experience shows that it simply is not possible to give the propensity to consume a numerical value and use it as a reliable element in economic forecasting; too much depends on the unpredictable, socially conditioned balance, in millions of minds, between a complex of material aspirations, on the one hand, and a desire for security, on the other. The notion of a demand for liquidity dependent exclusively on the rate of interest similarly looks very unreal once one turns from the behaviour of professional investors to that of the mass of the public, whose liquid-asset-holding habits are much more a matter of the current, and variable, Done Thing than of continuously calculated economic advantage. Most important, the emergence, with full employment and prolonged experience of rising prices, of “real” as against monetary calculations of advantage—calculations of the worth of a wage, a contract or the buying power of a mass of liquid assets—surely demand that Keynes' cavalier dismissal of Wicksell and Hayek (*General Theory*, Book IV, Chapter 14) be reconsidered. It is time for a clever dog to go down, however murky the waters, and ease the wild duck out of the weeds and rubbish.

Dr. Hahn, however, is not that clever dog. If Keynes' assumptions fall short of perfect realism, those to which he uncritically reverts fall far shorter. There is the competitive assumption that all employers are always engaged, flat out, in reducing costs. (It follows that, since no margin of energy exists for the attainment of greater efficiency, every increase in wages must infallibly reduce employment.) There is the dogmatic denial that money wages can ever remain stable while prices rise. (It follows that inflation does not merely set in with full employment, but follows from every attempt to achieve it.) There is the even odder assumption, unstated but implicit,

that while production must precede sales, orders do not precede production. (It follows that the multiplier is a myth, since the income of any one period can be spent only on the irrevocably fixed production of a previous period.) And there is the enormous negative assumption that working-class solidarity does not matter; that the willingness or unwillingness of a man to accept, along with a lower money wage, the stigma of a blackleg, is identical with his elasticity of demand for income in terms of effort. Beside this piece of unrealism, the fact that Dr. Hahn does not begin to deal with Keynes' careful analysis of the effects on employment of a general lowering of money wages is of minor importance—as are various other instances of superficiality, unsupported assertions and occasional bad logic.

It is all rather a pity. Dr. Hahn has his finger on certain weak points of the current economic creed. Of him it can be said, as Keynes said of Major Douglas, "He is entitled to claim, as against some of his orthodox adversaries, that he at least has not been wholly oblivious of the outstanding problem of our economic system." But few, among the orthodox of an earlier day, paid any more attention to Major Douglas than was needed to controvert his obvious absurdities; and Dr. Hahn courts the same destiny.

Claygate.

HONOR CROOME

Agazdasagi Vezetés Tulzott Központsítása. By JANOS KORNAI. (Budapest: Kozgazdasagi es Jogi Konyvkiado, 1957. Pp. 207.)

THIS work, the title of which may be translated as "Excessive Centralisation in Economic Administration," was sponsored by the Institute of Economics of the Hungarian Academy of Sciences, and accepted as the author's dissertation for the degree of Candidate of Economic Science in September last year. As the Preface tersely comments, it was delivered to the printer in mid-October, just before the Revolution at the end of that month. As the author remarks "it would not have been in good taste to modify the text" in the light of events, and it was published unchanged in the following spring. It is a fascinating piece of work; essentially well-meaning and sympathetic towards the basic features of the tortuous socio-economic system which led to the explosion of last October, but at the same time—unintentionally—a damning indictment of it.

Mr. Kornai, striving throughout to restrict his scope and to lower his sights, examines the working of centralised planning in the Hungarian leather, shoe, wool and cotton textile industries. His intent is description on a practical plane. However, the shadows of many problems of pure theory, of profit- versus output-maximisation, "entrepreneurial" expectations, forecasting, games and bribery, welfare economics and so on stalk the whole book. As the description gathers momentum, analysis creeps into it, and the reader is privileged to witness the process of the author stumbling across the basic principles of non-Marxian economics, following

them up some of the way, stopping short of the ultimate logical implications and leaning over backwards to regain his *bien-pensant* balance. Considering the paucity of the tools which he allows himself to use, the analysis is quite remarkably sound in most places.

The first two chapters deal with the then existing system of *Instructions* and *Incentives*, whereby the State seeks to direct the conduct of the industrial firms it owns. The sum of Instructions is the *Plan* expressed in the form of a set of *plan indices* relating to volume of output at fixed prices, product breakdown of output, quality measured by "objective" standards ("subjective" standards, such as whether the shoe is a good fit for the average citizen's foot, whether the garment is pleasing, the pattern fashionable and the like, are not used), and to the production function (inputs used per unit of output). The latter group of indices is set partly in physical and partly in value terms (such as permissible cost of production, permitted "wages fund"). About forty such index numbers are prescribed for the typical Hungarian light industrial firm, 100% fulfilment of each being technically obligatory.

Two major ways are available to ensure fulfilment. One is the use of "administrative means," such as fines, dismissal of executives and, in more serious cases of neglect, criminal proceedings. The other is the system of Incentives—in practice, bonuses paid to the decision-makers in the firm, the so-called "triangle" of director, chief engineer and chief accountant (lesser employees may be on piece-rate wages or on a flat salary, and may get bonuses either automatically or at the director's discretion). The fulfilment of only two main indices—money volume of total output and planned "cost-of-production reduction"—is rewarded by bonuses; the latter index has generally a lesser weight and is so intractable for planning purposes that its fulfilment in practice varies between 3 and 200%. The other thirty-eight or so indices have no financial sanction, and may or may not have an administrative one. Formally, therefore, the firm's "executive triangle" must solve a maximisation problem with one clear-cut and one ambiguous maximand, and with about thirty-eight side conditions which may or may not be enforced, in the sense that violation has an uncertain sanction. One wonders whether capitalist entrepreneurs have much reason to envy communist directors for their immunity from the "inevitable crisis."

Due to imperfections of foresight in the drafting of the Plan, the main indices may turn out to be impossible to fulfil, or their fulfilment may be demonstrably harmful to the economy. As failure to reach 100% of an index involves total loss of the corresponding bonus, which is normally a fifth to a quarter of the triangle's total income, a "fetishisation of the 100%" results, the maximand being discontinuous. This leads to wasteful "production drives," to switches between labour-intensive and material-intensive products and to the use of countless devices, all strictly within the letter of the law, for "cooking" stock records, production schedules, the timing of

payments and so on. On the other hand, if the room for switches and "cooking" is too small to enable 100% to be reached anyway, the firm "gives up" and goes slow, for once it is clear that it will fall short of a target, it makes no difference to it by how much it does so. In addition, a process of intricate bargaining develops between the firm, on the one hand, and the Trust, Ministry or Planning Board officials, on the other, about the setting of plan targets, since the lower the target, the greater the probability of the bonus. Moreover, though overfulfilment of a target carries a higher bonus, it may at the same time induce the Ministry to prescribe a higher one in the next plan, reducing the probability of future bonuses. This is not a mere time-preference problem for the director, for he is liable to be transferred from one firm to another, the chances of a transfer depending both on his performance and on those of other firms in the same industry.

At its best, the given system of Instructions and Incentives may succeed in driving industry to maximise one index number, the money volume of output at fixed prices. The author recognises that this need not coincide with the maximisation of welfare, however defined, if only because prices fixed for industry and prices fixed for consumers by the State distributive system bear no particular relation to each other. Firms are not penalised for producing, and often do produce, goods which prove totally unsaleable, while shortages of other goods are no less common. A few tentative references are made here to the working of a market economy with consumer sovereignty, though it is stated that the socialist system has the compensating advantage of higher utilisation of capacity. Inter-firm relations seem also greatly distorted under the given system, but neither the resulting anomalies nor the lack of flexibility and mobility and the chronic shortage of raw materials due to excessive investment in fixed at the expense of working capital, appear to be inherent in centralised planning.

A detailed examination of these matters is provided in Chapters III and IV on the "Joint Effects of Instructions and Incentives" and "Inter-firm Relations: The Firm as Buyer and Seller." The fifth and most explicitly critical chapter on "Centralisation as a Socio-political Problem" moves on a somewhat more abstract plane, and seeks to trace the system of economic administration prevailing down to 1956 to its political roots. Stalin's *dictum* is quoted: "Our Plans are not predictions, nor guesses, but *instructions*." "Bureaucratism" is shown to be a logical consequence, and the fear of any spontaneity inevitable.

The final chapter deals with current plans for reform, suggesting that the root causes of inefficiency, waste and loss of welfare are not really tackled by them. It is not explained how the root causes could be removed without abandoning the system which combines State capitalism with price-fixing. The author, perhaps understandably, advocates "tenacious theoretical work, long debates."

An interesting postscript to the book is provided by a very recent

Hungarian Government ordinance abolishing the former system of plan indices in light industry and replacing it with only four index numbers, the ranking one being, quite simply, the total profit of the firm.

A. E. JASAY

Oxford.

The Sterling Area in the Postwar World: Internal Mechanism and Cohesion, 1946-1952. By P. W. BELL. (London: Oxford University Press, 1956. Pp. 478. 63s.)

THIS is a lengthy and formidably industrious addition to the large-scale surveys of the Sterling Area which seem to be more popular in America than in the Area itself. The author says it was originally a doctoral dissertation for Princeton University completed in 1954, and the statistics on which it is based are for 1946-52. Professor Bell regards the views of British writers on the affinity and the harmony of interests between members of the Area, and the freedom of payments inside it, as inaccurate and misleading, and the rather inconclusive conclusion of his long examination is that there is a lack both of good reasons for overseas members to belong to the Area and of better alternatives for them to choose.

As might be expected, he treats controls on the convertibility of sterling as the "most significant" of the changes since 1939, and in criticism of "dollar pooling" he quotes the late Dr. Harry White: "it does mean that many American producers are not getting a fair chance to sell in sterling area markets." Did other Americans, we might wonder, get an unfair chance? For certainly all available dollars have been paid to somebody. The greater part of the book, however, deals with "intra-Sterling Area" relations, and the overseas members, the O.S.A., are divided into two groups, "monetarily-dependent regions," and "monetarily-independent countries." The former group comprises the colonies and Ireland, and is held in "monetary bondage" by the United Kingdom; the second group consists of all other members, and these suffer drawbacks under the Sterling Exchange Standard which differ only in degree from those of the colonies.

The monetary differences between the two groups is that the independent countries have their own central banks, while the dependent regions—except for Ireland—have currency boards, and the difference is important. But unfortunately Professor Bell is largely misinformed about the position in the colonies. He describes the currency board as "the central monetary authority," which it is not, and he makes "automaticity of the currency board's operation in the foreign exchange market" a distinguishing characteristic of the colonial currency system, although the board does not deal in foreign exchange, and issues and redeems currency at the request of the banks, not on its own initiative. On the basis of the same error, West African Currency Board commissions on the issue and redemption

of currency are listed in a table of "Telegraphic Transfer Rates" from which they differ in amount and function. Professor Bell has been resourceful in filling the gaps in his knowledge, and one improvisation attributes to a colony which does not belong to a currency board "a local currency representative and a Crown Agent in London." A number of such points, trivial in themselves, give a cumulative impression of surprising neglect of the facts; for instance, the Malayan note issue is quoted in £s. when it is in Malayan dollars of 2s. 4d.; we are asked to attach price and income significance to increased circulation in Malaya and East Africa without mention of the important point that the geographical area of each of these boards increased in the years mentioned. For commercial banks in dependent regions, the book offers a choice of procedures quite unrelated to the actual methods of meeting currency requirements. And Professor Bell is consistent in conflict with the facts when he says that "no measures are available to enable the colonies to utilise their accumulated sterling balances at least in part for development purposes." Most government balances not earmarked for specific purposes were allocated to the Ten Year Development Plans of various colonies, and even part of the currency funds have been released. But is it a good case for this use of balances to say that those allocated under the Colombo Plan "are expected to be dissipated by 1957?"

The sterling balances are treated as the chief disadvantage of the Sterling Exchange Standard, not only for the colonies, but also for the independent overseas members of the Area. "Both groups must bear the burden, in the form of imports foregone, of accumulating balances necessary for the working of the system," while "Great Britain normally has 'unrequited exports' only following some period when there was enjoyment of 'unrequited imports.'" The "normally" should be noted, as one might otherwise regard this as too simple an explanation of the balances of 1946-52 with which the rest of the book deals. At the end the author suggests that attention be given to alternatives which "might offer members the opportunity of utilising even working balances for development." This is an opportunity that might appeal to others besides the O.S.A., but unfortunately we are not given even a model of how it would operate. With a section on "Disturbances in the Balance of Payments and the Automatic Adjustment Mechanism under an Exchange Standard" as the basis for analysis of price-income effects in the several members of the Area, Professor Bell finds a second disadvantage, or "cost," to overseas members in "domestic repercussions from balance of payments disturbances greater than would have occurred under flexible exchange rates." He does not consider the possibility that the monetary authorities in the various countries might not have believed in the efficacy of flexible exchange rates for the internal policies of development, full employment, industrialisation and so on, which their governments had introduced, indeed, he does not recognise the existence of such policies. But it can no longer be denied that India

had the right to "pursue development with inflation," although the "generally favourable experience" of Pakistan's appreciation in 1949 is more open to doubt. For Professor Bell, however, flexible exchange rates have merits that every country would enjoy if it were free, and when he concedes that these are more debatable for colonies, it is on the shaky ground of the "greater importance of direct equity investment in these areas." It is not on any measurable basis that equity investment can be said to be more important in West Africa than in the Union, in Fiji than in Australia; and paradoxically it is for Malaya that he would relax the rigid parity with sterling, although among the colonies, Malaya is an outstanding example of equity investment.

If this falls short of either an explanation or an epitaph for the Sterling Area, it nevertheless draws attention to the need for clarification of certain problems inherent in the use of one country's currency for international purposes by several other countries.

IDA GREAVES

Chicago.

The Labour Government and British Industry, 1945-51. By A. A. Rogow, with the assistance of PETER SHORE. (Oxford: Basil Blackwell, 1955. Pp. xiii + 196. 18s.)

WHEN the Second World War ended the Truman administration in the United States set to work to consolidate the Fair Deal, the Attlee administration in Britain to establish the Welfare State. There was no substantial return in either country to "normalcy." Instead there was a conscious determination to show that social justice and a redistribution of power between the classes (albeit not complete) could be achieved without resort to totalitarianism. The advance of Communism in Western Europe, which had been notable in Italy and France and far from imperceptible elsewhere, was checked by the Marshall Plan, the Truman Doctrine and the creation of N.A.T.O.; but these institutions could not have been created—certainly not sustained—had they not been based upon these new democratic political and economic foundations.

Mr. Rogow does not claim to tell the whole story of the Labour Government of 1945-51. He sets out to examine only one section of its achievements—its relations with industry. But it is not possible fully to explain the imperfections which his examination reveals if one does not recognise the magnitude of the task with which the Government was faced. There was the job of reconstruction after total war—the shift of man-power and resources upon an unprecedented scale in a far shorter time than their original deployment occupied during the War. There was the massive Parliamentary task of drafting and enacting almost innumerable Bills for nationalisation of more than half a dozen major industries as well as reconstructing the national system of health and insurance. There were the

budgetary and fiscal problems of redistribution of income; of the change from a debtor to a creditor position in international trade; of carrying out a full-employment policy with the aid of a Treasury, Bank and Board of Trade which had been publicly declaring for half a century that this was none of the Government's business.

Of course, in these circumstances the Government's achievement in the field of industry was far from satisfactory. Mr. Rogow is a sympathetic critic, and I find most of his account both well informed and fair. He puts his finger accurately on two outstanding weaknesses or failures. First, the Government relied heavily for the administration of controls and of nationalised industries upon persons who had no faith in planned economy or social ownership. Second, it failed to tackle with sufficient skill or boldness the task of explaining its aims to the public and creating goodwill for its policies; and it allowed itself to be beaten badly in this field of "public relations" by "Mr. Cube" and his followers. Mr. Rogow is an American, and is therefore more easily surprised than an Englishman might be by a government which left so many key decisions to be taken by or on the advice of its political opponents and which permitted private industry to spend shareholders' money lavishly on political propaganda while severely restricting anything of the sort on the part of the public sector; but even an Englishman, if he knows our English history, must be astonished by the tenderness with which the Labour Government reacted to the accusation of "jobs for the boys."

No doubt these were errors of judgement, due perhaps to lack of confidence in the administrative ability of comparatively untried men or to a touching faith in the special mystique possessed by the white knights who adorned the boards of so many public companies. More serious, and possibly of lasting importance if there should be another Labour Government, was the failure—not absolute, but relative to the dimensions of the problem to be tackled—to build up a group of trained and properly qualified officials capable of seeing the problems of the economy as a whole and advising Ministers effectively on central planning. True, the ineffective Steering Committee which had permitted an optimistic galloping off in every conceivable desirable direction, was succeeded after a couple of years by the Economic Policy Committee which did a great deal of resolute "slashing"; but even its achievements were too often based upon a mere requirement of the same percentage of "cut" by each Minister who had received an allocation.

Mr. Rogow's analysis in detail of the problems of planning, control and organisation is well done and very well worth reading. His chapter on Public Relations is stimulating and suggestive, though I think he is somewhat less than fair to Sir Stafford Cripps' effort in his dynamic earlier years of office: not to mention the giant posters, "We Work or Want," seems a strange omission. The chapter on Industry and Labour is disappointing.

Mr. Rogow thinks that profit-sharing and co-partnership are "popular" in Britain and devotes some space to them; but he does not mention the N.J.A.C. or the N.P.A.C.I.! His major conclusion is that "so far as the future is concerned, this analysis suggests that the issue of co-operation or conflict will be joined at every point at which power interests, rather than property interests, are sharply opposed." If that be true, the omission of a discussion of the two agencies in which organised labour and organised employers meet to discuss with the Government the central issues of power and economics is very remarkable. As Mr. John Strachey says in a foreword, Mr. Rogow has made a start—a good start—in the analysis of the Labour Government's experience. There is still plenty of room for further exploration.

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London.

Industry and the State. By P. SARGANT FLORENCE. (London: Hutchinson, 1957. Pp. 196. 10s. 6d.)

THIS is a further volume in Hutchinson's University Library series. As the title suggests, it is mainly concerned to trace the impact of state policy and activity on industry—the term industry being "confined to activities, apart from agriculture, resulting in products and not services" (p. 14). The subject matter is arranged according to the relationship of the State to the various groups involved in industrial activity—as a protector of one group against another (labour against employer, consumer against producer and so on); as a partner with industry to serve the common interest in efficient production (conciliation, development councils and the like); as a provider of information and services for industry; as a direct participant in production where industries are nationalised; and as a controller of industry as a whole (location of industry, control of capital issues and similar controls). There is doubtless much to be said for such an arrangement. It does have the effect, however, of separating the treatment of what most readers will regard as closely related subjects and vice versa. Thus, for example, Wages Councils are dealt with in the same chapter as the Companies Acts and anti-monopoly legislation, whilst joint consultation and conciliation are to be found elsewhere.

All this is prefaced by a six-page chapter on the "ethics, science and art of State policy in industry" and a long chapter setting out the historical background of state intervention. The former is not to be recommended to those (like the present reviewer) who are becoming allergic to the term "value-judgment." The latter is remarkable for a long table showing in parallel columns industrial legislation and events contributory thereto since 1800. On the contributory side a good deal of selection has been necessary and has produced some odd results. In the realm of ideas Harriet Martineau and Ruskin find a place but not Marshall or Pigou. One would

have thought Marshall's influence on our handling of monopoly problems and Pigou's influence on labour policy to have been quite considerable. Coal-mining legislation is set out in one column but with no mention of the Reports of the Sankey and Samuel Commissions and the Lewis Committee in the "contributory" column. It is noted that birth-rates started falling (1876-80), but what exactly this has contributed to is not clear. Professor Florence has a great gift for tabulation and classification, but it can be over-done. The simple statements made on p. 65, for example, are not made easier by being dressed up as physiological routes, psychological routes, inter-industry transfer routes, inter-firm transfer routes, reorganisational routes and transfer plus reorganisational routes.

The book is extremely comprehensive—perhaps too much so for clarity of exposition. Every form of State activity which can possibly bear upon industry is brought in at some point or other—even unemployment insurance, taxation and control of the capital market. Some institutions, such as joint industrial councils, the Finance Corporation for Industry and the Industrial and Commercial Finance Corporation, could justifiably have been omitted.

This effort to get everything in has limited the usefulness of the book in several ways. Some important aspects of the subject (such as location of industry) have received only brief treatment. Also it has cramped the author's style in following up some useful ideas set out in his philosophy of state intervention. One would like to have seen some generalisations on the aims, implications, forms and limitations of state activity in the industrial field more consistently followed up.

