CHAPTER 1

THE STARTING POINT

It is now almost an axiom of the theory of economic development that the route to affluence lies by way of an industrial revolution. A continuous—some would say 'self-sustaining'—process of economic growth, whereby (wars and natural disasters apart) each generation can confidently expect to enjoy higher levels of production and consumption than its predecessors, is open only to those nations which industrialize. The striking disparity between the standards of living of the inhabitants of the so-called developed or advanced countries of the mid twentieth century and the standards prevailing in today's underdeveloped or backward countries is essentially due to the fact that the former have industrialized and the latter have not.

This does not imply that there is some definite process or event called an industrial revolution which takes the same form in all countries in which it occurs. But it does imply that there are certain identifiable changes in the methods and characteristics of economic organization which, taken together, constitute a development of the kind which we would describe as an industrial revolution. These include the following related changes: (1) widespread and systematic application of modern science and empirical knowledge to the process of production for the market; (2) specialization of economic activity directed towards production for national and international markets rather than for family or parochial use; (3) movement of population from rural to urban communities; (4) enlargement and depersonalization of the typical unit of production so that it comes to be based less on the family or the tribe and more on the corporate or public enterprise; (5) movement of labour from activities concerned with the production of primary products to the production of manufactured goods and services; (6) intensive and extensive use of capital resources as a substitute for and complement to human effort; (7) emergence of new social and occupational classes determined by ownership of or relationship to the means of production other than land, namely capital.

These interrelated changes, if they develop together and to a sufficient degree, constitute an industrial revolution. They have always been associated with a growth of population and with an increase in the annual volume of goods and services produced.

The first industrial revolution occurred in Great Britain and is of particular interest in that it occurred spontaneously, without the government assistance which has been characteristic of most succeeding industrial revolutions. Exactly when it took place is a matter of controversy. The first economic historian to discuss the British experience of industrialization in terms of this concept of a specific revolution was Arnold Toynbee, who delivered a course of lectures on the subject in the University of Oxford in the year 1880/1.[1] He took his starting-point as 1760 and for about half a century this view of the matter went unchallenged, until Professor Nef, the American historian, questioned the significance of the historical boundary it implied. He stressed the essential continuity of history and traced the beginnings of large-scale industry and technological change back to the sixteenth and early seventeenth centuries. According to Nef: 'The rise of industrialism in Great Britain can be more properly regarded as a long process stretching back to the middle of the sixteenth century and coming down to the final triumph of the industrial state towards the end of the nineteenth, than as a sudden phenomenon associated with the late eighteenth and early nineteenth centuries.'[2]

More recently, new interpretations have emerged from the work of economic historians, who have begun to explore and depend more heavily on the statistical evidence bearing upon the rate of economic growth. Because the overseas trade records constitute the best and most comprehensive set of statistical series covering the whole of the eighteenth century, the movements in foreign trade have largely conditioned the statistical interpretation of the industrial revolution. Paul Mantoux,

[1] Toynbee died in 1883 at the age of thirty but his lectures had made a tremendous impact on his pupils and in 1884 they published his *Lectures on the Industrial Revolution in England* on the basis of his and their notes of the lectures he gave in Oxford in 1880/1.

[2] J. U. Nef, *Economic History Review* (1934), reprinted in E. M. Carus-Wilson, *Essays in Economic History* (1954), vol. 1, p. 105.

writing in the 1920's, had already pointed out that the curves of imports and exports and tonnage cleared from British ports 'rise almost vertically towards the end' of the eighteenth century, that is, following the slump of 1781 occasioned by the American War.[1] Professor Ashton has developed this theme:

> After 1782 almost every available statistical series of industrial output reveals a sharp upward turn. More than half the growth in the shipments of coal and the mining of copper, more than three-quarters of the increase of broad cloths, four-fifths of that of printed cloth and nine-tenths of the exports of cotton goods were concentrated in the last eighteen years of the century.[2]

Professor Hoffmann, the German economist who compiled an index of industrial output for Britain, concluded that 'the year 1780 is the approximate date at which the annual percentage rate of industrial growth was first greater than two, a level at which it remained for more than a century'.[3]

The current convention then is to date the first industrial revolution from the 1780's when the statistics of British international trade show a significant upward movement. Following this convention, Professor W. Rostow has suggested an even more precise historical boundary and has developed the theory that the period 1783–1802 was 'the great watershed in the life of modern societies'. This is the period which he defined as the 'take-off into sustained growth' for the British economy, the interval when the forces of modernization made their decisive breakthrough and set up an automatic and irreversible process of economic growth.[4]

At one extreme then we have Professor Nef tracing the beginnings of the industrial revolution back to the middle of the sixteenth century, to the new capitalistic industries of Elizabethan times: at the other extreme we have Professor Rostow's dramatic compression of the essential transformation into a couple of decades at the end of the eighteenth century. The debate goes on. But fundamentally the differences between the

[1] Paul Mantoux, *The Industrial Revolution in the Eighteenth Century*, 12th ed. (1961), with introduction by T. S. Ashton.

[2] T. S. Ashton, *The Eighteenth Century* (1955), p. 125; see also Asa Briggs, *The Age of Improvement* (1959), p. 18.

[3] W. Hoffmann, *British Industry 1700–1950* (1955), p. 30.

[4] W. W. Rostow, *The Stages of Economic Growth* (1960). But see Rostow's later study, *The World Economy* (1978), where the British take-off is dated 1783–1830 and the 1783–1802 phase is characterized as an 'initial surge'.

protagonists in the debate are differences of emphasis rather than substance. No one would deny that the period which began around the middle of the eighteenth century was a period in which important and far-reaching changes took place in the characteristic tempo of economic life in Britain, and that these constituted a transformation that was, in a sense, the prototype of the transition from pre-industrial to industrial forms of economic organization which is everywhere a necessary condition of modern economic development. Those who, like Nef, choose to emphasize the underlying continuity of history will trace the origins of the process of industrialization back to earlier centuries. Those who, like Rostow, prefer to focus on the significant discontinuities of history will stress the revolutionary character of the changes taking place in relatively short periods of time and will look for the crucial watersheds, the irreversible upturns in the statistical series. These are differences in methods of historical analysis and interpretation rather than disputes about what actually happened in history. To understand the process of economic change one needs to take both approaches into account, and to recognize the significant discontinuities in the 'seamless web' of history.

If we take our starting-point as the middle of the eighteenth century, then, we begin with pre-industrial Britain, though it is evident that the process of industrialization had already begun. Within the following century a revolution took place in the social and economic life of Britain which transformed the physical appearance of the land and established a totally different way of living and working for the mass of its people. This first industrial revolution is of special interest not only to historians but also to students of modern economic development. For it represented the spontaneous beginnings of the process which created the affluent societies of today, a way of escape from poverty which roughly two-thirds of the inhabitants of the modern world, the people of the underdeveloped countries, are now desperately trying to discover for themselves.

What kind of economy, then, was the pre-industrial English economy of the mid eighteenth century? How like was it to the pre-industrial countries of the present day in, say, Asia, or Africa or South America? Can we assess the characteristics which distinguished it from its own developed form or from the industrialized countries of the mid nineteenth century? A list of the characteristics of twentieth-century pre-industrial economies would stress their extreme poverty, their slow rate of economic development, their unskilled, unspecialized labour force and their regional disparities—that is, the wide differences in standards of living or of economic development as between one region and the next. How far were these factors—poverty, stagnation, dependence on agriculture, lack of specialization or of regional integration—characteristic of eighteenth-century England?

I. POVERTY

First, then, how poor were the people of eighteenth-century England?

One way of measuring poverty on a national scale is to express it in terms of national-income data. The national income of a country represents the sum total of the goods and services bought by or produced by its people during a given year. Since a community's income depends on the value of what it produces and its purchasing power depends on its income, there are in effect three ways of calculating the national income: (1) by aggregating all the incomes earned by its residents, (2) by valuing all the goods and services produced by them, and (3) by summing their expenditures. In principle, after making the kind of adjustments required to eliminate double counting (e.g. counting only once the goods that are embodied in the production of other goods produced within the same year), these three ways of calculating the national income must lead to the same result, which is a convenient measure of the total value of a nation's economic activity. If we divide the national income, thus calculated, by the population sharing in it, we get an average which can be regarded as an index of the prevailing level of productivity or of living standards.

Clearly any calculation of this kind which is based on eighteenth-century statistics must be very rough indeed. But if we are prepared to rely on the national-income calculations made by reputable observers living at the periods in which we are interested we can establish some benchmarks which may at any rate indicate the orders of magnitude involved. One of the earliest estimates of national income made for England and Wales was that compiled by Gregory King at the end of the seventeenth century to illustrate the economic strength of the

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TABLE I. *A Scheme of the Income & Expence of the several Families of England Calculated for the Year 1688*