There is much of value in this book, but the average reader may be forced to work too hard to find it. The author is easily distracted from his main theme. The references to wages policy or price policy of nationalised industry might have been more limited, and it seems difficult to justify a couple of pages on the rewards to risk-bearing. The style of writing is often obscure. Two examples must suffice. "The fact about industry perhaps most important in State policy is the comparatively low level and narrow section where industrial decisions are made" (p. 16). "Since 1949 there has been a spate of revisions of this (coal) output target; the Ridley Committee upward, many economists downward" (p. 164).

It is difficult to sum up the merits of this book. So many worthwhile ideas and relevant facts are packed into less than 200 pages that it is from some points of view a considerable achievement. But few students will read it with pleasure, and only the more able and industrious with profit. This is a pity, since very few economists can write with greater wisdom and authority on this subject than Professor Florence.

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A. BEACHAM

United States versus United Shoe Machinery Corporation. An economic analysis of an anti-trust case. By CARL KAYSEN. (Cambridge, Mass.: Harvard University Press (London: Oxford University Press), 1957. Pp. 404. 52s.)

THIS book sets out an economic analysis of the issues involved in and arising from the Civil Anti Trust suit brought by the United States against the United Shoe Machinery Corporation under sections 1 and 2 of the Sherman Act. The material (in the book) is derived from Professor Kaysen's original memorandum for the United States District Court of Massachusetts. The major issue of the case was whether the U.S.M.C. monopolised the shoe machinery and shoe factory supplies markets, as the U.S. Government alleged.

This book is a history of the mechanisation of the shoe industry. With it should be read "The Opinion of the Court" on the same case written in lucid, limpid English by Judge Charles E. Wyzanski Junior. Professor Kaysen was a professional economist who was appointed Law Clerk to Judge Wyzanski to act as his economist assistant in connection with the trial of the U.S.M.C. case. His duties were to sift the evidence, to consider economic criteria embodied in the basic policy of the Anti Trust laws and to advise the Judge thereon. Professor Kaysen's book is less easy reading than the Opinion, but it gives the surround and background, the before and after, of the opinion. The bulk of the book is an economic appraisal of the evidence before the Court.

Many things come out in the book. There is the fever of invention of shoe machinery in the last third of the nineteenth century. The shoe industry has been mechanised within the lifetime of men living to-day. Broadly speaking, shoe machines are fed by hand and not automatically, in other words, the industry is still a hand industry but using machines to perform the operations.

The Sherman Anti Trust Act was passed in 1890 and subsequent to that in the next ten or fifteen years there were a great number of mergers throughout the United States, of which the formation of the U.S.M.C. in 1899 was one. The U.S.M.C. merged the interests of five shoe-machinery manufacturers, of whom three were the dominant companies in the principal shoe-machinery groups at the time. At the time of the merger the U.S.M.C. controlled the major share of its market, say 70% or greater. Subsequent additions by purchase and its own natural growth raised it to the level of about 85% of the market, at which figure it has been stabilised for some time.

The shoe industry in the wealthier countries is relatively a stationary industry. During about two-thirds of the period of its mechanisation, that is from 1900 onwards, shoe machinery the world over has been dominated by or largely based upon the work and development of the U.S.M.C. This

is a tribute to the force of the idea created by the men who in 1899 set up the U.S.M.C. merger. The system of control over the shoe industry which they set up to give them the power to work out their ideas was the so-called "tied lease" system. The U.S.M.C. did not sell its machines to the shoe manufacturer, it leased them to him. In the tied-lease system the shoe manufacturer, to use their machines at all, had to use all of them and no others. The stringency of this system was relaxed in America about thirty-five years ago, that is to say the tying clauses were removed. One of the results of the leasing system is that the shoe industry has been serviced with machines in better order, better maintained than is the case in similar industries where outright purchase of machines is the rule.

One of the things brought out in this book is "how you start so you go on." The merger of 1899 and the leasing system was built up around a group of key machines whose use was essential to most types of shoe production. To this day those same key machines or their improved and modified successors still dominate the trading system of the U.S.M.C.

One use the U.S.M.C. has made of its power has been to set up a first-class research organisation. It appears that the use of this research organisation to improve the machines on which the dominance of the U.S.M.C. is based is one of the factors in retaining its position through the last sixty years. During the last war the research organisation did valuable work for the U.S. Government. The application of the efforts of the research and development to the shoe industry has naturally been controlled by the commercial policy of the U.S.M.C. There are indications that the smallness of size and the lack of growth in the shoe-manufacturing industry has restrained somewhat the U.S.M.C.'s research organisation from working out and applying revolutionary concepts.

Under the various Anti Trust laws the United States has fought three cases against the U.S.M.C. First, in 1911 on general monopoly grounds; the United States lost in this case. Second, in 1915 to break up the tied-lease system outlined above; in this case the United States won. Then third the present case, which the United States won. The broad decision in this case is to allow shoe manufacturers to buy their shoe machines as an alternatives to leasing, and to release shoe manufacturers from the obligation to employ U.S.M.C. operatives for maintaining their leased machines. No attempt was made to split up the shoe-machinery supply business, it being held that such split up would damage the shoe industry.

It was held that the two steps of allowing shoe manufacturers to purchase their machines instead of compelling them to lease them, and allowing them to do their own machine maintenance if they so wished, would give encouragement and greater freedom of action to competing shoe-machinery manufacturers.

To reduce the hold which the U.S.M.C. was thought to have over the shoe-manufacturing industry, they were compelled to hive off and separate

and sell to a different company much of the shoe-components supply industry which they had built up over the course of the last sixty years.

By these steps it was expected that the market power in the shoe industry of the U.S.M.C. would be reduced. There is some indication that the U.S.M.C. is now diversifying its excellent research and engineering skills into other trades.

What the outcome will be we cannot tell; "the future's not ours to see." It was a bold move to disturb and try to break up the market power of a company which has dominated the shoe-machinery industry of the world for two-thirds of the time during which that machinery had been in being.

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Street.

Concentration in Canadian Manufacturing Industries. By G. ROSENBLUTH. (Princeton, New Jersey: Princeton University Press for the National Bureau of Economic Research (London: Oxford University Press), 1957. Pp. xv + 152. 28s.)

THE National Bureau of Economic Research who sponsor this study as the sixty-first of their general series, continue to put us in their debt. Professor Rosenbluth has set a model for the analysis of Census of Production data to obtain trends and general characteristics in any country's industrial structure. Concentration and changes in concentration, that is, the number or proportion of firms and plants, which produces or employs a certain proportion relatively to their whole industry, are the main themes—themes important enough as indicating possible monopoly conditions; but other important themes are involved. There is, in particular, the measurement of the absolute size of firms and plants and changes in their sizes.

The author finds (pp. 17, 35-7) that at any one time, as might be expected, the degree of concentration in an industry depends mainly on the average size of its firms; but a surprising fact brought out in this book is the difference in the relative and absolute trends, at least in Canada. Relatively to the size of industry plants have not increased—"the level of concentration for manufacturing as a whole was appreciably lower in 1948 than in 1929 or 1922" (p. 100). Yet, absolute size has increased greatly. Comparing the first and last nine years (both including war years) of the 1917-48 year-by-year table (p. 120) employees per establishment increased from a range of 21-28 to one of 30-45, and horse-power per establishment from a range of 76-137 to one of 207-244. This apparent paradox was largely due to the phenomenal growth of the Canadian market (p. 105) and Canadian industries, making Canada now (p. 3) as industrialised, considering its total population, as the United States. As Rosenbluth confirms (p. 16), concentration is usually higher when industries are smaller. In the United

States (compared with Canada in Chapter IV) corresponding industries were larger, though size of plants and firms were much the same, hence concentration has remained greater in Canada.

The Canadian Census of 1948 was particularly generous in its detail about firms, though it must be borne in mind that by the size of firm is only meant its size within a given industry—integrated firms appear as different firms, one in each industry. The author has been correspondingly generous in publishing summary measures based on this detail. He provides appendices in which the seventy to ninety industries selected (p. 15) for their homogeneity which he deals with, have various indices worked out of their concentration; their average number of plants per firm; their average size of plant and firm; and their degrees of mechanisation or “capital-labour ratios,” such as horse-power or fixed assets per worker. These measures make it possible to attempt correlation, for instance, of the mechanisation of an industry with the average size of its plants or firms. But there is the danger that slick mathematical averaging may cover up some essential facts. Many industries, to judge from British and American experience, have no really typical size of plant and some indeed, a bimodal distribution of sizes. An arithmetic mean size can always be mechanically churned out by dividing number of employees by number of plants, but the resultant quotient will not always be a representative size of plant. Though he stresses the importance of the average size of plant and of firm, and happily keeps the two separate, the author unfortunately does not give us the basic distribution of sizes from which to judge. Again, the significance of the bare horse-power per worker ratio as an index of an industry’s mechanisation, depends on whether much power has to be used in heavy processing or whether the power is only activating light, but often expensive, high-capacity and specialised machines in such work as assembling parts. The author, though aware (pp. 43, 51) of these qualifications, makes no distinction and finds (p. 56) only a low positive correlation between horse-power per worker and size of plant in industries generally. The coefficient will be found much higher if (as the admirable appendices allow) the degree of mechanisation is correlated with size by comparing the horse-power index of industries using power only in a similar way, for instance, in assembly. Really high correlation cannot be expected, since many other factors, particularly the locations imposed by transport cost on certain industries, cut across the effect of mechanisation on size. Rosenbluth does not deal in detail with location except for a listing of fifteen industries (p. 44) “having high transport costs . . . to provide a rough test of the influence of transportation barriers on firm size and concentration.”

Concentration in industry rather than firm size is the main theme of this book, and the author should not, perhaps, be held responsible for any deep inquiry into the causes of the variation in the average size of firms in different industries, which he leaves (p. 17) as a field for a “promising attack.” He

has certainly advanced realistic economics many steps farther in co-ordinating and perfecting the measurement of concentration, in applying statistical analysis to these measures and in demonstrating the importance of such factors as industry size and the capital-labour ratio when accounting for concentration.

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The Dock Worker. (Liverpool: Liverpool University Press. Second Impression 1956. Pp. 277. 17s. 6d.)

THIS book was first published in 1954 and is a study of industrial relations in the Port of Manchester. It is the work of a team of investigators from the Liverpool University Department of Social Science, and reflects conditions in the port during 1950–51. We are told that Manchester was chosen in order to gain experience for later systematic study of the more complex case of Merseyside.

The result is a very worth-while book of much wider significance than we are led to expect. Although the differences between Manchester and other ports need always to be borne in mind, the reader feels that he is being given a valid understanding of the reasons why labour troubles persist in dockland in spite of considerable improvements in working conditions and full employment.

The book necessarily centres around the working of the National Dock Labour Scheme. Its central thesis seems to be that this has given dock workers economic security (in the form of a guaranteed minimum wage) but not social security. The latter is a difficult concept, and seems to stand for those psychological satisfactions which work must yield if the worker is to be contented and efficient. One important aspect of it is regularity of employment. Men are still not assigned to work systematically but by the haphazard and somewhat degrading procedures of the call-stand.

The present reviewer was not entirely satisfied with the evidence on this. About 40% of the men appeared to like the system, and might easily cause trouble if it were changed. Nor does it appear that irregularity of work occurs to the extent suggested. A table presented elsewhere in the book (p. 167) shows that in 1951 only 11% of the sample of dock workers interviewed worked on an average less than 44 hours per week, and only 9% more than 52 hours. Since these figures are affected by sickness, holidays and voluntary absence, it would appear that the very great majority of the men had the chance to work (on an average) a standard week throughout the year. There is no evidence to show undue variation of hours in individual cases from week to week, though in view of the nature of the work and the wages structure this would not be surprising.

The majority of the dockers were extremely critical of their union

(T. & G.W.), and took little active interest in it. Criticism centred around its size, heterogeneity, bureaucracy and detachment from life in the docks. This needs to be related to a comment on the 1951 strike (a comment critical of both management and union), where the authors deplore the "retreat from the common concerns of human relations into an unreal world of red tape and special pleading" (p. 209). One has the feeling that one is nearer to the heart of the matter here than in the discussion of the shortcomings of the National Dock Labour Scheme.

There is much more in this book of interest to economists than can be indicated in a short review. There is, for example, an excellent factual account of the Dock Labour Scheme and the organisation of dock work at Manchester. Of more general interest is the account of the wages structure, which seems to give considerable scope for disputes without the virtue of relating reward very closely to skill and effort. Nevertheless, it appears elsewhere in the narrative that efficient and reliable workmen may reap their reward in other ways. Those engaged in current wrangles about wages in theory and wages in practice will find much food for thought here.

Occasionally the authors get carried away by their obvious enthusiasm for the job. One wonders how much significance is to be attached to the effect of recent changes on the patriarchal structure of dockland society. Also it is only too easy to get lost in the maze of facts. Thus, for example, the statement that 95% of those thinking that the Ship Canal Company was a bad employer were sons of dock workers needs to be related to the fact that 75% of those interviewed were sons of dock workers.

All in all, this is a valuable and well-presented piece of research. It is to be hoped that it will be widely studied, not only by professional economists and sociologists but also by those who appear in its pages.

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The British Tinplate Industry: a History. By W. E. MINCHINTON. (London: Oxford University Press, 1957. Pp. xvi + 286. 35s.)

Using first iron and later steel as its principal raw material, tinplate manufacture was for two centuries a separate, small industry. Founded on the natural advantages of abundant water supply and comparatively easy access to raw material as well as to exporting docks, it soon became predominantly localised in numerous small family businesses in South Wales—a situation maintained, even when circumstances changed, by the availability of skilled labour. As late as the 1930s, it was importing from abroad a substantial proportion of its steel bar. Yet by 1959 it will have ceased almost entirely to be a separate industry and will have become only one of a number of end-products of two or three giant plants which integrate all

the processes of iron and steel manufacture. It is most appropriate that Mr. Minchinton, working in University College, Swansea, should have been able to record at this time the whole of these two centuries of development.

The industry began its expansion behind the shelter of tariffs, imposed in 1703 and 1704, which kept out imports from Germany. Subsequent developments in the rolling of plates soon gave it a virtual monopoly of world trade, until the McKinley tariff of 1890 dealt it so severe a blow that for a time it seemed unlikely to recover. But this, though the most noteworthy, was only one of the periods of depression which it had to endure up to the time of the Second World War. It is a melancholy, though fascinating, story of alternating expansion and contraction, of over-production followed by redundancy, of fierce competition succeeded by cartelisation and other forms of restriction. Systematic research and the development of new processes seem to have been almost non-existent until at long last mergers and amalgamation produced really large units of production. The story does not confirm the belief held in some quarters that competition is the best guarantee of efficiency.

Mr. Minchinton, however, permits himself no generalisations about economic policy. The facts must speak for themselves, and reader can draw his own conclusions. But the facts are all here; they are presented with clarity, with precision, without jargon and without waste of words. The author has devoted years of study to a mass of material (there are six closely printed pages of bibliography) which he has completely mastered. This is now without question the most authoritative book on the tinplate industry in Britain. I hope that Mr. Minchinton himself and other economic historians in the University of Wales will now go on to make similar studies of other local industries—tramp shipping, for example, might justify a claim for exploration before all records are lost.

A sentence or two about Henry Folland, Sir William Firth, John Hodge, Ben Tillett and Ernest Bevin make one wish occasionally that Mr. Minchinton had devoted more space to the personal drama of this industry, its internal competition, its mergers and so on; but perhaps that might have marred the strict objectivity which he has so admirably maintained throughout. One feels confident that he has never selected a fact for record because it would help to prove a case, nor omitted anything of significance because it would not fit the pattern. The only omission that can seriously be regretted is that there is no treatment at any length of the profitability of the industry. Having said that, however, let me repeat that this is an admirable work, which should be read not only by all economic historians, but by all persons who have responsibility for our steel industry.

H. A. MARQUAND

London.

The Economics of Soviet Steel. By M. GARDNER CLARK. (Cambridge, Mass.: Harvard University Press (London: Oxford University Press), 1956. Pp. 400. 60s.)

THIS is the latest volume to come from the Russian Research Center of Harvard University. The first titles have dealt more with politics than economics, and this is the first study of a single Soviet industry to be published. It is doubly welcome, as breaking away from the aggregative approach to the Soviet economy and as a detailed, painstaking study of "the central, most vital sector of any modern industrial economy."

The first part describes the remarkable growth of production and investment in the Soviet iron and steel industry. An interesting chapter on the relationship between costs and prices and the system of subsidies leads into a discussion of the rate of investment (for which, in Soviet terms, only "wreckers" would insist on the criterion of profitability). Part 2 discusses problems of specialisation and scale. In techniques the Russians decided to "follow the American way" and hence to build bigger and bigger units. There is a good discussion of the difficulties this "gigantomania" led them into, especially the physical strain on, and high cost of, the transport system and the neglect of the consumers' needs. Perhaps fortunately, a surprisingly large proportion of steel-making and rolling remains outside the jurisdiction of the Ministry of Iron and Steel in the small-scale plants of machinery builders. This gives some flexibility.

Part 3 is concerned with the factors affecting location of the industry and its future development, and Part 4 reviews the productivity record. The Russians' main concern here is not productivity of labour, of which they have in the past had a plentiful supply, but productivity of capital equipment. Mr. Clark makes the judgment that while labour productivity is quite low by American standards, the productivity of furnaces measured by some coefficient of "the utilization of useful capacity," is higher than in the United States.

The growing shortage of high-grade ore and good coking coal in the U.S.S.R. is imposing the same sort of problems on the Soviet industry as much of the British industry has had to face for some years. The discussion of techniques, scattered throughout the book, is one of its most valuable features. There has been no sign so far of the Russians innovating, but they are very quick to adopt any advance in Western technique. The British steelmen who went on the tour of the Russian industry in the autumn of 1955 reported that their best was equal to our best. It is doubtless the scarcity of capital which has led them to concentrate apparently so much on the technical efficiency of existing equipment. Where we might use beneficiation of ores or high-top-pressure operation, the Russians may well use both; they have been quick to introduce the use of oxygen in the air blast, and so on. On the other hand, it may be misleading to speak, as

Mr. Clark does, of the "conversion of blast- and open-hearth furnaces to automatically controlled operation." While the Russians may use any "instrument one could think of," there is other evidence that they are no closer to the technical ideal of a fully automatic furnace than we are. One would have liked a more systematic discussion of Russian technology than is perhaps possible from the material.

The Soviet industry has so far always been under pressure to produce more. Now there is not only the home demand of an industrialising nation but there are also the satellite countries to be considered, China, and perhaps those countries in a wider orbit who may be influenced by trade. We may perhaps draw some political comfort from the conclusion suggested by Mr. Clark, that the Russians might welcome the opportunity to cut their armaments industry, with its drain on quality steel.

This book should remain a valuable source book for many years. The facts which it contains have been found "scattered here and there through the pages of innumerable Soviet economic and technical publications," and every fact is most carefully documented. There is much here for the student of Soviet statistics. For the student of industry there is again much detail. An appendix lists all the Soviet iron and steel plants with their main characteristics. Nevertheless, the places where it reads more like a thesis than a book are relatively few, and it would give a wrong impression of Mr. Clark's style to quote such instances. Inevitably it is a study written from the outside, and therefore there is lacking the information one would like on the decision-making processes—what decisions are taken at what level, and how the questions, for example, of prices and costs are really settled. Nothing is said on research into technology. How is it decided what technical lines to go for, and what is the role of the central research institutions? Within these limitations, however, Mr. Clark has produced a good and useful book.

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The Obligation to Carry. By A. M. MILNE and AUSTEN LAING. (London: Institute of Transport, 1956. Pp. 129. 5s.)

THIS monograph deals, in the main, with the question of how far "obligations" (law and custom, imposed from outside or arising within the organisation) may be expected to hinder British Railways in their competition with other forms of transport, and with road transport in particular. The problems arising from the fact that the railways regard themselves, and are regarded by the community at large, as a "Public Service" form the core of the book. Here the case for changing the concept of "Public Service" from that adopted by the British Transport Commission before the Transport Act, 1953, is presented.

This was, briefly, to carry the good with the bad traffic and to supply all demands within a structure of prices imposed by the Transport Tribunal. It should be altered, it is argued, to one where traffic is carried only at a price constructed from a basic element of costs specific to the traffic in question, to which is added a contribution to other costs, based on relative demand elasticities, and subject to a limitation on total profits. The supporting arguments (chiefly about the allocation of resources) will in general be familiar to economists, and they possibly do point in the correct *direction* for change in the rates structure. Whether they will enlighten the railways themselves is another matter.

A good deal of the railways' thinking about "Public Service" is coloured by the allegedly large incidence of common and joint costs. The railway administrator may know the direction of change but still see no clear principle of allocation and discrimination to help him fix actual rates. The authors cannot deal with the "practical difficulties" of costing, but outline the "doctrine of avoidable costs" and put the need for discrimination. The administrator might well feel impatient with such reassurances about the avoidable cost approach as: "if the spatial and temporal references are made explicit, then there exists the basis for determining the specific costs involved in the decision (on rates)" (p. 96). Making them explicit—that is, guessing the interrelations of demand and cost—remains a really formidable job.

The railway administrator does not need telling about costs so much as freeing from his fears on the demand side, fears which will not be dispelled by the author's scrupulous avoidance of the command "maximise your profits" in favour of the command "avoid an undue profit" (p. 63). (One would have thought indeed that compromising here would be as fatal to the proper allocation of resources as ignorance about costs.) The railways still seem to be convinced of the need to modify "unfair competition" from the roads. The arguments (pp. 82 ff.) in support of restriction of entry into road haulage will presumably be welcome there. But the reasons given for this are highly debatable—that there exists a procession of road hauliers who, ignoring their long-run costs, are forced in turn to withdraw from the battle, being replaced by new-comers who ignore this experience. The idea of carnage among road hauliers has never been proved to be true even for the 1920s and 1930s, and must be quite wrong nowadays. If entry is so restricted, one can imagine road hauliers entering with glee those "further arrangements, voluntary or otherwise, between road and rail to ensure that all transport operators are pursuing a common policy of economic pricing and that price data are made available to all concerned" (p. 85). (These are deemed to be necessary to set the stage for competition between road and rail.)

On the most interesting and vital question of how the large-scale organisation, personnel and the prominence of the railways will affect their

competitive behaviour, there is disappointingly little. A few general paragraphs point out the disadvantages of the "unflexibility" inevitable in railway administration, the impossibility of making calculations of profit at a low level in the organisation and the direct commercial disadvantage of having to publish information when competitors do not have to do so. The last of these points may be accepted, but as to the others, one can, of course, think up other arguments to show the advantages of large-scale organisation—the quality of information gathered, market forecasting, the hiring of more costly personnel, etc. The question here is really which of these possible merits and demerits actually apply in the railways, and, more important, how decision-taking at different levels could include the use of much more complex techniques of costing.

On the whole, it is difficult to see to what body of readers most of this monograph will appeal. Its limited field restricts its interest for the professional economist. Administrators in the transport industry who are concerned with the theory of costs will wish to know much more than is given here. And it will make little impact on the arguments of organised railway users bent on maintaining privilege before the Transport Tribunal. However, the first two groups will benefit from the historical survey of obligations which precede the main arguments, and even the last may be a little shamed by a witty chapter on "The Public Attitudes towards the Duties of the Railways."

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The Organisation of Science in England. By D. S. L. CARDWELL. (London: Heinemann, 1957. Pp. ix + 204. 18s.)

Economic history is rapidly being conventionalised as a series of "revolutions," each providing the essential conditions to generate its successor, each arising out of the conditions established by its predecessor. This book is concerned with the origins of a recent member of the series, the applied science revolution, which Dr. Cardwell describes in his preface as the "second industrial revolution." In particular, it lays much of the blame for Britain's backwardness in this second industrial revolution on the failure of the educational system to provide an adequate body of professional scientists.

What was lacking, according to Dr. Cardwell, was a scientific rank and file, the corps of trained second-class men who should have been available to put new materials and processes through the research and experimentation stages which must precede practical industrial application. The classic illustration of this deficiency is the case of the aniline-dye industry. Although the initial discovery was made by an Englishman and although the basic raw material (coal) was abundant in England, it was the Germans who developed and improved the new process and took the industrial lead.

Not until the state-aided science schools, inspected by officers of the Royal Engineers, penetrated the "Iron Curtain of Latin and Greek, buttressed by class privilege and underpinned by the Established Church" did science become a recognised profession. The demand for science teachers created a class of professional scientists from which industry could eventually recruit what it needed. It was a slow process, however. At the beginning of the twentieth century there were only a few hundred professional chemistry graduates in England, and of these about three-quarters were teachers.

This description of the development of science education in England, and of the process which transformed the typical scientist from the distinguished amateur of the nineteenth century to the professional specialist of the twentieth century, makes fascinating reading. Dr. Cardwell has established convincingly that there was a relative scarcity of applied scientists in nineteenth-century England (relative as compared to other industrial countries) and that the educational system was largely to blame for this deficiency. By implication, English manufacturers suffered under a heavy handicap in a world where opportunities for technological progress were largely found in the application of science to industry.

How important the handicap was, in practice, in retarding British economic growth it is difficult to say, however, within the rather limited focus of this book. To put it in its proper perspective we need to know more about the relation between science and industry than the number of applied scientists. Nor indeed is Dr. Cardwell's hypothesis of the passivity of industrial demand acceptable on *a priori* grounds. If the Army could create its own cadre of applied scientists in spite of the deficiencies of the educational system, then so, surely, could industry. If industrial demand did not exist or was ineffective in spite of the industrial opportunities offered by the application of science, then this is a circumstance which requires explanation.

Within its limits this is a useful and suggestive contribution to the history of British industrial progress. Its emphasis on the role of the educational system and on the influence which government was able to exert through that system is well justified.

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PHYLLIS DEANE

The Highland Economy, 1750-1850. By MALCOLM GRAY. (Edinburgh and London: Oliver & Boyd, 1957. Pp. viii + 280. 25s.)

To students of British economic development the story of the Scottish Highlands has an interest which is disproportionate to their weight in the national economy. For this is the region which the Industrial Revolution passed by. It is Britain's most intractable underdeveloped area.

This study traces the origins of the Highland problem to the crucial century during which the first Industrial Revolution transformed the British economy. For much of the period there was little, on the face of it, to distinguish the rate of advance in the Highlands from that of other agricultural areas in Britain. The region shared in the phase of rapid population growth which began in the second half of the eighteenth century and continued in the early decades of the nineteenth. It built up new industries (kelp and sheep-farming) and developed old stand-bys (cattle and fish) in response to the new demand by the industrialising south. There was a notable expansion in the area's social capital as measured by the expenditure on roads and canals.

For the true Highland counties, the crofting counties, it was essentially a passive participation involving remarkably little development in average productivity and no increase in money incomes which was not fully reversible by a change in the terms of trade for primary products. The increased population had been fed partly by expanding the area under cultivation but largely by the widespread adoption of potatoes as a staple crop. Between 1750 and 1850 there had been no appreciable improvement in grain yields or in animal husbandry or fishing techniques, no new manufactures to replace the cottage industries killed by factory competition and no reinvestment of boom earnings in projects of long-term significance. The Caledonian canal, constructed largely by immigrant labour, created no new traffic in the area which it served. There arose no indigenous class of merchant entrepreneurs willing to speculate their capital in the new economic opportunities of industrialisation.

Hence the prolonged decline in primary product prices which followed the Napoleonic wars and the disastrous series of potato-crop failures in mid-century bore upon a community which had developed no reserves and no alternatives. By the middle of the nineteenth century it appears that the average Highlander had a lower money income, a smaller animal stock, a narrower range of cottage industries and a less varied diet than his predecessors half a century or more ago. The only solution was emigration.

It should be admitted that the author's conclusions are not quite as unequivocal as this, partly because he is concerned also with the eastern Highlands, where there had been less resistance to change and more assimilation of Lowland agricultural techniques. Partly also it is because he is conscious of certain immaterial values in the Highland way of life—"a fine essence of living that was lost in the more prosperous east." It would have been interesting to have had this "essence" defined more precisely. On balance, however, he concludes that material conditions deteriorated in the north-west during the century under review.

Dr. Gray has explored a variety of sources in a thoroughly convincing way, and he writes with style though not always with precision. This is the kind of regional research which can be recommended to a national and

even to an international audience. But the non-specialist will find it difficult at times to distinguish the wood from the trees. Nowhere, for example, are we told in absolute terms how many people lived in the region, nor how they were distributed, nor how their numbers changed in the course of the century. If we try to work it out for ourselves by reference to readily accessible sources we find that it is far from clear exactly which Scottish counties, or definable parts of counties, fall wholly within the Highland Economy as visualised by the author. Most economists will be grateful for the numerous statistical illustrations drawn from local records, while regretting the lack of a broader statistical background to give them perspective. A good map—though not essential to the narrative—is another accessory that might assist the mere Sassenach to feel at home with the geographical detail.

These, however, are surface blemishes which do not detract from the scholarly quality of this book nor from its value as a contribution to the growing number of regional histories of the Industrial Revolution.

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European Refugees, 1939-52. A Study in Forced Population Movement. By M. J. PROUDFOOT. (London: Faber & Faber, 1957. Pp. 542. 52s. 6d.)

THIS book, the product of six years of research by the late Professor Proudfoot, fills a surprisingly large gap in the history of the forced population movements of the Second World War and the subsequent activities of the international agencies that were set up to take care of the millions who had to be repatriated or resettled. The author has attempted to encompass in one volume the period from 1939 to 1952 covering three phases of the refugee problem of the Second World War: the forced population transfers undertaken by Nazi Germany and the Soviet Union, the organisation of mass repatriation and rehabilitation schemes by the allied military authorities and the United Nations Relief and Rehabilitation Administration (U.N.R.R.A.) and the resettlement work of the International Refugee Organisation (I.R.O.). Much of this story is already known to specialists from the work of Eugene Kulischer, Joseph Schechtman, Jacques Vernant, H. B. M. Murphy and Gerald Reitlinger—to name only a few. There are also official histories of U.N.R.R.A. (by George Woodbridge) and I.R.O. (by Louise W. Holborn). But this is the first study of its kind which traces the history of these momentous years in the lives of some 60 million Europeans who were uprooted by the War and its aftermath.

While suffering from an *embarras de richesse* in so far as material on re-

patriation and resettlement of the refugees was concerned, the author had to rely on a variety of less satisfactory sources in his analysis of the first and, to a refugee reviewer, perhaps the most fascinating phase of the story. This is the story of war-time movements, which starts with an account of population transfers in German-occupied Czechoslovakia and Poland and includes chapters on escapes from the occupied areas (Chapter III) and forced-labour movements in Germany (Chapter IV). To reconstruct this phase of the European refugee story is an immensely difficult task. Although much useful evidence was collected during the Nuremberg Trials, no study has yet been made of the Nazi archives relating to the population transfers. The highly centralised machinery of the department headed by Fritz Sauckel, Hitler's Commissioner General for Man-power, and the operations of *Organisation Todt*, the two principal institutions responsible for procurement of slave labour, require a study in its own right. But relying on some fragmentary material brought together by the Anglo-American Committee of Inquiry of 1946 and the International Labour Office study of *Exploitation of Foreign Labour by Germany* (1945) and various newspaper sources, the author has brought together massive evidence which is of interest to a political scientist, student of economic planning, historian and demographer alike.

To extract some meaning from the chaotic war-time population movements, the author devotes special attention to an examination of types of migration rather than the counting of persons. Most of the migrations stemmed either from Nazi policies, Soviet policies or the general disorganisation of war. Following this line of approach, we note the transfer and resettlement of some 821,000 ethnic Germans in accordance with the Nazi plan for colonisation of the Incorporated Provinces of Poland; the tragic case of some 9 million European Jews, of whom 5 million were exterminated by the Nazis and some 800,000 deported in the Soviet Union; the movement of forced-labour populations to meet the man-power requirements of Germany (8½ millions) and the U.S.S.R. (2½ millions); and the other migrations due to the general military situation. More often than not one type of migration movement dissolved into another, German colonists became refugees overnight as the Red Army moved westward. Not all Jews from the German-occupied territories were deported to Poland; some were put to work in slave-labour brigades and managed to survive, and a small number were able to emigrate to Palestine. Some individuals underwent double deportation, first at the hands of the Germans, then at the hands of the Russians. Thus migration in war-time Europe was a process of continuous flux in which millions of persons were being moved from place to place without any regard to their personal wishes or comfort.

The story of the German concentration camps is told in Chapter X. To-day it is convenient for the free world to forget, as best it can, this

strange and terrible story. There are known to have been in all some 500 concentration camps and satellite work camps in operation in the later stages of the War. The camps were of various sizes and types, ranging from forced-labour camps housing a few thousand prisoners to huge "death factories" like Auschwitz-Birkenau in Poland and Dachau in Bavaria, in each of which some 50,000 men and women were awaiting their turn for asphyxiation in a gas chamber. The total number of people involved in this fantastic nightmare cannot be estimated with any degree of accuracy from the captured German archives. A conservative estimate puts the number of persons who were sent to the camps at 6½ millions. Six millions of these were exterminated. "This is the record"—says Sir John Hope Simpson in his Preface—"of a crime unique in history in its magnitude and incredible cruelty."

The bulk of the book is concerned with what can be called the three R's of the post-war refugee story—repatriation, rehabilitation, resettlement. As I have already stated, much of this work is known from official accounts and scholarly works. Furthermore, the operations of U.N.R.R.A., I.R.O. and the Office of the High Commissioner for Refugees and scores of voluntary relief agencies have been conducted under the full glare of world-wide publicity. What the author has done, however, has been to unite a coherent account and critique of the work of these international bodies, and this in itself is by no means a small contribution. As a senior member of the Displaced Persons Branch of the Supreme Headquarters Allied Expeditionary Force (S.H.A.E.F.), he was responsible for the drafting of the S.H.A.E.F. plan for the control, care, repatriation and resettlement of refugees. With the termination of S.H.A.E.F. the plan became a blueprint for the work of U.N.R.R.A. Subsequently, many of its basic principles were retained in the constitution of I.R.O., which assumed responsibility for the maintenance and resettlement of just over 1 million refugees after July 1947.

The emphasis in the part of the book dealing with the three R's of the post-war refugee story is on lessons which can be derived from the study for the future. As the relatively recent experience of Korea and Indo-China has shown, the refugee problems created by war cannot be entirely solved during the military period. It is, therefore, essential that the planners, both military and civilian, should make a detailed study of the practical problems involved in the handling of the refugees during and after the Second World War. The work under review can be recommended as the best text-book for a study of this kind. Students of refugee problems are indebted to the colossal labour and outstanding achievement of one man.

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J. ZUBRZYCKI

The War Potential of Nations. By K. KNORR. (Princeton, New Jersey: Princeton University Press, 1956 (London: Oxford University Press, 1957). Pp. 310. 40s.)

THIS is an unsatisfactory book. Its object is "to contribute to a theory of war potential," by which is meant, as must be meant with such a subject, some way of arranging our knowledge so that it will be a reliable guide for future policy and in future eventualities. But it repudiates the aim of establishing a *general* theory of war potential because, as the author recognises, a theory that tried to accommodate all the possible types of war situation that might occur in the future would consist of rather sterile generalities. For this reason it limits itself to discussing methods of estimating war potential in relation to further wars of attrition between Great Powers on the model of the first and second World Wars. At this point it runs into another difficulty, the uncertainty whether there will ever be such a war again in view of the emergence of nuclear weapons. On this Professor Knorr concludes that, since we do not know the answer and had better be on the safe side, we ought to assume that such wars are still possible and that war potential, as opposed to immediate and mobilised strength, may therefore still prove to be relevant in the future as it has been in the past. But nothing he says makes the uncertainties any less. And after thus lowering his sights the author still fails to rise above rather obvious generalities in his attempt to provide a limited theory.

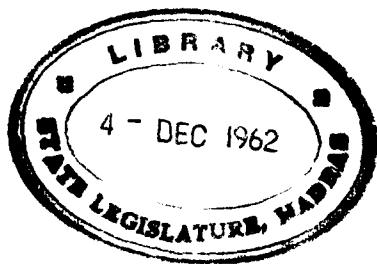
He begins the attempt by accepting another limitation. Previous definitions of what constitutes war potential have failed to be precise; he therefore deliberately disregards some elements of potential strength in order to achieve precision in discussing the elements that seem to matter most. He considers those to be morale—what he calls "motivation for war"—and administrative efficiency as well as economic strength. But even if it is agreed that these are the fundamentally important criteria, Professor Knorr's detailed analysis of each of them gets us no nearer to a theory. Nothing that he says about morale leads one to believe that it can be accurately measured in advance for contingencies that have not yet arisen. Relative administrative superiority comes to mean in the end superiority in improvisation, wisdom and judgment. Who can measure these, and what theory can help us to acquire them? The sections on economic elements in war potential are full of precise information of great interest, drawn from the findings on the last World War, but it is impossible to see anything novel in the conclusions they give rise to. Here are some of them. "The composition of a nation's productive resources is highly relevant to its wartime strength." "Other things being equal, a nation's economic war potential will be greater, therefore, the more the durable goods and chemical industries contribute to the national product in peace-time." "For wars other than nuclear *débâcles*, capacity for manufacturing

production is now the most important factor in the economic basis of war potential."

The truth seems to be that our knowledge of the world's Great Powers from these points of view cannot be precise enough for what the author calls predictive purposes; or that, if it can be precise, it does not take us much further than common sense will take us anyway. We know who are the World's Great Powers from the potentiality point of view without needing a theory which explains why they are. We do not need a theory to enable us to predict that a Great Power could beat a little one—other things being equal. Anything worthy the name of theory must be able to forecast which of the Great Powers could beat which others of the Great Powers in various circumstances. And even if we could evolve such a theory, and even if every sociologist swore by it, no Great Power would believe it until it had been tested.

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F. H. HINSLEY



NOTES AND MEMORANDA

A NOTE ON TINBERGEN ON THE OPTIMUM RATE ON SAVING

IN his paper on "The Optimum Rate of Saving" in the *ECONOMIC JOURNAL*, December 1956, Professor Tinbergen has shown how an optimum rate of saving for the society can be arrived at, given a welfare (utility) function involving present and future consumption and a technical function showing how much future consumption can be created by sacrificing a unit of present consumption. Professor Tinbergen's approach is based on a set of assumptions about measurability, additivity and interpersonal comparability of utility as well as the identity of utility with welfare, which are not difficult to criticise. In this note, however, we shall grant these assumptions and shall try to see whether, given all these, Professor Tinbergen's approach is acceptable.

First, can one relate utility to total income without looking at the income *per capita*? Professor Tinbergen uses two utility functions both leading to diminishing marginal utility with increasing income irrespective of the growth of population. But surely there is no *a priori* reason for expecting diminishing marginal utility if population is growing at the rate at which income is rising. In any case, that one cannot have a unique relationship between income and utility seems obvious—the utility function will be affected by the number of people enjoying that income. If the growth of population is affected by the level of real consumption, and thus by the rate of saving, the problem has to be tackled in terms of a set of simultaneous equations. Even if population growth is assumed to be independent of our decision, the choice will be affected by the fact that utility depends, among other things, upon income *per capita*.¹

Secondly, can we assume that the capital-output ratio is independent of the saving rate? The rate of saving gives us the increase of the capital stock. But, given the technique, unless we increase the labour supply at that rate, the rate of increase of output will be lower. If the labour supply is increasing at a lower rate than the capital stock the gap has to be made up by a rise of the productivity of labour (with constant capital-output ratio), *i.e.*, by a growth of technological knowledge. But can we assume that as soon as we try to speed up the full capacity rate of growth of output by choosing a higher rate of saving, progress of technological knowledge will

¹ We are assuming here equal distribution of income. If distribution is unequal, one has to compare degrees of inequality. Actually the distribution of income may not be independent of our decision about the saving rate. In a free-enterprise economy one method of raising the saving rate is to transfer income from those who save little to those who have lower propensities to consume which may involve an increase in the degree of inequality of income distribution. This will make the problem even more complicated.

also be speeded up to the required extent?¹ When such adjustment does not take place, a higher rate of capital accumulation will require some replacement of labour by capital, *i.e.*, a movement along the production function, thus raising the capital-output ratio.² This dependence of the capital coefficient (K) on the rate of saving ($1 - c$) is of considerable significance as far as the choice of the rate of saving is concerned, since the gains from a higher rate of saving will thus be less than Tinbergen's equation suggests.