Number of Families	Ranks Degrees Titles and Qualifications	Heads per Family	Number of Persons	Yearly Income per Family	Totall of the Estates or Income	Yearly Income per Head	Expence per Head	Increase per Head	Totall Increase per annum
				£ s.	£	£ s.	£ s. d.	£ s. d.	£
160	Temporall Lords	40	6,400	2800 0	448,000	70 0	60 0 0	10 0 0	64,000
26	Spirituall Lords	20	520	1300 0	33,800	65 0	55 0 0	10 0 0	5,200
800	Baronets	16	12,800	880 0	704,000	55 0	51 0 0	4 0 0	51,200
600	Knights	13	7,800	650 0	390,000	50 0	46 0 0	4 0 0	31,200
3,000	Esquires	10	30,000	450 0	1,200,000	45 0	42 0 0	3 0 0	90,000
12,000	Gentlemen	8	96,000	280 0	2,880,000	35 0	32 10 0	2 10 0	240,000
5,000	Persons in offices	8	40,000	240 0	1,200,000	30 0	27 0 0	3 0 0	120,000
5,000	Persons in offices	6	30,000	120 0	600,000	20 0	18 0 0	2 0 0	60,000
2,000	Merchants & Traders by Sea	8	16,000	400 0	800,000	50 0	40 0 0	10 0 0	160,000
8,000	Merchants & Traders by Sea	6	48,000	200 0	1,600,000	33 0	28 0 0	5 0 0	240,000
10,000	Persons in the Law	7	70,000	140 0	1,400,000	20 0	17 0 0	3 0 0	210,000
2,000	Clergy Men	6	12,000	60 0	120,000	10 0	9 0 0	1 0 0	12,000
8,000	Clergy Men	5	40,000	45 0	360,000	9 0	8 0 0	1 0 0	40,000
40,000	Freeholders	7	280,000	84 0	3,360,000	12 0	11 0 0	1 0 0	280,000
140,000	Freeholders	5	700,000	50 0	7,000,000	10 0	9 10 0	10 0	350,000
150,000	Farmers	5	750,000	44 0	6,600,000	8 15	8 10 0	5 0	187,000
16,000	Persons in Sciences & Lib. arts	5	80,000	60 0	960,000	12 0	11 10 0	1 10 0	40,000
40,000	Shopkeepers & Tradesmen ...	4½	180,000	45 0	1,800,000	10 0	9 10 0	10 0	90,000
60,000	Artizans & handycrafts ...	4	240,000	40 0	2,400,000	10 0	9 10 0	10 0	120,000
5,000	Naval officers...	4	20,000	80 0	400,000	20 0	18 0 0	2 0 0	40,000
4,000	Military officers	4	16,000	60 0	240,000	15 0	14 0 0	1 0 0	16,000
511,586		5¼	2,675,520	67 0	34,495,800	12 18	12 0 0	18 0	2,447,100

																Decrease
50,000	Common Seamen	3	150,000	20	0	1,000,000	7	0	7	10	0		10	0		75,000
364,000	Labouring People & outservants	$3\frac{1}{2}$	1,275,000	15	0	5,460,000	4	10	4	12	0		2	0		127,500
400,000	Cottagers & Paupers . . .	$3\frac{1}{4}$	1,300,000	6	10	2,000,000	2	0	2	5	0		5	0		325,000
35,000	Common Souldiers . . .	2	70,000	14	0	490,000	7	0	7	10	0		10	0		35,000
849,000		$3\frac{1}{4}$	2,795,000	10	10	8,950,000	3	5	3	9	0		4	0		562,000
	Vagrants		30,000			60,000	2	0	3	0	0	1	0	0		60,000
849,000		$3\frac{1}{4}$	2,825,000	10	10	9,010,000	3	3	3	7	6		4	6		622,000
			So the General Account is													
				£	s.	£	£	s.	£	s.	d.	£	s.	d.		£
511,586	Increasing the wealth of the Kingdom	$5\frac{1}{4}$	2,675,520	67	0	34,495,800	12	18	12	0	0		18	0		2,447,100
849,000	Decreasing the wealth of the Kingdom	$3\frac{1}{4}$	2,825,000	10	10	9,010,000	3	3	3	7	6		4	6		622,000
360,586	Neat Totalls	$4\frac{1}{20}$	5,500,520	£32	0	£43,505,800	£7	18	£7	11	3	£0	6	9		£1,825,100

SOURCE: Gregory King, *Natural and Political Observations and Conclusions upon the State and Condition of England*, reprinted in *Two Tracts by Gregory King*, ed. George E. Barnett (Baltimore, 1936).