Thirdly, is it correct to say that "there need not be, in principle, any difference between the choice an individual makes and the choice to be made for the nation as a whole"?³ Surely the "psychological discount" of future income arising from the so-called defective telescopic psychology is not very relevant from the point of view of planning.⁴ We are interested in to-morrow's satisfaction as such, not in *to-day's* assessment of to-morrow's satisfaction. The "psychological discount rate" ($n - 1$), which Tinbergen uses in this connection,⁵ appears to be not quite applicable in planning problems.

Again discounting of future may not be entirely "irrational" as far as the individual is concerned, for he is mortal. The more distant the future the less is his chance of being alive. And he is less interested in his heir's satisfaction than in his own. Thus future income may indeed mean less to him, and some sort of time discount is very understandable. Actually from an individual's point of view integrating a utility series from to-day to infinity, as Tinbergen does, does not seem to be very meaningful. This may partly explain why Tinbergen found that the observed personal rates of saving in most countries were so much lower than the values he expected on the basis of his equations (*op. cit.*, pp. 607-9). Part of the explanation may also lie in the simple fact that while from the point of view of the individual the return to capital is the interest rate, from the point of view of the society it is the net output produced per unit of capital. Even if the

¹ In Mr. Harrod's terminology, the "natural" rate of growth must become equal to the "warranted" rate of growth, whatever the value of the latter.

² Professor Tinbergen recognises the importance of technological advance in determining the value of K . "The values to be given to the capital coefficient K , we saw, have to depend on whether we assumed that, together with increased savings, there will be forthcoming the increased technological knowledge, organisation, etc., that, in the history of developed countries, accompanied the growth of their capital assets. In other words, whether together with savings the growth of knowledge and organisation can also be accelerated. If this is assumed to be the case, we should give to K the values of about 3 or even a little less; if not, K may be considerably higher, up to 20" (*op. cit.*, p. 608).

The point, however, is not so much that the value of K may vary, but that an attempt to cut down c may raise the value of K .

³ *Op. cit.*, p. 603.

⁴ F. P. Ramsay dismissed the idea of pure time discount as "ethically indefensible" as it "arises merely from the weakness of imagination" ("A Mathematical Theory of Saving," *Economic Journal*, December 1928, p. 543). See also "A Note on the Discussion of the Problem of Choice between Alternative Investment Projects," *Soviet Studies*, January 1951, pp. 289-90.

⁵ *Op. cit.*, p. 605.

interest rate is equal to the rate of profit on capital invested, it does not include the share of other factors of production in the income created by the investment.

When we integrate the utility flows in Tinbergen's case I up to T years, we get¹

$$U_a = \log(c \cdot Y_0) \left(\frac{1 - n^{-T}}{\log n} \right) - \frac{(1 - c)T \cdot n^{-T}}{K \cdot \log n} - \frac{(1 - c)}{K} \left(\frac{1 - n^{-T}}{\log^2 n} \right)$$

Maximising this with respect to c , we get the optimum value of c ,

$$c = \frac{(1 - n^{-T})K \cdot \log n}{1 - n^{-T} - T \cdot n^{-T} \log n}$$

In the limiting case of Professor Tinbergen, where $T = \infty$, this reduces to $c = K \cdot \log n$. Thus, for example, when Professor Tinbergen assumes $K = 3$ and $\log n = 0.05$, the "optimum" rate of consumption is 0.15 (*i.e.*, the rate of saving is 0.85). It is these high values of the "optimum" saving ratio which make Professor Tinbergen conclude that "in order to explain observed personal rates of saving prevailing in most countries we must assume that either the capital coefficient is supposed to be much higher than the values usually now presented or the psychological discount rate is considerably higher than normal interest rates."²

If, however, we introduce the difference between capital-output ratio and the capital-interest ratio as well as the life-expectation of the individual, the problem seems much easier to solve. Even if we assume as high a rate of interest as 12½%, *i.e.*, a capital-interest ratio of 8, and use it in place of the capital-output ratio of 3, we get 0.4 as the value of the consumption rate. And if the average saver expects to live only twenty years more and tries to maximise utility (psychologically discounted) for that period (*i.e.*, $T = 20$), the value of c becomes 0.9. The rate of saving 0.1 is not too far from the observed personal rates of saving.³

For the purpose of the choice of *social* optimum rate of saving, however, it is the capital coefficient, and not the capital-interest ratio, which is relevant.⁴ Also the expectation of life of the present savers need not determine the time horizon to be taken into account, nor is there much need to use the "psychological discount" in planning problems.⁵ The

¹ I am indebted to Mr. David Epstein of Trinity College for helping me with the mathematics.

² *Op. cit.*, p. 609.

³ *Op. cit.*, p. 607.

⁴ We have to examine, of course, the decline of the capital coefficient with the rise in the saving rate, discussed earlier.

⁵ This is not to say that in the case of the *social* choice we should not use any time discount. The uncertainty as to the future may be one of the reasons for using such a discount. One may also abandon pure utility analysis and make specific value judgments like "those who sacrifice should benefit." But pure time discount does not seem to go well with a model of interpersonal comparison of utility. In any case there is no reason why the individual's "psychological discount" should be taken very seriously in the determination of the optimum rate of saving.

basis of the choice for the society as a whole seems to be very different from that of an individual, for, among other things, while the individuals die the nation does not.

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AMARTYA KUMAR SEN

THE CONVEXITY OF THE PRODUCTION POSSIBILITY FUNCTION

SOME years ago Professor Samuelson, following a line of reasoning used by Professor Bishop, demonstrated that, in the case of two products and two factors with homogeneous production functions of the first order, the production possibility curve could not be concave, but must be convex from above.¹ "This proof," said Professor Samuelson, "is suggestive only, but could easily be made rigorous." Mr. J. Black has provided a rigorous proof in the *ECONOMIC JOURNAL* of March 1957 (he looks at the curve from below, and thus proves concavity). His route, however, is slightly roundabout,² and it may be worthwhile to provide a rigorous proof along the lines suggested by Professor Samuelson.

In Fig. 1 all of both factors (labour and land) can produce either OA of clothing or OB of food.

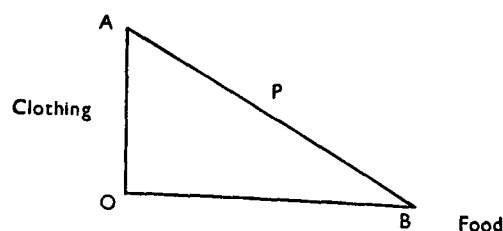


FIG. 1

It follows from the constant returns to scale property of linear homogeneous production functions that any combination represented by a point P on AB is possible. Following Samuelson's terminology, we can call AB a "down-the-line" production-possibility curve. Along AB the factor proportions used in both food and clothing are the same, and equal to the proportion of total factors available.

¹ P. A. Samuelson, "International Factor Price Equalisation Once Again," *ECONOMIC JOURNAL*, June 1949, pp. 184-5.

² Mr. Black starts by drawing a continuously concave curve to represent the locus of equilibrium combinations of two factors in the production of two goods; thence he declares the concavity cave property of the former curve be regarded as intuitively obvious, or whether it also calls for formal proof.

The next thing is to show that in general there must be possible combinations above AB . Take any point P on AB .

Let marginal physical productivity of 1 unit of labour at P in clothing be c_1 .

Let marginal physical productivity of 1 unit of land at P in clothing be c_2 .

Let marginal physical productivity of 1 unit of labour at P in food be f_1 .

Let marginal physical productivity of 1 unit of land at P in food be f_2 .

There is no loss of generality if we assert that $\frac{c_1}{c_2} \geq \frac{f_1}{f_2}$.

(We can, if we wish, and as Samuelson does, tie up the direction of the inequality with which of the products is "labour-intensive" and which "land-intensive," but it is not a necessary part of the present argument.)

Suppose $\frac{c_1}{c_2} > \frac{f_1}{f_2}$

Transfer a unit of labour from food to clothing. Food output falls by f_1 and clothing rises by c_1 . We restore food output by transferring land from clothing to food. How much do we need? Obviously $\frac{f_1}{f_2}$ units of land.

But we could take as much as $\frac{c_1}{c_2}$ of land away from clothing to bring output back to the old level, *i.e.*, we have the original outputs and $\left(\frac{c_1}{c_2} - \frac{f_1}{f_2}\right)$ units of land to spare to be added to either food or clothing or both. Thus there are production-possibility points in the quadrant north-east of P .

Suppose $\frac{c_1}{c_2} = \frac{f_1}{f_2}$

In this case no transfer of factors on the above lines is any help. But in this case also the ratios of the marginal productivities of land and labour will be the same all along AB , *i.e.*, AB is the production possibility curve.

Put the other way round, if $\frac{c_1}{c_2} \neq \frac{f_1}{f_2}$ at any point P on AB it must be unequal at every point on AB .

What have we proved so far? Simply this: Either the ratios of the marginal productivities are the same all along AB , in which case AB is the production possibility curve and that is the end of the story. Or else the ratios are unequal, in which case there are possible points above AB .

It also follows that if Q be any point above AB where the ratios of the marginal productivities of land and labour in the two products are still unequal, further possible points to the north-east of Q can be found. We know that there cannot be points outside the area bounded by AQ and QB . Thus there will be a production-possibility frontier running from A to B .

somewhere in the triangle AZB , at all points on which the ratios of the marginal productivities of labour and land in the two products must be equal.

Let Q, R be any two points on this boundary. Suppose Q requires L_Q labour and T_Q land in food, and R requires L_R labour and T_R land in food. It follows that $(L_R - L_Q)$ labour combined with $(T_R - T_Q)$ land can produce either QM clothing or MR food. (Since the ratios of the marginal productivities are equal at both P and Q , both these differences must be positive.) Once more QR is a "down-the-line" possibility curve between Q and R . Once more there will, in general, be points above QR . Thus

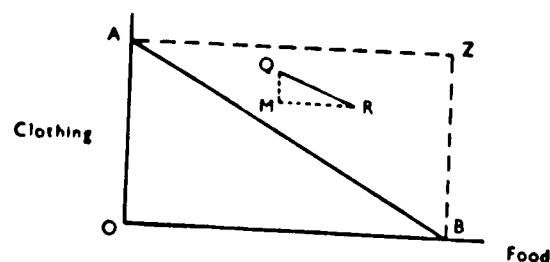


FIG. 2

the boundary joining A to B has the property that it always lies outside any chord of itself, i.e., it must be convex seen from above.

This would seem to complete the proof—but there is one loose end still to be tied up. We have seen that AB itself is a special case of the production-possibility curve. Might not an otherwise convex curve have a straight bit, e.g., QR ? The answer is no. Since Q and R are on the boundary, the ratios of the marginal physical productivities of labour and land in the two products must be the same at Q and R , but the factor proportions employed in the two products must be different. Now as we travel down QR we allocated the amounts of factors $(L_R - L_Q)$, $(T_R - T_Q)$ in the same proportions to the two products. It is conceivable that $\frac{L_R - L_Q}{T_R - T_Q}$ might be equal to the factor proportions used in either of the products at Q or R , but it cannot be equal to both. Thus at least at one point S on QR (and in fact at every point) the ratios of the marginal productivities must become unequal, thereby allowing us to find a production possibility point to the north-east of S .

Thus the production-possibility curve is either AB itself or a continuous convex curve lying above it.

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G. D. N. WORSWICK

OFFICIAL PAPERS

WEST INDIAN FINANCES

In June 1954 the Colonial Office, with, no doubt the needs of the approaching Federation in mind, asked Dr. Prest to undertake a Fiscal Survey of the British Caribbean. His report was completed by September 1955 and is now, with the addition of a short Postscript and two footnotes recording the dissent of the Government of Trinidad to criticisms, issued by the Colonial Office in its series of Colonial Research Studies.¹

The *Survey* is arranged in three sections. It begins with a sketch of the setting (economic, administrative and social) in which the system of public finance has to operate. This vigorous and, at times, provocative introduction to the area could with advantage be read by anyone interested in West Indian affairs. Dr. Prest stresses the relative poverty of the area, the almost total lack of interest in government finance, the area's economic vulnerability and the dependent nature of the currency. These set limits to policy. Thus, the currency system limits deficit financing to the size of accumulated reserves and, as MV is more likely to be inelastic in the short run than in advanced economies, a policy of subsidisation of foodstuffs might not result in lower prices or a policy of higher indirect taxes bring about a higher price level. By what standards, then, should such an area's fiscal policy be judged and to what levels should public revenue and expenditure rise? Dr. Prest courageously draws the answers to these questions from his introductory sketch. The comparison should be with the United Kingdom "as it was 50 or perhaps even 100 years ago," because of the kind of problems faced and the newness of the machinery for facing them, and with a local authority rather than with the central government of the United Kingdom, because of the size of the territories and the lack of monetary autonomy. The resemblance to Latin America is held to be closer in some respects than to the United Kingdom. The answer to the second question—the right level of revenue and expenditure—is that tax revenue and expenditure should account for a smaller proportion of national income than is the case in advanced economies because of the greater need for flexibility in fiscal matters and the colossal inexperience of West Indian governments in economic intervention. Dr. Prest's argument is sound, but what is more likely to keep down the size of the public sector in fact is the difficulty of raising revenue and the need to attract overseas capital.

In the next section the accounts of each government are first analysed separately and then inter-territorial comparisons are made. Dr. Prest and his assistant, Mr. W. G. Demas, should be congratulated on the assembly of this material. The pattern is varied, but several broad conclusions emerge.

¹ *A Fiscal Survey of the British Caribbean*. By A. R. Prest. London: H.M. Stationery Office, 1957. Pp. 136 + 10 Charts. 10s.

Customs and excise together accounted for over one-third of consolidated current revenue in all territories, except the Virgin Islands. Income tax came next, except in Trinidad, where it came first, and in the six grant-aided islands of the Leewards and Windwards, where grants-in-aid were either the biggest or second biggest item. In the larger territories, unlike some of the smaller (notably Grenada), the yield from export taxes appears to be small, and a possible source of increased revenue seems to be uncovered. But the percentage contribution to government revenue is misleading in the larger territories, where the various statutory marketing boards levy cesses on exported produce. This reveals another feature of West Indian public finance, namely the high ratio of the revenue of government commercial bodies and public corporations, on the one hand, to current consolidated government revenue, on the other. In Jamaica the respective totals are shown as 60 million West Indian dollars and 63 million. The revenue and expenditure of these para-government bodies should be brought under regular parliamentary review: the hurried move away from *laissez-faire* should not be towards bodies not answerable to Parliament. Anyway, the search for new sources of revenue should not leave export taxes unexplored. Such taxes would, of course, amount to taxes on the profits of producers, estate and peasant.

In the third section of his report Dr. Prest examines in turn six important features of the fiscal system. Company taxation is shown to account for between 55 and 85 % of total income tax collected in the larger territories and nearly as much in the smaller islands with the exception of Montserrat. The Jamaican figure will rise sharply when the 1957 agreement with the bauxite companies becomes fully operative. Some of the shortcomings pointed out in the industrial incentive legislation have been taken into account since Dr. Prest completed his report.

In his discussion of personal income tax Dr. Prest questions whether policies of social welfare can be soundly based when less than 4 % of the population pay direct taxes. Tax rates are now little, if anything, below the corresponding levels in Britain, particularly when the absence in the larger territories other than British Honduras of any earned income allowance is remembered. (Incidentally, in a capital-short economy there is no case for differentiating against unearned income. The unearned income benefits which residents of the area receive under pioneer industry legislation might with advantage be generalised.) If, on the one hand, income-tax rates cannot be raised without adversely affecting incentive and overseas recruitment and, on the other hand, social welfare services are essential ingredients in political programmes, then the income-tax net must be more widely cast. As Miss Martin and Professor Lewis have argued (*The Manchester School*, September 1956), exemption limits are set too high and family allowances are too generous in economies where average income is low: "In a country like India or Nigeria," they say, "a man earning £200

a year is extremely well off in comparison with the average income of the population, which is only about £60 a year for a person gainfully occupied. Even the £100 a year man is definitely 'middle-class' and a cut above his neighbours. The effect of present policies is to exempt practically the whole of the 'middle-class' from paying income tax, and so the yield of the tax is bound to be small." What about the costs of collecting many small sums? Opinions differ about this, but Miss Martin and Professor Lewis think it has been exaggerated. Certainly cost would be much lower if direct taxes on the 'middle-class' took the form of land taxes and poll taxes as they do in Asia and Africa. If it is not soon found possible, economically and politically, to tax directly in one way or another many of those now below the exemption limit, one comes back inevitably to Dr. Prest's query concerning welfare services, especially when the steady growth of population is brought into the picture.

Four other topics are discussed: the incidence of taxation, budgetary procedure (which includes an ingenious demonstration that errors of budgeting are mainly deliberate), public assets and liabilities and the finances of Federation. Each is informative and stimulating. On occasion comparison with other under-developed areas would have been worthwhile and this is one way in which the foundations laid by Dr. Prest should be built on. Meanwhile Financial Secretaries and others interested in government finance in the British Caribbean should be grateful to the Colonial Office for proposing and to Dr. Prest for undertaking this pioneering *Fiscal Survey*.

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The University College of the West Indies.

CURRENT TOPICS

SENIOR economists who are visiting the United Kingdom for considerable periods during the present academic year include Professor W. Fellner from the United States, Mr. K. L. Kinsman from Australia, Professor Kenjiro Ara from Japan and Mr. J. Nowicki from Poland, all of whom are at Cambridge. Professor A. C. Harberger is dividing his time between Cambridge and the London School of Economics. Others at London include Dr. M. P. Hale, Professor A. C. Land and Mr. F. Honigsbaum, all of whom, together with Professor Harberger, are holders of Fulbright grants. In addition, Dr. J. Durand and Mr. E. McCrensky, both from the United States, are visiting the London School of Economics for shorter periods. At Oxford, Professor G. F. Kennan, formerly United States Ambassador in Moscow, is Eastman Visiting Professor; also at Oxford are Professor G. M. Meier from the United States, Professor M. Morishima from Japan and Mr. K. M. Savosnik from Sweden.

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 the October 1, 1958, 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 1957/58:

Research Grants

Mr. J. D. Bailey, Research Student, Nuffield College, Oxford. (Renewal.)	British Investment in Australasian Financial Companies, 1870-1900.
Mr. G. E. Clayton, Lecturer in Economics, University of Liverpool.	Banking in Spain and in Portugal.
Mr. A. B. Cramp, Research Student, London School of Economics.	Operation of Bank Rate, 1822-60.
Mr. R. Davis, Lecturer, University of Hull. (Renewal.)	English Shipping Industry, 1660-1702.
Mr. A. G. E. Jones, Teacher, Bristol College of Commerce.	Growth of Banking in Suffolk, 1700-1900.
Mr. R. V. Lennard, Historian. (Renewal.)	Rural England in the Middle Ages.
Miss C. A. P. Leubuscher. (Renewal.)	Shipping Facilities available to the overseas trade of Colonial Territories.
Mr. J. W. McCarty, Research Student, Cambridge University.	British Investment Overseas in Non-Ferrous Metal Mining, 1870-1914.
Miss J. E. Mitchell, Lecturer, University of Nottingham. (Renewal.)	The Balance of Payments Crisis of 1951.
Mrs. C. S. Orwin. (Renewal.)	A History of Modern British Agriculture, 1846-1913.
Dr. L. S. Pressnell, Lecturer, University College.	Money in the Eighteenth Century.
Mr. P. Robson, Lecturer, Queen's University, Belfast.	Fiscal and Financial Aspects of Post-war Capital Levies.
Professor R. S. Sayers, F.B.A., London School of Economics.	A Study of American Banking.
Mr. J. S. G. Wilson, Reader, London School of Economics.	Banking in France and the Netherlands.
Mr. G. A. Yewdall, Research Student, University of Leeds.	Population movements in certain northern towns during the early part of the nineteenth century.

VOLUME II of *The Works and Correspondence of David Ricardo*, edited by P. Sraffa with the collaboration of M. H. Dobb, has recently been reprinted. It is hoped that before the publication of this issue of the JOURNAL it will again be available for sale, either through the book trade, or in the case of Fellows at the special price of 16s. on application to the Secretary at the Marshall Library, Downing Street, Cambridge.

THE following have been admitted to Life Fellowship of the Society:

Faaland, J.	Mangasha, Y. W.	Spiegelglas, Prof. S.
Liefmann-Kiel, Prof.	Pattabhiraman, N.	
Dr. E.		

THE following have been admitted to Fellowship of the Society:

Abela, M.	Fraser, I. S. A.	Preston, R. L.
Airey, J. N.	Freedman, A. M.	Qayyum, M. A.
Anderson, D. L.	Gellatly, Capt. L.	Ramasamy, K.
Ayres, A. P.	Grech, P.	Robinson, C. H.
Baker, A. G.	Gupta, P. K.	Sancho, T. A.
Bates, J. A.	Hamilton, D. P. I.	Sarma, B.
Belshaw, D. G. R.	Heaven, N. B.	Schofield, J.
Bishop, K. G.	Heinrich, E.	Senker, P. J.
Blackwell, W.	Irwin, B. M.	Shahani, P. K.
Bock, K. W.	Jones, F. P. B.	Sharp, G.
Bodhiratna, K. A.	Khan, A. G.	Sharpe, H. D.
Brennan, L. E.	King, H. M.	Smith, C. T.
Brennan, P. T.	Kothandaraman, M.	Stern, R. M.
Brown, E. F. A.	Kromphardt, Prof. Dr.	Taplin, W.
Brown, F.	W.	Taylor, R. S.
Bryden, W. K.	Lai Chin Chung	Tedman, E. A.
Burke, E. M.	Lawley, L. C.	Terrell, J. R. F.
Callan, P.	Levine, A. L.	Tin Sun Tong
Carman, P.	Llewellyn, E.	Tomlins, W. E.
Carpenter, B. R.	Lowther, T. R.	Topper, M.
Chaufournier, Dr. R. A.	Mandal, Dr. G. C.	Troup, G. W.
Clark, K. E.	Margolis, Prof. J.	Uduhirinwa, Dr.
Collins, J.	Melville, G. L.	M. N. N.
Collis, Lieut. Col. A. A.	Mohamed, C. A.	Vickers, Dr. D.
Culpan, J.	Moorhead, D. H.	Walker, J. A.
Dales, J. H.	Murphy, Major R. W.	Watkins, G. H. J.
Dange, B. G.	Murty, P. S. K.	Watling, K. L.
Davies, Miss N. J.	Nnajide, J. N.	Webster, A. E.
Deutsch, Prof. J.	Noah, H. J.	Weeks, J. M.
Dixon, D. F.	O, Pu-Sheung	Williams, M. I.
Dumbell, G. E.	Ojewumi, A. G.	Williams, T. J.
Einzig, R. S.	Ola, C. S.	Woodrow, W. R.
Ellis, J. S.	Oso, I. O.	Wong, Chak Ming
Fernando, H. P.	Pereira, J. A.	Yankson, E. A.
Francis, W. D.	Pilisi, Y-D.	Yau, R. C. K.
Fraser, C. F.		

THE following have been admitted to Library Membership of the Society:

Athenaeum, Padova, Italy.
 Atlantic Refining Co. Philadelphia.
 Bank of Israel, Jerusalem.
 British Information Services, Kuala Lumpur.
 Bureau of Economics & Statistics, Government of Andhra Pradesh, India.
 Courtaulds (Canada) Ltd., Montreal.
 Deoghar College, Bihar, India.
 Graduate Economics Soc., Wharton School, University of Pennsylvania.
 Hatfield Technical College, Hatfield, Herts.
 Hunting Technical & Exploration Services, Toronto.
 Indian Council of World Affairs Library, New Delhi.
 Istituto di Economia delle Fonti di Energia, Milan.
 Kelley & Millman Inc., New York.
 Lockwood Memorial Library, University of Buffalo.
 Maharaja's College, Ernakulam, India.
 National Council of Applied Economic Research, New Delhi.
 Nottingham & District Technical College, Nottingham.
 Seminar für Rechts-und-Wirtschaftswissenschaft, Universität, Mainz.
 Skidmore College Library, Saratoga Springs, New York.
 Social Science Research Library, Seoul, Korea.
 Somervell Bros. Ltd., Kendal.
 Stephen F. Austin State College, Nacogdochas, Texas.
 University of Illinois Library, Chicago. Undergraduate Division.

RECENT PERIODICALS AND NEW BOOKS

Journal of the Royal Statistical Society

- VOL. 120, PART 2, 1957. *An Inquiry Concerning Interviewer Variability*: K. GALES and M. G. KENDALL. *Economic Acceptance Sampling Schemes*: G. HORSNELL. *Changes in the Proportions of Male Colour Types during the Period 1914-39*: A. J. LEA. *A Method of Estimating Surplus Labour in Peasant Agriculture in Over-populated Under-developed Countries*: N. K. SARKAR. *Unit Value and Volume Index Numbers of Inter-area Trade*: A. MAIZELS.
- VOL. 120, PART 3, 1957. *The Measurement of Productive Efficiency*: M. J. FARRELL. *The Use of Electronic Data Processing Equipment*: J. H. H. MERRIMAN and OTHERS. *An Application of Linear Programming to the Transport of Coking Coal*: A. H. LAND. *The Mathematical Relation between the Number of Diseases and the Number of Patients in a Community*: G. HERDAN. *Sentence-length Distributions of Greek Authors*: W. C. WAKE.

Applied Statistics

- VOL. VI, No. 2, JUNE 1957. *Evolutionary Operation: A Method for Increasing Industrial Productivity*: G. E. P. BOX. *Some Statistical Applications of Electronic Computers*: S. LIPTON. *"Three-Group" Regression Analysis: Part I: Simple Regression Analysis*: W. M. GIBSON and G. H. JOWETT. *Discriminant Functions of Socio-economic Class*: K. GALES. *The Study of Variability in Engineering Design*: S. J. MORRISON. *A Simple Survey with Both Postal and an Interview Stage*: P. G. GRAY.

Economica

- VOL. XXIV, No. 95, AUGUST 1957. *National Wage Policy in the Netherlands*: B. C. ROBERTS. *The British National Debt: Part I*: E. G. JONES and E. NEVIN. *Method and Analysis in David Hume's Economic Essays*: D. VICKERS. *Tariffs, Subsidies and the Terms of Trade*: W. M. CORDEN. *Notes on the Place and Significance of the Money Multiplier*: E. J. MISHAN.

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- VOL. 9, No. 2, JUNE 1957. *Anglo-American Economic Relations in War-time*: R. OPIE. *Classical Growth*: I. M. D. LITTLE. *An International Comparison of "Over-employment" Trends in Money Wages*: C. CLARK. *Changing Economic Thought in Poland*: P. J. D. WILES. *Communism and the Price System: I: On the Role of the Law of Value in Socialist Economy*: W. BRUS; *II: In the Pincers of the Law of Value*: J. PAJESTKA. *A Note on Productivity Changes and the Terms of Trade*: A. ASIMAKOPOULOS. *Mr. Newman on Revealed Preference*: H. S. HOUTHAKKER.

The Review of Economic Studies

- VOL. XXIV, No. 65, JUNE 1957. *The "Transformation Problem"*: F. SETON. *Stability in a Closed Economy and in the Foreign Exchange Market, and the Redistributive Effect of Price Changes*: J. SPRAOS. *The Compatibility of any Behaviour of the Price Level with Equilibrium*: J. C. GILBERT. *Demand Theory without a Utility Index*: L. MCKENZIE. *A Note on Bondholding and the Liquidity Preference Theory of Interest*: F. P. BRECHLING. *Index Numbers and Demand Analysis*: M. C. KEMP. *Notes on the Theory of Stability of Multiple Exchange*: M. MORISHIMA. *Multiplier Theory and Fiscal Policy*: A. HAGGER. *Mr. Gehrels on Custom Unions*: R. G. LIPSEY. *A Reply to Mr. Kemp*: A. R. BERGSTROM.

The Manchester School of Economic and Social Studies

- VOL. XXV, No. 2, MAY 1957. *The Growth of Life Assurance in U.K. since 1880*: J. JOHNSTON and G. W. MURPHY. *An Engel-type Curve for Cash*: J. SPRAOS. *Private Company Finance in the Post-war Period*: F. R. JERVIS.

Scottish Journal of Political Economy

- VOL. IV, No. 2, JUNE 1957. *Organisation in Two Nationalised Industries*: A. E. THOMPSON. *The Span of Control*: L. F. URWICK. *Gorbals: A Study in Redevelopment*: T. BRENNAN. *Two Scottish West Indian Liquidations after 1793*: S. G. CHECKLAND. *The Labour Theory of Value*: H. D. DICKINSON.

The Economic History Review

- VOL. X, No. 1, AUGUST 1957. *Treasure Hoards in the Italian Economy, 960-1139*: D. HERLIHY. *Deficit Financing in the Reign of James I*: R. ASHTON. *The Social Structure in the Eighteenth Century: a Calculation by Joseph Massie*: P. MATHIAS. *The British Standard of Living, 1790-1850*: E. J. HOBBSAWM. *Buganda: An Outline Economic History*: C. C. WRIGLEY.

The Journal of Industrial Economics

- VOL. V, No. 3, JULY 1957. *Letters Patent for Inventions: Their Use and Misuse*: G. A. BLOXAM. *Crude Oil Prices in the United States at the Gulf Coast*: W. A. LEEMAN. *The Relationship between Wage and Effort*: W. BALDAMUS. *Flour Pricing and the Miller's Margin*: J. M. BELLAMY. *The Stated Qualifications of Directors of Larger Public Companies*: D. P. BARRITT. *Selective Studies in Alternative Manhour Costs*: S. MELMAN, A. CALDERARO and J. SURIDIS. *Financial Provision for Research and Development in Industry*: J. F. COALES.

Bulletin of the Oxford University Institute of Statistics

- VOL. 19, No. 2, MAY 1957. *Savings Behaviour: A Symposium. Tests of the Life Cycle Hypothesis of Savings*: F. MODIGLIANI and A. K. ANDO; *Savings and the Balance Sheet*: M. FRIEDMAN; *Expectations and Consumer Behaviour*: T. P. HILL; *Econometric Analysis of the Savings Survey Data*: T. HAAVELMO; *The Significance of Income Variability on Savings Behaviour*: L. R. KLEIN and N. LIVIATAN; *An Evaluation of the Tests*: J. TOBIN and H. WATTS; *Some Conditions for Progress in the Study of Savings*: I. FRIEND; *The Danger of Over-simplification*: J. D. SARGAN; *A Reply to the Critics*: M. R. FISHER.

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- VOL. 9, No. 1, MAY 1957. *Self-contradiction in Leontief's Dynamic Model*: M. McMANUS. *Economic Theory in Great Britain Today*: J. C. GILBERT. *Progress in the United Kingdom Iron and Steel Industry*: E. T. SARA. *Real Earnings in Sheffield, 1851-1914*: S. POLLARD.

Political Studies

- VOL. V, No. 2, JUNE 1957. *The Development of Political Organizations in Kenya*: G. BENNETT. *The Independent Member in Ireland*: B. CHUBB. *Some Notes on the Standing Committees of the French National Assembly*: P. A. BROMHEAD. *J. S. Mill and Democracy, 1829-61: I*: J. H. BURNS. *Political Decision in Opposition*: R. T. MCKENZIE.

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- VOL. VIII, No. 2, JUNE 1957. *The British Sociological Association Conference, 1957*: R. FLETCHER; *Social Theory: Retrospect and Prospect*: D. G. MACRAE; *The Role-set: Problems in Sociological Theory*: R. K. MERTON; *Social Investigation: Past Achievements and Present Difficulties*: T. S. SIMEY; *Primordial, Personal, Sacred and Civil Ties*: E. SHILS; *Social Research and Social Policy in the Nineteenth Century*: O. R. MCGREGOR; *Sociology and Social Policy*: G. D. H. COLE; *Reports of Group Discussions. The Social Grading of Occupations in Brazil*: B. HUTCHINSON.
- VOL. VIII, No. 3, SEPTEMBER 1957. *Social Conflict and the Theory of Social Change*: L. A. COSER. *Notes on the Use of Statistics in Social Administration*: J. P. MARTIN. *Primitive States*: P. M. KABERRY. *Social Stratification and Intellectual Roles in the Negro Community*: W. RECORD. *A Sociological Theory of Economic Administration*: W. BALDAMUS. *A Mathematical Presentation of Israel's Political Parties*: T. M. GOODLAND. *Ice-breaking for Sociologists*: S. J. GOULD.

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- VOL. 5, No. 1, JULY 1957. *The Search for a Laic Morality under the French Third Republic: Renouvier and the "Critique Philosophique"*: H. TINT. *The Changing Role of Local Democracy: The Trade Union Branch and its Members*: T. E. STEPHENSON. *The Distribution of Social Defects in Liverpool*: I. M. CASTLE and E. GITTUS. *The Use of Models for Social Economic Structures*: F. ZWIEG. *The Group Discussion as an Interview Technique*: J. A. BANKS. *Family or Sibship Position and Scholastic Ability*: J. P. LEES and A. H. STEWART. *Family and Authority: The German Father in 1955*: R. KÖNIG.

Population Studies

- VOL. XI, No. 1, JULY 1957. *A Demographic Study of the British Ducal Families*: T. H. HOLLINGSWORTH. *The Measurement of Population Distribution*: O. D. DUNCAN. *Social Ambitions of the Bourgeoisie in Eighteenth Century France, and their Relation to Family Limitation*: J. G. C. BLACKER. *Death Rates, Age Distribution and Average Income in Stationary Populations*: L. JOHANSEN. *The Fertility of Teachers in England and Wales*: W. SCOTT. *Applicants for Assisted Migration from the United Kingdom to New Zealand*: L. B. BROWN.

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- VOL. VIII, No. 9, 1957. *International Pattern of Demand for Foodstuffs*: D. BASU and G. T. JONES. *A Statistical Study of the Productivity on Cambridgeshire Farms*: F. G. FORSYTH. *A Note on the Decline in Numbers of Farmworkers in Great Britain*: J. D. HUGHES. *Statistics of Owner-occupation of Farms in England and Wales for 1927*: S. G. STURMEY. *A Note on Research Methodology and Peasant Agriculture*: A. MARTIN.
- VOL. VIII, No. 10, 1957. *Monopolistic Tendencies in the Chemical Fertilizer Industry*: H. FRANKEL. *International Pattern of Demand for Foodstuffs in 1954: Mathematical Analysis of the Data*: D. BASU and G. T. JONES.

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- VOL. V, PART II, 1957. *Some Recent Danish Experiments in Neolithic Agriculture*: A. STEENBERG. *The British Plough: Some Stages in its Development*: F. G. PAYNE. *The Rabbit in England*: E. M. VEALE.

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- VOL. XII, No. 3, JUNE 1957. *The Future Pattern of Food Consumption in the United Kingdom*: A. W. ASHBY. *Some Problems of Land Tenure*: A. H. MAUNDER. *Developments in Farm Management Advisory Work in the Eastern Countries*: D. B. WALLACE. *The Significance of Variation in Annual Farm Profits*: Z. W. TANSEY. *Some Short-term Forecasting Methods*: F. HOLME. *Teaching Farm Management in a Three Year Degree Course*: E. M. CARPENTER. *A Review of the Fresh Milk Market in England and Wales, 1939 to 1956*: J. EMPSON. *A Note on Cereal Prices and Acreages*: T. W. GARDNER.

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- OL. 83, PART I, No. 363, 1957. *Continuous Investigation into the Mortality of Assured Lives: Memorandum on a Special Inquiry into the Distribution of Duplicate Policies. The Effect of Bankruptcy on Non-assignable Annuities*: D. HOUSEMAN. *The Effect of Taxation on Damages and Compensation for Loss of Incomes*: D. HOUSEMAN.

The Incorporated Statistician

- OL. 7, No. 4, APRIL 1957. *Cost Accounting and Statistics*: J. A. REECE. *The Design of Experiments: II: The Nature of Measurements*: M. J. MORONEY. *The Generation of Income Distributions: Some Illustrative Models*: D. G. CHAMPERNOWNE. *Diagrams for Rapid Estimation of Partial Correlation Co-efficients*: F. D. LIDDELL.

The Banker

- OL. 107, No. 377, JUNE 1957. *Monetary Strategy Now. A Commonwealth View of Sterling. America's Drift from the Factory*: E. L. DALE. *Confessions of a Reflationist: I: The Moment of Policy's Turning*: N. MACRAE. *Montagu Norman in Perspective*: E. V. MORGAN. *German Banking Changes Back*: W. RINGLEB. *America's Changing Banking Scene: III: The Money Market*: J. S. G. WILSON.

- VOL. 107, No. 378, JULY 1957. *Europe's Problem Currencies. Canada's Economy Now:* E. P. NEUFELD. *Confessions of a Reflationist: II: The Inheritance from Stagnation:* N. MACRAE. *New Deal for Rents:* C. JONES. *America's Changing Banking Scene: IV: The Federal Reserve:* J. S. G. WILSON. *Lombard Street in Calmer Waters:* J. GRAHAME-PARKER.
- VOL. 107, No. 379, AUGUST 1957. *Wanted—Leadership. Central Banks for New Dominions:* I. GREAVES. *Could Europe's Oil be Cheaper?:* D. OVENS. *Squeeze in Abeyance. Can Ireland Face Europe?:* J. MEENAN.
- VOL. 107, No. 380, SEPTEMBER 1957. *Europe's Currency Cauldron: A New Deal?: The Dollar Problem Reconsidered; The German View:* R. E. LUKE. *Attrition in Fleet Street:* J. E. HARTSHORN. *Superannuation for All?:* M. SHANKS. *Taxation of Overseas Profits:* G. WHILLANS.
- VOL. 107, No. 381, OCTOBER 1957. *Expedient or Cure? Exchange Priorities Now. Ottawa and Europe. Commodities Face a Test:* F. CASSELL. *The Economics of Algeria: I: Frenchman's Burden:* J. W. SAXE. *The "Fed" Rejects Inflation. Australia's Second Banking Reform:* J. O. N. PERKINS.

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- VOL. CLXXXIII, No. 1359, JUNE 1957. *Light on Montagu Norman's Policy:* SIR R. HAWTREY. *Switzerland: Fifty Years of the Swiss National Bank:* R. PFENNINGER; *The Swiss Industries Fair, 1957:* H. HAUSWIRTH; *Trends in the Swiss Capital Market:* E. BADER; *The Importance of Switzerland as a Financial Centre:* A. SCHAEFER. *European Economic Welfare and Oriental Industrialisation:* W. ROBERTSON.
- VOL. CLXXXIV, No. 1360, JULY 1957. *Our New Index Number. The Scope and Limitations of Monetary Policy:* W. F. CRICK.
- VOL. CLXXXIV, No. 1361, AUGUST 1957. *Fighting Inflation. The Banking Half-year. The Cheques Act, 1957:* J. M. HOLDEN. *The Reorganisation of the Austrian Capital Market:* F. SCHEU. *Survey of Economic Conditions in the U.S.A.: Growing Signs of a Gradual Decline.*
- VOL. CLXXXIV, No. 1362, SEPTEMBER 1957. *Hire Purchase in Small Manufacturing Business, Part I:* J. A. BATES. *Alpbach and Integration:* G. H. MORRISON. *Bankruptcy Law Amendment.*
- VOL. CLXXXIV, No. 1363, OCTOBER 1957. *Bank Rate in Action. The Bankers and Monetary Policy:* E. NEVIN. *Adjusting Deutschmark without Tricks:* K. RICHBÄCHER. *The Future of European Monetary Policy. Hire Purchase in Small Manufacturing Business, Part II:* J. A. BATES. *The Come-back of the German Big Three Banks:* H. J. PANTEN.

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- VOL. XXXII, No. 3, AUGUST 1957. *Sterling Today. The International Finance Corporation. Economic Progress in South Africa.*

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- NO. 122, JUNE 1957. *The European Free Trade Area:* S. R. DENNISON. *Housing After the Rent Act:* A. C. L. DAY.
- NO. 123, SEPTEMBER 1957. *The Control of Industrial Location:* J. SYKES. *Towards Better Farming:* C. A. COOKE. *The Upsurge of Inflation.*

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- NO. 45, JULY 1957. *Britain Revisited:* SIR S. CAINE. *Switzerland Copes with Prosperity:* G. SOLOVEYCHIK. *The Future of Local Government Finance:* J. WISEMAN.
- NO. 46, OCTOBER 1957. *The "Norman Conquest" Reconsidered:* SIR T. GREGORY. *How much more Inflation in the U.S.?:* D. M. KEEZER and E. R. EGGERS. *Science and Industry:* T. WILSON.

Midland Bank Review

- AUGUST 1957. *The History of Retirement Pensions. The Ministry of Agriculture, Fisheries and Food.*

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- NO. 39, AUGUST 1957. *Price Policy in a Period of Continuing Inflation:* P. T. MENZIES. *Towards a Community of Purpose:* W. C. WALGATE.

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- NO. 34, JUNE 1957. *Japan and the General Agreement on Tariffs and Trade:* J. E. MEADE. *Flat Racing and Thoroughbred Breeding in England Today:* J. HISLOP.
- NO. 35, SEPTEMBER 1957. *The Economics of National Superannuation:* A. T. PEACOCK. *Fare-fixing in Air Transport:* A. H. FOX. *The Royal Bank and the Scottish Economy, 1727-60:* H. HAMILTON.

Westminster Bank Review

- AUGUST 1957. *The Economics of the Theatre:* A. DUKES. *Household Durables and the "Squeeze":* M. WRAY. *Automation and Productivity, Competition and Incentives:* S. B. BAILEY. *The Too-prolific Hen:* H. FRANKEL.

Planning

- VOL. XXIII, No. 411, JUNE 1957. *Trade Fairs and Exhibitions.*
- VOL. XXIII, No. 412, JULY 1957. *Free Trade and Social Security.*
- VOL. XXIII, No. 413, AUGUST 1957. *Postage and Philately.*
- VOL. XXIII, No. 414, SEPTEMBER 1957. *Designs for Europe.*

Town and Country Planning

- VOL. XXV, No. 7, JULY 1957. *Special number on Hampstead Garden Suburb.*
- VOL. XXV, No. 8, AUGUST 1957. *Cities in Flood:* D. HEAP. *Canada Needs Regional Planning:* N. PEARSON.
- VOL. XXV, No. 9, SEPTEMBER 1957. *Urban Dispersal Policy. Soviet Union to Build New Towns:* D. HOJAYEV. *Space for our Congested Cities:* C. FEISS. *Spain's Housing Policy:* G. D. HARPMAN.
- VOL. XXV, No. 10, OCTOBER 1957. *Addis Ababa: The Master Plan:* G. B. DIX. *A Manifesto against Ugliness:* H. R. LUCE. *The Welsh "Quadrilateral":* B. E. CRACKNELL.

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- VOL. 27, No. 5, JULY 1957. *Railway Freight Charges:* A. A. HARRISON. *Tankers: Past Present and Future:* A. S. C. HULTON. *Passenger Transport in Britain: What Next?:* A. B. B. VALENTINE.
- VOL. 27, No. 6, SEPTEMBER 1957. *European Air Transport Economics:* S. WHEATCROFT. *The Staff Problem in Transport:* A. BULL.

Progress

- VOL. 45, No. 254, SPRING 1957. *"Anti-Trust" in the United States:* A. FORTAS. *The National's Share in Management: A Problem for the International Business:* F. J. PEDLER. *School for Merchant Venturers:* E. B. J. POSTMA. *The Leverhulme Trust:* SIR M. CLIFFORD. *Productivity on the Farm:* A. W. HASLETT. *A New Aim for Progressive Thought:* P. KUIN.
- VOL. 46, No. 255, SUMMER 1957. *The "Investment League":* A. K. CAIRNCROSS. *The Royal Tropical Institute, Amsterdam:* SIR R. WINGATE. *Structure and Level of World Trade:* P. R. TOWELL. *The Grand Banks of the South:* E. ROSENTHAL. *Malaya's Plans for the Future:* E. M. K. JOHARI.

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- NO. 20, SEPTEMBER 1957. *The Finance of Development in Tropical Africa: I.*

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- NO. 25, JUNE 1957. *World Situation. The U.S. Cordage Industry.*
- NO. 26, SEPTEMBER 1957. *World Situation. Mexican Henequen.*
- NO. 268.—VOL. LXVII.

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VOL. XXXIII, No. 64, APRIL 1957. *The Australian Economy, April 1957*: P. H. KARMEL. *Wage Rates, the Cost of Living and the Balance of Payments*: J. E. MEADE and E. A. RUSSELL. *The Calculation of the Cost of Protection*: W. M. CORDEN. *A Production Function from Farms in the Whole-milk Region of Western Australia*: H. P. SCHAPPER and R. G. MAULDON. *Arbitration in a New Key*: K. F. WALKER. *Spatial Competition and Sheltered Industries*: W. T. DOWSETT. *E. G. Wakefield and the Alienation of Crown Land in New South Wales to 1847*: K. BUCKLEY. *An Estimate of the Magnitude of Income Redistribution in New Zealand*: C. WESTSTRATE.

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- No. 6, 1957. *The Work of Financial Organisations Must Be at the Level of Their New Tasks. On Unfinished Construction and the Commissioning of Fixed Capital*: V. ROBOTOV. *Some Questions on the Strengthening of Cost Accounting in Industry*: V. GANSHTAK. *Profoundly Study the Economics of Production*: M. ZAKHAROV. *The Reform of the Revenue Departments*: V. SAMOILOV. *On the Enterprise Fund*: R. KORAGEDOV. *Improve the Role of Incentive Funds*: V. MITROFANOV. *Savings Banks in Bulgaria*: I. PALISKY. *The 1957 Budget of the Korean Democratic People's Republic. Corporation Reports of the Monopolies of the U.S.A. in 1956*: I. VEITSMAN.

Dengi i Kredit (Russian text)

- No. 4, 1957. *Improve the Organisation of Industrial and Construction Management. Ways to Develop Mutual Clearing*: E. MITELMAN. *Reinforce the Links between the State Bank and the Collective Farms*: SH. BULUSHEV. *Accounting and Credit on the Railways*: I. GARBER and M. PESSEL. *Resources for Paying Off Loans for the Introduction of New Technology and their Computation*: M. YAMPOLSKY. *The Strengthening of the Trend towards Concentration among U.S.A. Banks*: V. USOSKIN.
- No. 5, 1957. *The Work of the State Bank—to the Level of Its New Tasks. Suggestions on the Administration of Regional Branches of the State Bank (Leningrad)*: N. POZDNYAKOV; *Moscow*: Z. DEGTVAREV; *Sverdlovsk*: I. KOPYLOV; *Latvia*: L. KHOKHLOV and N. ZILBERSHTEIN). *On the Problem of the Essence and Functions of Money in a Socialist Society*: I. DYMISHITS. *Travellers' Cheques Issued by the Banks of Socialist Countries*: A. ALTSHULER. *Credit Control Since the War in the Capitalist Countries*: A. EIDELNANT.

Ekonomista (Polish text, English and Russian summaries)

- No. 3, 1957. *The Problem of The Profitability of Agricultural Production in Peasant Farms*: A. BRZOZA. *The Influence of Economic Incentives on Agricultural Production*: H. CHOLAJ. *On the Problems of the Profitability of State Farms*: T. RYCHLIK. *The Economic Problems of Automation in Capitalist Countries*: M. KALECKI and A. SZEWSKI. *Economic Problems in the Wrocław (Breslau) Correspondence of Karl Marx*: S. SCHWANN. *Changes in the Social Structure of the Small Peasantry in People's Poland*: M. DZIEWICKA. *From Research on the Housing Situation in People's Poland*: A. ANDRZEJEWSKI. *Some Problems of Linear Programming*: W. TOMASZEWSKI. *Problems of Regulation of Monopoly and Competition*: J. GRZYWICKA. *Y. Poniatowski on the Economic Situation of Polish Agriculture after the War*: M. CIEPIELEWSKA. *Against Simplification in Studies of the Situation of the Working Class*: J. POPKIEWICZ and F. RYSZKA.

Planované Hospodářství (Czech text)

- No. 3, 1957. *Completing the Building of Socialism in Czechoslovakia by Developing Co-operative Farming*: J. KNÁKAL. *Problems Relating to the Manufacture and Development of Machine Tools in Czechoslovakia*: Z. ŠVÁBENSKÝ. *Theoretical Problems of Raising the Economic Effectiveness of Directing the National Economy*: Z. VERGNER. *On Economic Incentives for Raising the Effectiveness of Industrial Production*.
- No. 4, 1957. *Problems Concerning Building Work in Progress and Uncompleted Sites*: E. ČERVENÝ. *The Economic Development of the Indian Republic*: A. ŽIŽKA. *On the Organisation of the Garment Industry. Questions of Forming and Planning Prices*: V. JANZA. *Raising the Efficiency of the National Economy by Using Economic Incentives*: F. BOREŠ.
- No. 5, 1957. *Raising the Efficiency of the Exploitation of Sources of Power in Czechoslovakia*: M. RATAJ. *The First Results of the Shortened Working Week*: M. PÍCK. *Reserves in Lowering Production Costs in the Engineering Industry*: J. HLÍDEK. *How Agricultural Production and Marketing Will be Planned Next Year*: M. PARKAN. *The Planning of Wholesale Prices*: O. ŠÍK. *Evaluating the Economic Effectiveness of Technical Development*.
- No. 6, 1957. *Certain Economic Questions Relating to the Construction of Thermal Power Plants*: V. TKAČEV. *Measuring Labour Productivity in the Building Industry*: J. KOMÁREK. *Raising the Quality of the Training of Agricultural Specialists*: J. JANOVIC. *For the Development of International Co-operation in the Field of Power*: F. HOMOLA. *Theoretical Problems Involved in the Direction of the National Economy*: R. KOCANDA. *Problems Concerning the Planning and Fixing of Prices in the Engineering Industry*: V. HANUŠ.

Finansi i Kredit (Bulgarian text)

- No. 3, 1957. *Bulgarian-Soviet Friendship—the Guarantee for New Economic Successes. For Successful Fulfilment of the State Budget for 1957. Some Problems on Planning and Collecting Profits Taxes:* G. PETROV. *How to Use Soviet Experience in the Matter of Capital Investment:* I. PALIISKY. *Accumulation Plans in Municipal Enterprises:* I. PETKOV. *The Appeal to Workers in Industry, Electrification and Transport and the Tasks of Financial and Bank Workers:* A. STOICHEV.
- No. 4, 1957. *Vladimir Ilich Lenin. The Tasks of the Ministry of Finance and State Control in 1957:* K. LAZAROV. *For Successful Collection of State Revenues in 1957:* YA. YANEV. *On the Question of a Further Strengthening of Economic Accounting in Industrial Enterprises:* V. NANKOV. *The Contract System in Purchasing Agricultural Produce:* T. DONCHEV. *For Improved Financial Standards in Collective Farms:* K. ZANEV. *On Accounting the Value of Production:* S. STRUMILIN.
- No. 5, 1957. *An Improvement in the Organisation and Control of Soviet Industry and Construction. The Struggle for Higher Profitability in Industrial Enterprises as a New Form of Socialist Competition:* V. RANKOV. *How to Show the Money Income and Outlay Balance of the Population in 1957:* K. GUGOVSKY. *The Finance and Control by the Bulgarian Investment Bank of Beyond-limit Capital Outlays on State Farms:* D. MINKOV. *The New Settlements System:* P. KHAZEVOV. *Bring Order into the Payments Methods on Co-operative Farms:* G. STOIROV. *Verification of Turnover Tax Returns by Local Retail Co-operative Societies:* P. TYANKOV.
- No. 6, 1957. *For a Higher Level of Work on the Draft 1958 Budget. Some Problems of Financial Practice and Science:* D. BAZHDAROV and G. PETROV. *Successes among Consumer Co-operatives:* K. KAMENOV. *Turnover Taxes and Procurement Prices:* S. TODOROV. *Foreign Exchange and Financial Control under Socialism:* R. DELCHEV. *How the Kiev Savings Banks Work:* R. DELCHEV.

Ikonomicheska Misl (Bulgarian text, French and Russian summaries)

- No. 2, 1957. *The New Economic Aid from the Soviet Union. The 1957 State Budget:* K. LAZAROV. *Coal and the Bulgarian Fuel Problem:* I. BAICHEV. *Charles Fourier—The Great Utopian Socialist:* P. SPIRKOV. *Lenin and the Peaceful Coexistence of Two Systems:* S. SUKMANDZHIEV. *Some Problems of Cost Calculating on Labour. Collective Farms:* L. GLYUMEZOV. *Costing on Labour-Collective Farms:* K. KIRYAKOV.

Planovo Stopanstvo (Bulgarian text)

- No. 2, 1957. *The Improvement of the System for Buying Agricultural Produce—an Important Factor in Increasing Agricultural Output:* S. SYULEMEZOV. *The 1957 Capital Investment Plan and the Development of the Economy:* P. TOPCHIEV. *International Trade in Some of Our Traditional Agricultural Exports:* K. TSANKOV and Zh. IVANOV. *Trends in the Development of Our Motor Vehicle Park and Demand for Various Types of Fuel:* Z. ZLATEV. *Setting Limits for Working Capital in Industrial Enterprises:* L. APOSTOLOV.

Probleme Economice (Rumanian text, French and Russian summaries)

- No. 5, 1957. *Labour for the Community and the General Processes of the Socialist Economy: The Calculation of the Cost-of-Living Index and of Real Wages:* M. BIJI and V. TREBICI. *Some Aspects of the Problem of Excess Stocks:* M. SIBIANU and V. CHIRIAC. *Agricultural Collectivisation in the Timisoara Region:* N. BELLI. *Consumer Co-operatives and the Development of Commercial Exchange between Town and Country:* GH. FETEANU. *Some Problems Relating to the Socialist Transformation of Capitalist Industry by Peaceful Means in the Chinese People's Republic:* I. BURSTEIN. *On the Agrarian Crisis at the End of the Nineteenth Century in Rumania:* N. MARCOU. *On the Western European "Common Market":* N. GODAN and V. VOLOSINIUC.

Statistikai Szemle (Hungarian text, English and Russian summaries)

- MARCH 1957. *Preliminary Demographic Data for the Year 1956:* A. KLINGER. *Examination of Meteorological Factors Influencing Sugar Beet Production:* I. MÉSZÁROS. *An Outline of the Input-Output System—II:* Z. KENESSEY, V. NEMÉNY and Gy. SZAKOLCZAI. *Problems of Socio-Professional Classification:* P. DEMÉNY. *Hungary's Foreign Trade with European Capitalist Countries (1945–1956):* L. KERÉNY. *Remarks on the Problem of National Income Derived from Foreign Trade Activities:* J. BENEDECZKI and L. DRECHSLER. *Some Problems of Coal Processing in the Chemical Industry:* M. KISTELEKI-STILLER and T. VINCZE. *General Censuses:* L. HÉJA.

- APRIL–MAY 1957. *On the Komló Investments:* F. DEÁK and L. SZILÁGYI. *Why do Eloquent Figures Keep Silence?:* A. MÓD. *Consumption of Milk and Dairy Products in Hungary:* M. ZAFIR. *The Statistical Application of the Geometric Mean:* P. KOVES. *Timely Problems of our Demographic Policy:* K. MILTÉNY. *A Comment:* J. RÉDEI. *Some Problems of the Economic Interpretation of Index Numbers:* G. HAJPÁL. *The Branch Structure of Industry:* G. PÁL.
- JUNE 1957. *The New Index of Industrial Production:* Z. ROMÁN. *The Resolution of the Board of the Central Statistical Office on the Computation of Production Indices in Industry. The Role of the 1949–56 Regrouping of Farm Plots and Their Impact on Our Agriculture:* L. BORBÉLY. *Methodological Questions on the History of the Computation of National Income:* R. HORVÁTH. *The Library of the Central Statistical Office:* J. KOVACSICS. *A New General Statistics Textbook in the German Democratic Republic:* P. KÖVES and G. PÁRNICZKY. *Trends of Labour Productivity and Average Earnings in State Industry:* A. NYILAS. *Meeting of the Methodological Committee for Industry and Building of the Central Statistical Office. The Statistical Activity of the United Nations Organisation:* Z. KENESSEY. *Strengthening the Central Statistical System in the Soviet Union.*

Közgazdasági Szemle (Hungarian text, English and Russian summaries)

- No. 5, 1957. *Costs of Production and the Balance-sheet of the National Economy:* Gy. TAUSZK. *The Role of Price in the Socialist Economy:* B. NAGY. *Specific Features of a Modern Capitalism:* A. HAÁSZ. *The Present and Prospective Situation of Hungarian Metallurgy:* L. KISMARTY. *On the Planned Development of Agriculture:* K. GARAMVÖLGYI. *Objectives and Methods of Econometric Research:* K. KÁDAS.
- No. 6, 1957. *The Main Proportions of the Economic Plan for 1957:* Gy. SOMOGYI. *New Facts on Soviet-Hungarian Trade:* L. KÖVÁRY and Gy. LÁZÁR. *The Overcoming of Inflation—Our Reserves and Prospects:* A. MÓD. *Market Control—Its Role and the Means of Carrying it into Practice:* V. SÁGHY. *On the Correlation of National Income and Foreign Trade in Hungary:* T. KISS.
- No. 7, 1957. *Problems of Economic Policy and the 1957 Plan:* I. FRISS. *Remarks on the 1957 Economic Plan:* J. BOGNÁR. *The State as an Economic Factor in Modern Capitalism:* A. HAÁSZ. *On Wages and Income Distribution in Co-operatives:* F. ERDEI. *The New Soviet Method of Industrial Management:* E. REDÖ. *"Economic Mechanism" or "Economic Policy"?:* Gy. VARGA.
- Nos. 8–9, 1957. *Our Economic Tasks:* J. FOCK. *The Reorganisation of Industrial Producer-Prices:* B. NAGY. *Hungarian Foreign Trade Problems:* J. BOGNÁR. *Experiences in the Management of Industrial Enterprises:* J. BÁLINT and OTHERS. *A Practical Method of Assessing the Economics of Export:* Gy. ERÖS and OTHERS. *Some Aspects of Hungarian Prospects and Possibilities:* M. KÖKÉNY. *Aspects of Social-Economic Relationships in Farm Co-operatives:* F. FEKETE. *On Income Distribution in Farm Co-operatives:* L. MARKÓ. *Capital Accumulation in Bulgaria:* J. NATAN. *Some Correlations between Industrialisation and Foreign Trade in Underdeveloped Countries:* F. MOLNÁR.

NEW BOOKS

British

ADDIS (J. P.). *The Crawshay Dynasty. A study in industrial organisation and development, 1765–1867.* Cardiff: University of Wales Press, 1957. 9". Pp. xiv + 184. 12s. 6d.

[To be reviewed.]

ASHWORTH (H.). *Housing in Great Britain.* London: Thomas Skinner (330 Gresham House, Old Broad Street, E.C.2.), 1957. 8½". Pp. 157. 7s. 6d.

[This is designed primarily as a text-book for those preparing for the Final Examination of the Building Societies Institute. The author is General Manager and Secretary of the Co-operative Permanent Building Society. The book does not set out to be an original contribution to thinking on the subject, but it brings together a good deal of information in convenient form. Part I, on Housing Policy, consists of largely factual survey of present housing needs—with brief but sensible

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remarks on the ambiguities of this concept—viewed in relation to the existing stock of houses, its prospective rate of obsolescence and the prospective rate of family formation. This Part contains also an historical account of house building and housing policy in the present century, and a survey of sources of finance and of the trend of house prices and building costs since the War. Part II, on Housing Standards, is more technical, but contains a useful compact summary of the pros and cons of different designs of dwelling.]

BASTIN (J.). *The Native Policies of Sir Stamford Raffles in Java and Sumatra. An economic interpretation.* London: Oxford University Press, 1957. 8½". Pp. xx + 163. 30s.

[To be reviewed.]

BELL (C.). *Survey of International Affairs, 1954.* Edited by F. C. BENHAM. London: Oxford University Press for the Royal Institute of International Affairs, 1957. 9½". Pp. 329. 45s.

FOLLIOT (D.). (Ed.). *Documents on International Affairs, 1954.* London: Oxford University Press for the Royal Institute of International Affairs, 1957. 9½". Pp. 368. 55s.

[These two volumes are complementary to each other, but each is designed so as to be suitable for use independently. The main focus of international affairs in 1954 was in South-East Asia and the Far East, with the termination in Indo-China of the last full-scale armed conflict between the communist world and the western world. The events in this area accordingly occupy a large part of the Survey. In the Documents volume relatively more space is devoted to affairs in Europe and the Middle East.]

A Bibliography in Economics for the Oxford Honour School of Philosophy, Politics and Economics. Compiled by LADY HALL, G. B. RICHARDSON and J. R. SARGENT. London: Oxford University Press, 1957. 8½". Pp. 80. 6s. 6d.

[This replaces the similar Bibliography that was issued in 1950, and like it arranges the material according to the papers set in the Oxford P.P.E. examination. The 1950 Bibliography was a useful compilation, but it reflected markedly the individual interests of its editors and was much stronger in some fields than in others. The present publication, as well as being up-to-date and generally more comprehensive, is also better balanced. Its compilers are to be congratulated on having produced what is the best and most thorough classified bibliography of economics at present available. The amount of material included—journal articles as well as books—is remarkable, and undergraduates reading P.P.E. will be relieved to learn from the preface that not all the two thousand or so items included are to be regarded as indispensable. Its usefulness will by no means be confined to Oxford. Since it is likely to have a wide circulation, might the Oxford University Press consider the publication of an interleaved edition, for teachers of economics to make their own additions and keep the coverage up-to-date?]

CLARK (C.). *The Conditions of Economic Progress.* Third Edition. London: Macmillan, 1957. 9". Pp. xiv + 720. 70s.

[To be reviewed.]

CLEGG (H. A.) and CHESTER (T. E.). *Wage Policy and the Health Service.* Oxford: Basil Blackwell, 1957. 9". Pp. 142. 18s. 6d.

[To be reviewed.]

DEPARTMENT OF AGRICULTURAL ECONOMICS, UNIVERSITY OF BRISTOL. *Cropping and Crop Costs in South West England, 1955; Report No. 97; 10½", Pp. 85, 2s. 6d.* *An Economic Study of Pig Production in South West England, 1955-56, by E. BURNSIDE and R. C. RICKARD; Report No. 99; 9", Pp. 48, 2s. 6d.* Newton Abbot: Department of Agricultural Economics, University of Bristol, 1957.

DEPARTMENT OF AGRICULTURAL ECONOMICS, UNIVERSITY OF BRISTOL. *A Farmer's Guide to Incentive Schemes, by W. M. STRONG. Report No. 98.* Newton Abbot: Department of Agricultural Economics, University of Bristol, 1957. 10½". Pp. 30. 2s. 6d.

[A brief survey of the incentive payments schemes appropriate to different types of agricultural work and their advantages and disadvantages.]

The Dock Worker. An analysis of conditions of employment and industrial relations in the Port of Manchester. Department of Social Science, University of Liverpool, Social Research Series. Liverpool: Liverpool University Press, 1956. 9". Pp. 277. 17s. 6d.

[Reviewed in this issue.]

H.R.H. the Duke of Edinburgh's Study Conference on the Human Problems of Industrial Communities within the Commonwealth and Empire, Oxford, 1956. Vol. I: *Report and Proceedings*; Pp. 338. Vol. II: *Background Papers, Appendices and Index*; Pp. 339. London: Oxford University Press, 1957. 10". 42s. per set.

[To be reviewed.]

EDDY (J. P.). *The Law of Copyright.* London: Butterworth, 1957. 9½". Pp. 356. 35s.

[This is a new text-book describing the state of the law of copyright since the passage of the Copyright Act of 1956. An annotated text of the Act is included.]

FAWZI (SAAD ED DIN). *The Labour Movement in the Sudan, 1946-1955.* London: Oxford University Press for the Royal Institute of International Affairs, 1957. 9". Pp. xiv + 175. 25s.

[To be reviewed.]

FREEMAN (T. W.). *Pre-famine Ireland. A study in historical geography.* Manchester: Manchester University Press, 1957. 9". Pp. 352. 35s.

[To be reviewed.]

GILBERT (M.) and STONE (J. R. N.) for the International Association for Research in Income and Wealth. *Income and Wealth, Series VI.* London: Bowes & Bowes, 1957. 9". Pp. 306. 42s.

[To be reviewed.]

Graduate Employment. A sample survey by PEP. London: Political and Economic Planning in conjunction with Allen & Unwin, 1956. 9". Pp. 300. 30s.

[This volume is based on a questionnaire which was completed in the autumn of 1954 by 4,535 men (women were not covered) who graduated with a first degree in arts, science and technology in the academic year 1949-50. Of those included in the sample, 52% had taken a degree in arts, 28% in science and 20% in technology. Medicine, dentistry, agriculture and veterinary science were not covered by the survey. The greater part of the analysis deals with the employment of the graduates between the years 1950 and 1954. Many interesting details are given regarding such matters as starting salaries in the different occupations; salaries in relation to the class obtained by the graduate at his university; changes in employment, etc. It is however, regrettable that owing to the base year chosen for the inquiry (1949-50) more than 50% of all the men in question were found to be in receipt of Further Education and Training Grants, which means that they had served during the War. The result of this is that the sample is composed of a much higher proportion of older men than would normally be the case. In this important respect the sample cannot be regarded as typical.]

JENKS (C. W.). *The International Protection of Trade Union Freedom.* No. 35 in the Library of World Affairs, published under the auspices of the London Institute of World Affairs. London: Stevens, 1957. 10". Pp. xl + 592. 84s.

[To be reviewed.]

KENDALL (M. G.) (Ed.). *The Sources and Nature of the Statistics of the United Kingdom.* Vol. II. London: Oliver & Boyd for the Royal Statistical Society, 1957. 10". Pp. 343. 30s.

[To be reviewed.]

LITTLE (I. M. D.). *A Critique of Welfare Economics.* Second edition. London: Oxford University Press, 1957. 9". Pp. 302. 30s.

[To be reviewed.]

LUNDBERG (E.). *Business Cycles and Economic Policy.* Translated by J. POTTER. London: Allen & Unwin, 1957. 9". Pp. xx + 346. 32s.

[To be reviewed.]

MACDOUGALL (SIR DONALD). *The World Dollar Problem. A study in international economics.* London: Macmillan, 1957. 9". Pp. xvii + 622. 50s.

[To be reviewed.]

MAKOWER (H.). *Activity Analysis and the Theory of Economic Equilibrium*. London: Macmillan, 1957. 9". Pp. xiv + 192. 25s.

[To be reviewed.]

MUNBY (D. L.). *Home Ownership*. Fabian Research Series, No. 188. London: The Fabian Society (11 Dartmouth Street, S.W.1.), 1957. 8½". Pp. 33. 2s. 6d.

[The author first gathers together a wide range of information about the present extent of house-ownership and about the expenditure and saving patterns it is associated with. After an account of the sources of finance for house purchase, he then proceeds to the main issue of policy, whether owner-occupation should be encouraged. While not denying that a system of owner-occupation has certain genuine advantages, he is suspicious of attempts to extend the system too widely. He argues that a house is not the ideal form of investment for a small investor and that a multiplicity of small freeholds is an obstacle to rational town planning. Moreover, he does not like the idea of the sharp class distinction that will develop if present trends are continued, and everyone is either "working-class" and lives in a local-authority rented house or else is "middle-class" and owns his own house. The many anomalies in the housing market of the present day make it difficult to ascertain people's real preferences between rented and owner-occupied accommodation. As far as immediate policy is concerned, Mr. Munby argues that the most helpful step would be for local authorities to develop a housing service, providing advice to owner-occupiers and facilities for repairs insurance. The only element that smacks of prejudice in this well-reasoned and informative pamphlet on a highly controversial subject is the author's evident dislike of building societies, which a reader might well suppose from his account to be profit-making bodies.]

PANKHURST (R.). *The Saint Simonians, Mill and Carlyle*. A preface to modern thought. London: Sidgwick & Jackson, 1957. 8½". Pp. x + 154. 21s.

[To be reviewed.]

Political Economy. A textbook issued by the Economics Institute of the Academy of Sciences of the U.S.S.R. Translated from the second Russian edition by C. P. DUTT and A. ROTHSTEIN. London: Lawrence & Wishart, 1957. 9". Pp. xxii + 858. 21s.

[This is an English translation of the official Soviet text-book of economic theory, the first Russian edition of which was reviewed in the *ECONOMIC JOURNAL* of September 1955, p. 509, by A. Nove.]

POOL (A. G.) and LLEWELLYN (G.). *The British Hosiery Industry*. A study in Competition. Second report. Leicester: University College, 1957. 10". Pp. 52. 7s. 6d.

[The first report on the research into the hosiery industry conducted by these authors under the Conditional Aid Scheme was noticed in the *ECONOMIC JOURNAL* of March 1956, p. 195. It dealt with competition in the industry. The subject of this second report is manufacturers' associations—their historical background, their structure and membership, their functions and their internal organisations. In this industry there is no question of associations being used to buttress the position of leading manufacturers or to establish a situation of oligopoly; on the contrary, by disseminating the results of research and conferring other such benefits on members, they help to put all firms on a similar footing and encourage effective competition between them. The authors believe that there is scope for useful extension of their functions, and they suggest in particular that good results would follow if wider support to the Research Association were forthcoming from manufacturers. At present only about a quarter of the firms in the industry subscribe to their Association. The authors also recommend the amalgamation of a number of competing associations in the industry, which at present duplicate one another's functions.]

PROUTY (R.). *The Transformation of the Board of Trade, 1830–1855*. A study of administrative reorganization in the heyday of laissez faire. London: Heinemann, 1957. 9". Pp. 123. 15s.

[The subject of this monograph is the process by which the Board of Trade was transformed from an advisory committee of the Privy Council, as it was at the beginning of the nineteenth century, into an executive department of state, as it had become by 1855. The author's approach is that of a student of administration rather than that of an economic historian. He shows how industrial development left the government no alternative but to participate in many ways in economic affairs, notwithstanding the prevalence of *laissez-faire* ideas. Regulation of railways, collection of statistics and registration of joint-stock companies were among the functions taken over by the Board of Trade during this period. Another, which has hitherto been less studied than those just named, was the regulation of merchant shipping, and it is to this that Mr. Prouty devotes the greater part of his space. He enumerates at length the various legislative controls over shipping which were instituted during the period, and then describes how the legislation was eventually consolidated and its administration placed under the supervision of the Board of Trade instead of being divided amongst different departments as it had formerly been.]

RAMSAY (G. D.). *English Overseas Trade during the Centuries of Emergence*. Studies in some modern origins of the English-speaking world. London: Macmillan, 1957. 9". Pp. 279. 30s.

[To be reviewed.]

Research in Unilever. London: Unilever, 1957. 8". Pp. 17.

[This is an address delivered by the Chairman at the annual general meeting of Unilever on April 25, 1957. Among the aspects treated by the speaker are: the degree of centralisation of research effort within the Unilever group; the relative importance of long-range and short-range projects and of projects aimed to achieve a specific purpose and those where invention precedes recognition of the need; and, more briefly, the criteria used in deciding how much research to do and how to choose between different research projects when, as is usually the case, the number of potentially rewarding lines of inquiry is more than can be undertaken.]

SCAMMELL (W. M.). *International Monetary Policy*. London: Macmillan, 1957. 9". Pp. 402. 40s.

[To be reviewed.]

SCHLESINGER (A. M.). *The Age of Roosevelt*. Volume I: The Crisis of the Old Order, 1919–1933. London: Heinemann, 1957. 9". Pp. xi + 569. 42s.

[To be reviewed.]

SCOTT (W. H.), HALSEY (A. H.), BANKS (J. A.) and LUPTON (T.). *Technical Change and Industrial Relations*. A study of the relations between technical change and the social structure of a large steelworks. Department of Social Science, University of Liverpool, Social Research Series. Liverpool: Liverpool University Press, 1956. 9". Pp. 326. 7s. 6d.

[To be reviewed.]

The Soviet Union in 1960. The story of the Sixth Five-Year Plan in action. Soviet News Booklet No. 1. London: Soviet News (3 Rosary Gardens, S.W.7), 1957. 8½". Pp. 55. 6d.

[A popular descriptive account in glowing terms of the increases in production envisaged in the sixth Five-Year Plan and what they will mean in terms of the standard of living.]

WILSON (J. S. G.). *French Banking Structure and Credit Policy*. London: Bell and the London School of Economics and Political Science, 1957. 9". Pp. 453. 45s.

[To be reviewed.]

WINDETT (A. S.). *The Changing East*. LPE Papers, No. 5. London: London Business Exchange (110 St. Martin's Lane, W.C.2), 1957. 9½". Pp. 32.

[The author's purpose is to describe for the benefit of British exporters the changes that have taken place in recent years in economic structure and policy in Eastern countries and to suggest how exporters had best organise their efforts in the light of these changes.]

American

ASHER (R. E.), KOTSCHNING (W. M.), BROWN (W. A.) and Others. *The United Nations and Economic and Social Co-operation*. Washington, D.C.: The Brookings Institution, 1957. 9". Pp. xi + 561. \$2.50.

[The authors survey in successive chapters the past and present activities of the United Nations in various spheres of activity in the economic and social fields: actions in emergency situations; international trade and payments; production and investment; full employment and economic stability; problems of under-developed countries, etc. Their survey forms a convenient source of reference both on the work done by or for the United Nations in these fields and on the discussion and criticism it has aroused. It incidentally provides a useful and discriminating guide to a large body of past United Nations publications.]

BARNA (T.) (Ed.). *The Structural Interdependence of the Economy*. Proceedings of an international conference on input-output analysis. New York: John Wiley (Milan: Baffrè; London: Chapman & Hall), 1957. 10". Pp. 429. 60s.

[To be reviewed.]

CHAMBERLIN (E. H.). *The Theory of Monopolistic Competition*. Seventh edition. Cambridge, Mass.: Harvard University Press (London: Oxford University Press), 1957. 8½". Pp. xiv + 350. 30s.

[The principal change in this edition of Professor Chamberlin's classic work is the addition of a new supplement to the bibliography, covering the period May 1948 to May 1956 and including over 800 items.]

CLARK (J. B.). *The Distribution of Wealth. A Theory of wages, interest and profits*. Reprints of economic classics. New York: Kelley & Millman, 1956. 9". Pp. 445. \$8.50.

[J. B. Clark's principal work, *The Distribution of Wealth*, in which he sets forth with great elaboration the static marginal productivity theory of distribution, is the latest addition to Messrs. Kelley and Millman's series of photographic reprints.]

DOMAR (E. D.). *Essays in the Theory of Economic Growth*. New York and London: Oxford University Press, 1957. 8½". Pp. 272. 36s.

[To be reviewed.]

DURAND (D.). *Bank Stock Prices and the Bank Capital Problem*. National Bureau of Economic Research, Occasional Paper 54. New York: National Bureau of Economic Research, 1957. 9". Pp. 68. \$1.00.

[The object of this paper is to establish by means of multiple regression analysis the factors determining the market prices of bank stocks in the United States in 1946-53, and hence the cost to banks of raising equity capital. As might be expected, dividends and earnings emerge as the chief factors. The relative importance of the two, however, differed substantially between different types of bank. A final chapter attempts to assess the effect of growth and capital appreciation. The results here are inconclusive.]

ERICKSON (C.). *American Industry and the European Immigrant, 1860-1885*. Cambridge, Mass.: Harvard University Press (London: Oxford University Press), 1957. 9½". Pp. x + 269. 38s.

[To be reviewed.]

FRANKEL (M.). *British and American Manufacturing Productivity. A comparison and interpretation*. Urbana, Illinois: Bureau of Economic and Business Research, University of Illinois, 1957. 9". Pp. 130. \$1.50.

[To be reviewed.]

HORTON (D. C.). *Patterns of Farm Financial Structure. A cross-section view of economic and physical determinants*. Princeton, New Jersey: Princeton University Press for the National Bureau of Economic Research (London: Oxford University Press), 1957. 9". Pp. 185. 36s.

[To be reviewed.]

HUR (J. J.) (Ed.). *Chemical Process Economics in Practice*. New York: Reinhold Publishing Corporation, 1956 (London: Chapman & Hall, 1957). 7½". Pp. 115. 32s.

[This contains the proceedings of a symposium at which a number of speakers, all of them engaged in business, discussed the relevance of various accounting and economic concepts and methods to the practical work of the chemical engineer.]

KLOPSTOCK (F. H.). *The International Status of the Dollar. Essays in International Finance*, No. 28. Princeton, New Jersey: International Finance Section, Princeton University, 1957. 9". Pp. 26.

[The subject of this paper is the great recent rise in foreign dollar assets and their role as monetary reserves for the world outside the United States. The author describes the composition of these assets—the countries holding them, official versus private holdings, the form in which they are held—and the implications of the movement towards a "dollar exchange standard" which the increase in them represents. In Mr. Klopstock's view the development is a healthy one, capable of benefiting both the United States and other countries. The United States' very large gold holdings make her well equipped to act as an international reserve centre. The existence of a large volume of foreign liquid assets is liable to create certain problems for the United States' domestic monetary policy, but the author does not believe that these problems are likely to present any insurmountable difficulty.]

KNORR (K.). *The War Potential of Nations*. Princeton, New Jersey: Princeton University Press, 1956 (London: Oxford University Press, 1957). 9½". Pp. 310. 40s.

[Reviewed in this issue.]

KOMAROVSKY (M.) (Ed.). *Common Frontiers of the Social Sciences*. Glencoe, Illinois: The Free Press and the Falcon's Wing Press, 1957. 9½". Pp. 439. \$6.00.

[The purpose of this volume is to explore the common frontiers of the social sciences not by means of general methodological essays but "by means of a scrutiny, and frequently a reciprocal scrutiny, of some one specific topic or a group of studies in overlapping areas of research." This is what the contributors were invited to do. Part I deals with topics in history and social research; Part II, which deals with economics and sociology, includes the following items: Plant Sociology—The Elite and the Aborigines, by Clark Kerr and Lloyd Fisher; Plant Sociology—Real Discoveries and New Problems, by C. M. Arensberg.]

LAMER (M.). *The World Fertilizer Economy*. Stanford University Food Research Institute, studies on Food, Agriculture and World War II. Stanford, California: Stanford University Press (London: Oxford University Press), 1957. 9½". Pp. xvi + 715. 100s.

[To be reviewed.]

MASON (E. S.). *Economic Concentration and the Monopoly Problem*. Harvard Economic Studies, Vol. C. Cambridge, Mass.: Harvard University Press (London: Oxford University Press), 1957. 8½". Pp. xi + 411. 48s.

[To be reviewed.]

Measurement and Behavior of Unemployment. A Conference of the Universities-National Bureau Committee for Economic Research. Princeton, New Jersey: Princeton University Press for the National Bureau of Economic Research (London: Oxford University Press), 1957. 9½". Pp. 605. 60s.

[To be reviewed.]

New England Textiles and the New England Economy. Reports by the New England Governors' Textile Committee to the Conference of New England Governors, with a Research Report by S. E. HARRIS. Cambridge, Mass.: New England Governors' Textile Committee, 1957. 11". Pp. 30 + 179. \$3.00.

[This is an annual report. 1956 was a reasonably good year, but the industry continued to lose ground. This partly reflected the declining importance of textiles in the national economy as a whole and partly difficulties peculiar to New England. Southern textile mills continue to show much better results than those in New England, notwithstanding that the wage-differential between the two regions in most branches of textiles has now ceased to be important.]

OAKS (C.). *Managing Suburban Branches of Department Stores*. Stanford University Graduate School of Business, Business Research Series No. 10. Stanford, California: Graduate School of Business, Stanford University, 1957. 9". Pp. 90. \$2.50.

[The development of large suburban branches has in recent years given a new lease of life to the department store in the United States. The author examines the management problems created by this major change in department store organisation, with particular reference to the functions of the buyer.]

POLYANYI (K.), ARENSBERG (C. M.) and PEARSON (H. W.) (Eds.). *Trade and Market in the Early Empires*. Economics in history and theory. Glencoe, Illinois: The Free Press, 1957. 8½". Pp. xviii + 382. \$6.00.

[This book, the result of an interdisciplinary research project, consists of eighteen essays by eleven authors, all bearing on the thesis that economic theory does not provide an adequate conceptual framework for the study of primitive economies because it is based on irrelevant institutional assumptions. It is argued that the price-making markets which provide the rationale for economic analysis became an important feature of economic life only in the relatively recent past and in eastern-type economies. For all other societies and periods the economic process is too deeply embedded in the social process to be independently analysed, and those who study primitive economies in terms of the market model are trying to fill empty sociological boxes. Empirical evidence for the hypothesis that price-making markets are a recent and relatively exceptional phenomenon is provided in the form of studies of trade and market institutions for communities]

as distant in time and place as ancient Mesopotamia, the Aztec Empire, eighteenth-century Dahomey, nineteenth-century India and the twentieth-century Berber Highlands. The book is directed towards economic sociologists and economic historians. Economists will find this reconsideration of economy and society stimulating and suggestive, but they are unlikely to find much practical or theoretical use for the new conceptual tools suggested by the authors.]

Problems of Capital Formation. Concepts, measurement and controlling factors. Studies in Income and Wealth, Vol. 19. Princeton, New Jersey: Princeton University Press for the National Bureau of Economic Research (London: Oxford University Press), 1957. 9½". Pp. 609. 60s.

[To be reviewed.]

Problems in the International Comparison of Economic Accounts. Studies in Income and Wealth, Volume 20, by the Conference on Research in Income and Wealth. Princeton New Jersey: Princeton University Press for the National Bureau of Economic Research (London: Oxford University Press), 1957. 9". Pp. 404. 63s.

[To be reviewed.]

Regional Income. Studies in Income and Wealth, Volume Twenty-one, by the Conference on Research in Income and Wealth. Princeton, New Jersey: Princeton University Press for the National Bureau of Economic Research (London: Oxford University Press), 1957. 9". Pp. 405. 63s.

[To be reviewed.]

ROSENBLUTH (G.). Concentration in Canadian Manufacturing Industries. National Bureau of Economic Research, General Series No. 61. Princeton, New Jersey: Princeton University Press for the National Bureau of Economic Research (London: Oxford University Press), 1957. 9". Pp. xv + 152. 28s.

[Reviewed in this issue.]

SCHULTZ (H.). The Theory and Measurement of Demand. Chicago, Illinois: Chicago University Press (London: Cambridge University Press), 1957. 9½". Pp. xxix + 817. 94s.

[This famous pioneering work, which first appeared in 1938, is now again made available. It was reviewed in the ECONOMIC JOURNAL of September 1939, p. 486, by J. Marshak.]

SIMON (H. A.). Models of Man, Social and Rational. Mathematical essays on rational human behaviour in a social setting. New York: John Wiley (London: Chapman & Hall), 1957. 9½". Pp. xii + 287. 40s.

[To be reviewed.]

SOTH (L.). Farm Trouble. Princeton, New Jersey: Princeton University Press (London: Oxford University Press), 1957. 9". Pp. vii + 221. 30s.

[To be reviewed.]

STARK (H.). Modern Latin America. University of Miami, Publications in Economics No. 2. Coral Gables, Florida: University of Miami Press, 1957. 8½". Pp. 321. \$2.50.

[The author's particular interest is the relationship between the Latin American countries and the United States. Much of his book is taken up with discussion of political developments in the region. The treatment of economic topics is for the most part descriptive rather than analytical.]

STEINER (P. O.) and DORFMAN (R.). The Economic Status of the Aged. A publication of the Institute of Industrial Relations of the University of California. Berkeley and Los Angeles: University of California Press (London: Cambridge University Press), 1957. 9½". Pp. xii + 296. 37s. 6d.

[To be reviewed.]

STELSON (H. E.). Mathematics of Finance. Princeton New Jersey: Van Nostrand (London: Macmillan), 1957. 9½". Pp. xii + 327. 40s.

[This is a text-book, designed for the use of American college students, dealing with the problems involved in calculations relating to compound interest, annuities, instalment purchases, insurance premiums, etc.]

TAYLOR (A. G.). Labor and the Supreme Court. Williamsburg, Virginia: published by the author (Social Science Division, College of William and Mary), 1957. 9". Pp. 178.

[The author's purpose is to provide a concise account of the state of the law pertaining to labour-management relations in the United States. The leading cases on each of the chief topics are presented in chronological order.]

WALTER (J. E.). The Role of Regional Security Exchanges. A publication of the Bureau of Business and Economic Research of the University of California. Berkeley and Los Angeles: University of California Press (London: Cambridge University Press), 1957. 9½". Pp. 170. 22s. 6d.

[In this volume the regional security exchanges in the United States are analysed in terms of share turnover, commission charges and numbers of shares listed. It is noted that a great deal of their activity consists of dealing in shares also quoted on one the national stock exchanges and that judging by their effectiveness in making a regional market for regional issues, their performance is disappointing. The main reason for this is the competition of the over-the-counter market in which the great majority of brokers on the provincial exchange also operate as dealers and in which their greater freedom to vary their charges and act as principals gives better opportunities for profit making. That new issues are all first made on the over-the-counter market and that it is possible for dealers to attract business by aggressive selling are further factors in its favour. The scope for possible improvements in regional exchanges is discussed with particular reference to mergers on the pattern of the Midwest exchange. This is a useful survey, although the role of these exchanges is discussed in rather narrow terms.]

WEATHERFORD (W. D.). Geographical Differentials of Agricultural Wages in the United States. Harvard Studies in Labor in Agriculture. Cambridge, Mass.: Harvard University Press for the Harvard Graduate School of Public Administration (London: Oxford University Press), 1957. 9". Pp. 99. 10s.

[In this carefully argued monograph the author shows that the pattern of inter-regional differentials in the wages paid to hired labour on farms in the United States has remained remarkably stable since the Civil War. Farm wage-rates are lowest in South Carolina, and rise gradually in all directions as we recede from there, the highest rates being paid in the North-west. The productivity of labour on farms in each region naturally corresponds broadly to the rate of wages paid there. In interpreting this phenomenon the author reaches the rather surprising conclusion that the most important factor responsible for differences between regions in the supply of farm labour, and hence in the rate of wages, is differences in birth-rates. Migration away from rural districts has, of course, been a factor of great importance in determining the size of the rural labour force in all districts, but inter-regional differences in the rate of townward migration have not been sufficient to outweigh inter-regional birth-rate differences.]

WEBER (A.). Theory of the Location of Industries. Translated with an introduction and notes by C. J. FRIEDRICH. Chicago, Illinois: Chicago University Press (London: Cambridge University Press), 1957. 8". Pp. xxxiii + 256. 37s. 6d.

[This is a reprint of a translation which was first published in 1929.]

Australian

South Pacific Enterprise. The Colonial Sugar Refining Company, Ltd. Sydney and London: Angus & Robertson, 1956. 9½". Pp. xvii + 500. 42s.

[This elaborately produced and illustrated centenary volume is the work of a number of different authors, some of them connected with the company, some not. Each chapter deals with a different aspect of its activities. The book is not primarily a history, but the historical chapters are among the most interesting. One of the chief themes is the decisive role played by the two leading personalities of the company's history, Edward Knox and E. V. Knox, in shaping its character and development.]

Canadian

HARRISON (W. E. C.). Canada in World Affairs, 1949-1950. Toronto: Oxford University Press for the Canadian Institute of International Affairs (London: Oxford University Press), 1957. 9". Pp. 374. 32s.

[This is one of a series of biennial surveys of international affairs since the end of the War as they affected Canada. The bulk of the book is concerned with political issues, in particular the development of NATO and the outbreak of war in Korea, but an extensive account is included of the devaluation of 1949 looked at from the Canadian point of view.]

INNIS (H. A.). *Essays in Canadian Economic History*. Edited by Mary Q. Innis. Toronto: University of Toronto Press, 1956 (London: Oxford University Press, 1957). 9½". Pp. 418. 68s.

[To be reviewed.]

German

ALBERS, W. *Die Einkommensbesteuerung in Frankreich seit dem Ersten Weltkrieg*. Kiel: Institut für Weltwirtschaft, 1957. 9½". Pp. x + 320. DM. 36.

WEISE, H. *Die Steuern im Vereinigten Königreich*. Kiel: Institut für Weltwirtschaft, 1957. 9½". Pp. xiii + 360 and a separate set of tables. DM. 40.

[These monographs on the French and English fiscal system set high standards of exposition and production. The first deals with French income tax from its introduction to 1955, the second with the development of the whole fiscal system in the United Kingdom over the same period 1920-55. Basically, both books consist of a highly detailed and to all appearances accurate compendium of fiscal measures; comparative tables and appendices which summarise the developments during the period under review are liberally provided.]

BAADE, (E.). *Die Lage der Weltwirtschaft und ihre Bedeutung für die Landwirtschaft*. Kiel: Institut für Weltwirtschaft, 1957. 9½". Pp. 26.

[A short lecture in which Professor Baade reviews the long-term prospects of world agriculture and reiterates his belief that production in at present underdeveloped areas will show a fast growth in the next decades.]

VOCHE, WILHELM. *Gesundes Geld*. Frankfurt: Fritz Knapp, 1956. 8". Pp. 147.

[A collection of essays, speeches and newspaper articles by the Governor of the German National Bank, mainly concerned with current financial problems, and reflecting traditional banking views.]

Swiss

ERBE (R.). *Die "Sterling-Area" nach dem Zweiten Weltkrieg*. Zürich: Polygraphischer Verlag, 1955. 8½". Pp. vii + 164. S. Frs. 12.80.

[A description of the working arrangement of the sterling area, followed by a survey of its successive crises in the years 1946-50. The book was completed in manuscript in 1951 and has not been revised since.]

MÜLLER (A. O.). *Die Verstaatlichung des Britischen Kohlenbergbaus*. Zürich: Polygraphischer Verlag, 1955. 8". Pp. xii + 164. S. Frs. 10.35.

[The nationalisation of the coal industry and the subsequent experience of the National Coal Board up to 1955 are treated mainly by a painstaking survey of the legislative and administrative aspects. In a short summing up at the end the author concludes that present achievements towards the nationalisation's stated objectives could equally well have come about without it.]

SANNWALD (R.). *Marx und die Antike*. Zürich: Polygraphischer Verlag, 1957. 8". Pp. 211. S. Frs. 14.50.

[This study, which traces the influence of the classics, on Marx's thought, is of specific historic and philosophic rather than of economic interest.]

Dutch

ANDRIESEN (J. E.). *De ontwikkeling van de moderne prijstheorie*. Leiden: Stenfert Kroese, 1955. 9". Pp. 285.

[The major part of this doctoral thesis on the development of modern price theory is devoted to a survey of English and American writing on the subject since Marshall. Particular attention is paid to the controversy over marginal cost versus full cost principle. In the latter half of the book the author puts forward his own contribution to the problem. The essence of his argument is that the cost curve may be expected to be horizontal, at least in the neighbourhood of the prevailing locus. This will make marginal cost coincide with average (variable) cost, and with suitable demand conditions determining the profit margin or mark-up it will lead to a situation where the marginal-cost and full-cost principles are indistinguishable.]

Danish

WINDING (P.). *Some Aspects of the Acceleration Principle*. Copenhagen: Einar Munksgaard; Amsterdam: North Holland Publishing Company, 1957. 10". Pp. 254. 30.50 guilders.

[To be reviewed.]

Swedish

FAXÉN (K. O.). *Monetary and Fiscal Policy under Uncertainty*. Stockholm Economic Studies, New Series, No. 1. Stockholm: Almqvist & Wiksell, 1957. 9½". Pp. 112. Sw. kr. 20.

[To be reviewed.]

Finnish

KASKIMIES (M.). *Kulutustavaroiden Jakeluteiden Rakennus*. Helsinki: Liiketaoustieteellinen Tutkimuslaitos, 1955. 10". Pp. 344. With a summary in German.

[The object of this book is to explain the structure of consumers goods' distribution. There is a good deal of distinction made between objective and subjective factors, or quantitative and qualitative elements, and so on, each category being discussed at length. Little (but some) empirical evidence is used. In the end the result is classificatory rather than explanatory.]

VIKKUNEN (H.). *Das Rechnungswesen im Dienste der Leitung*. Helsinki: Liiketaoustieteellinen Tutkimuslaitos, 1956. 10". Pp. 146.

[In industry, accounting is a tool of management, and its functions correspond to various specific aspects of policy and control. This theme and some of its implications are extensively and rather abstractly discussed in this book.]

Russian

LENIN (V. I.). *The Development of Capitalism in Russia*. Moscow: Foreign Languages Publishing House, 1956 (London: Lawrence & Wishart, 1957). 8". Pp. 51. 9s. 6d.

[This is the first English translation in full of the famous work written by Lenin in Siberian exile at the end of last century. Previously no more than selected passages of it, comprising rather less than a quarter of the whole, have been rendered into English. It was first published in Russia in 1899 with a print of 2,400 copies and had a second edition in 1908, on which this translation is based. The book has as sub-title, "The Process of the Formation of a Home Market for Large-scale Industry," which strikes the keynote of the particular controversy in the context of which it was written. In this controversy he was opposing the standpoint of the Narodniks, who preached a kind of Gandhian philosophy of anti-capitalism and anti-industrialism, hoping to build a sort of agrarian communism on the basis of the traditional institutions of the Russian village. In economic theory they held a position somewhat akin to that of Rodbertus or (later) of Rosa Luxemburg: industry could develop only "artificially" on the basis of an export market owing to the narrowness of the internal market (whence Lenin's sub-title). English readers may find it strange to meet Lenin here as a defender of "the progressive historical role of capitalism" and a critic of under-consumption views (on the ground that it is a characteristic of capitalism for investment in technical innovation to take the lead, and hence for "production to expand without a corresponding expansion in consumption"). But the main part of the book is concerned with an exhaustive analysis of the condition of the Russian peasantry, on the basis of the Zemstvo statistics of the time, with particular emphasis on the social differentiation of the peasantry and the emergence of embryo-capitalism in the shape of labour-employed *kulaks* in both agriculture and village handicrafts. It was this social analysis of the peasantry that was to play such a prominent part in the ideas and policies of the Russian Revolution and after.]

Israel

CREAMER (D.) and others. *Israel's National Income, 1950-1954*. Jerusalem: Falk Institute for Economic Research in Israel (24 Hillel Street) and Central Bureau of Statistics, 1957. 9½". Pp. 115. \$2.00.

[About half of this consists of summary and interpretation of results and the remainder of detailed tables and notes on sources and methods. The method of estimation used is summation of value added in each industrial branch of the economy, the latter in turn being calculated by

summing the returns to labour and capital in the branch concerned, except in the case of agriculture, where the estimate is based on gross receipts minus purchases from outside. Dr. Creamer uses the results to cast light on trends in national income in real and money terms, in unrequited transfers as a percentage of national income, in the industrial structure of the economy and in value added per worker in different sectors of the economy.]

THE FALK PROJECT FOR ECONOMIC RESEARCH IN ISRAEL. Third Annual Report, 1956. Jerusalem: Falk Project for Economic Research in Israel (24 Hillel Street), 1957. 9½". Pp. 57.

[The Falk Project has the two main objectives of carrying out research into the economic problems of Israel and providing research training opportunities for Israeli scholars. This report describes the work which it has at present under way. It includes quite detailed accounts of findings to date.]

Official

BRITISH

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD. Domestic Food Consumption and Expenditure, 1955. Annual Report of the National Food Survey Committee. London: H.M. Stationery Office, 1957. 9½". Pp. 148. 6s. 6d.

[This year's report contains the wide range of detailed statistics and analysis that has become customary in this series. The present issue provides more elaborate treatment than its predecessors in a number of respects: the diets of different household types within each social class are distinguished for the first time, the regional analysis is extended and there is a preliminary study of occupational differences in relation to food expenditure and consumption.]

PREST (A. R.). A Fiscal Survey of the British Caribbean. Colonial Research Studies, No. 23. London: H.M. Stationery Office, 1957. 9½". Pp. 136. 10s.

[Reviewed in this issue.]

CANADIAN

BARBER (C. L.). The Canadian Electrical Manufacturing Industry. Ottawa: Royal Commission on Canada's Economic Prospects, 1956. 10". Pp. 87.

[This is one of a series of some thirty studies on aspects of the Canadian economy which are being prepared by different authors at the request of the Royal Commission on Canada's Economic Prospects. The greater part of the study is occupied by a survey of the Canadian market for electrical apparatus. Canadian electrical manufacturers, who are protected by tariffs with an average rate of approximately 21%, at present supply about three-quarters of the electrical equipment used in the country. The limited size of the market prevents the industry from exploiting the economies of scale available to its competitors in the United States, especially in heavier appliances, and the author believes that there are an excessive number of producers in most lines in relation to the size of the market. 65% of the industry's assets are owned by foreign investors, and a slightly larger proportion is under the control of individuals or companies abroad, chiefly in the United States.]

RESTRICTIVE TRADE PRACTICES COMMISSION, DEPARTMENT OF JUSTICE, OTTAWA. Report Concerning the Sugar Industry in Western Canada and a Proposed Merger of Sugar Companies. Ottawa: Department of Justice, 1957. 10". Pp. 202.

[The subject of this report is the projected acquisition of control of the Manitoba Sugar Company by the British Columbia Sugar Refining Company. The latter already enjoys a virtual monopoly in the sale of sugar in parts of Western Canada, but the Manitoba Company supplies a substantial part of the sugar sold in Manitoba and a small part of the sugar sold in Saskatchewan. The conclusion is reached that the proposed acquisition would reduce competition to the detriment of the public interest. It had been contended on behalf of the British Columbia Sugar Refining Company that the proposed merger would lead to more efficient conduct of the Manitoba sugar-refining factory.]

AMERICAN

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM. Consumer Instalment Credit. Part I: Growth and Import: Vol. 1, Pp. 388, \$1.25; Vol. 2, Pp. 287, \$1.00; Part II: Conference on Regulation, prepared under the auspices of the National Bureau

of Economic Research: Vol. 1, Pp. xxvi + 553, \$1.75; Vol. 2, Pp. 161, \$0.60; Part III: Views on Regulations, Pp. 230, \$1.00; Part IV: Financing New Car Purchases, a National Survey for 1954-55; Pp. xii + 151, \$0.60. Washington, D.C.: U.S. Government Printing Office, 1957.

[To be reviewed.]

INTERNATIONAL

BANK FOR INTERNATIONAL SETTLEMENTS. Twenty-seventh Annual Report. Basle: Bank for International Settlements, 1957. 11½". Pp. 250.

[In addition to the usual survey of economic developments during the year, with particular reference to developments in the monetary sphere, this year's report contains as special features a study of the processes of saving and investment in the chief countries of Western Europe and an account of the banking operations carried out by the Bank for International Settlements during the years 1947-57.]

INTERNATIONAL MONETARY FUND. Eighth Annual Report on Exchange Restrictions, 1957. Washington, D.C.: International Monetary Fund, 1957. 9". Pp. 375.

[This report consists mainly of a detailed account of changes in national regulations. The introduction surveys events of the year in general terms and reports continued movement towards the establishment of a freer multilateral system of trade and payments.]

INTERNATIONAL TIN STUDY GROUP. Statistical Yearbook 1956. The Hague: International Tin Study Group, 1956. 10½". Pp. 284. 40s.

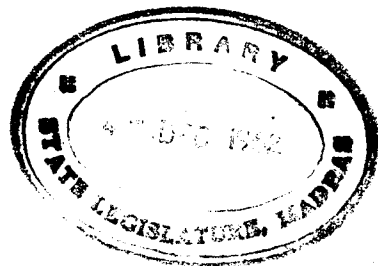
[This fourth yearbook is not a mere repetition of that of two years ago, though some 170 out of its 280 pages are occupied by statistics of the production and trade in tin, tin metal and tinplate, etc., in every country of the world, which has always and properly been the core of its predecessors. The first thirty-five pages contain the usual review of the world position, but this review is here extended to the whole period since 1946, and there is also in Part I, Section III, a short but interesting "assessment of tin consumption," which is a new feature explaining the basis of estimates and the degree of accuracy of the published figures. Then come the statistics of tin and tinplate by countries, but this is followed by a Part II of some seventy-five pages on canning, or more specifically on the Canned Food Industry and Trade, viewed globally and then by countries. This is a notable addition to this volume as a reference book. Here are a few surface scratchings from this mine of information. Tin consumption in the rest of the world outside the United States and the United Kingdom has risen from an average of 42,800 tons for 1946-50 to 64,900 tons for 1951-55, with 1955 the highest year at 71,800 tons. "The great bulk" of the 280,000 tons excess of production over commercial consumption since 1947 has gone into the United States strategic stockpile. Pre-war production of tinplate, at about 4 million tons, used 60,000 tons of tin: in 1955 it was 6.8 million tons and used 63,000 tons of tin. The highest grade of tinplate has ½ lb. of tin per 100 lb. of plate. Production of canned food has risen to nearly twice that of 1938. The canning of beer now absorbs one-sixth of all cans made in the United States. Such items will perhaps whet the reader's appetite for more serious study.]

INTERNATIONAL WHEAT COUNCIL. World Wheat Statistics, 1957. London: International Wheat Council (Haymarket House, Haymarket, S.W.1.), 1957. 11". Pp. 83. 20s.

[This is the third issue in its series. Statistics are given for the period from 1949/50 up to April 1957, covering production of wheat, trade, supply and distribution in exporting countries, prices and ocean freight rates.]

UNITED NATIONS. Demographic Yearbook, 1956. New York: United Nations Department of Economic and Social Affairs, 1957. 11½". Pp. 744. 50s.

[The Yearbook opens with a survey chapter on the world demographic situation. It is estimated that world population is in the region of 2,700 million and that it is growing at a rate of 1.6% per annum. Special features of this year's issue include tables showing population by religion, language, ethnic group, country of birth and country of citizenship, and statistics on the age, sex, industry, occupation and status characteristics of the economically active population.]



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