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economy at the time of the Glorious Revolution:[1] it is reproduced as Table 1. The next systematic attempt of this kind, so far as we know, was Joseph Massie's list of the numbers and earnings of different classes of the community, constructed for a more limited purpose—that of showing how the burden of a tax on sugar was distributed over the nation.[2] Finally, at the end of the eighteenth century and at the beginning of the nineteenth century, Pitt's income tax stimulated a number of similar calculations of national income designed to assess the taxable capacity of the country.[3]

If we take these estimates of contemporaries as our data, and adjust them to fit modern concepts of what is contained in the national income, we may deduce that the national income of England and Wales at the end of the seventeenth century amounted to a total which suggests an average of between £8 and £9 per annum per head of the population: in the 1750's it was probably between £12 and £13, again per head of the total population: at the end of the eighteenth century the corresponding average was about £22. Of course it is difficult to understand what the money incomes mean in real terms without knowing what they would buy. Prices change and the value of money alters. If we could measure the extent to which prices have changed over the past two to three hundred years we ought to be able to see eighteenth-century incomes in terms of today's money values. Unfortunately, the persistent inflation of prices since the Second World War and the accelerated inflation which set in at the end of the 1960's has made of today's values a highly ephemeral notion. An attempt to trace the course of the price indices for the period between say, 1754 and 1954 indicates that the general level of prices multiplied roughly six times in two centuries: but between 1956 and 1976 U.K. prices more than trebled in just two decades while in some

[1] King's careful table of the income and expenditure of each social group in England and Wales in 1688 is deservedly famous and has been reprinted many times. The original tract from which it is extracted appears in full in *Two Tracts by Gregory King*, edited with an introduction by George E. Barnett, Baltimore (1936). It is reclassified in modern form as a set of social accounts in Phyllis Deane and W. A. Cole, *British Economic Growth 1688–1959* (1962).

[2] P. Mathias, 'The Social Structure in the Eighteenth Century: a Calculation by Joseph Massie', *Economic History Review*, vol. x (August 1957).

[3] Phyllis Deane, 'The Implications of Early National Income Estimates for the Measurement of Long-term Economic Growth in the United Kingdom', *Economic Development and Cultural Change* (1955).

contemporary newly developing countries the price rise was even more spectacular.

It may nevertheless be interesting to draw a rough comparison between estimates of the English national income level on the eve of the first industrial revolution and the corresponding levels for today's third-world countries beginning their first great spurt of industrialization. Applying the evidence of the price indices we might conclude that an average of £12 per head per annum for the early 1750's should be inflated to a level of about £90 to give an order of magnitude for the early 1960's. It would appear then that this represents a relatively high national income level by comparison with mid-twentieth-century newly-developing countries: the average for Nigeria in the early 1960's has been put at about a third of this figure and that for India lower still. Probably the average calculated for some of today's Central and South American countries came closer to the estimated level for mid eighteenth-century England: the average for Brazil in 1961, for example, has been put at about £95 and for Mexico £105.[1]

These rough calculations involving imprecise comparisons across wide distances of time and space are obviously crude and impressionistic. They certainly do not provide useful *measures* of relative living standards. All that we can reasonably deduce from them is that the level of economic development reached by England on the threshold of the first industrial revolution was distinctly higher than that prevailing in the developing countries of South Asia and Africa when they began to industrialize rapidly. This deduction is supported by other sorts of evidence for the view that pre-industrial England was more favourably situated than most mid twentieth-century under-developed economies. There is, for example, the evidence that the English economy was producing a substantial surplus of the nation's staple food. In 1750 the corn export was equivalent to the subsistence requirements of roughly a quarter of the total population of England. If India had a food surplus of this relative magnitude her foreign exchange problems would surely shrink. In 1751, to take another example, more than 7 million gallons of British spirits were charged to duty in England: indeed at the peak of the gin-drinking boom in England the

[1] P. Rosenstein-Rodan, 'International Aid for Underdeveloped Countries'. *Review of Economics and Statistics* (1961).

figure exceeded 8 million gallons and consumption averaged nearly $1\frac{1}{2}$ gallons per head of the total population (men, women and children)—which is a very high rate of consumption of hard liquor by any standards. Statistics such as these do not suggest a high standard of material well-being but they do indicate the existence of an economic surplus, even if this was distributed through socially undesirable channels.

The seasonal rise in the death rate in winter, the periodic food riots and the squalor and disease of the overcrowded townships give evidence of a level of living for the mass of the people that was exceedingly vulnerable to temporary hardship. But in the ordinary course of events and in the average country parish in which the majority of people lived, the paupers could rely on being relieved from complete destitution by the Poor Law in childhood, sickness and old age. It has even been argued that the labouring poor enjoyed higher standards of living in the immediately pre-industrial era than in the decades of economic and social revolution which followed. The Hammonds, for example, claimed that 'in comparison with the dishevelled century that follows, the eighteenth century was neat, well dressed and nicely appointed'.[1] We shall come back to this view when we come to discuss the famous controversy concerning the workers' standard of living in the industrial revolution, but at this stage the point to notice is that although the standard of life was simple, and sometimes disastrously vulnerable to climatic extremes in the mid eighteenth century, there was some economic surplus, some slack in the economy.

In all this, it may be noted, the English were better off than most of their contemporaries in other countries. In the eighteenth century it was obvious to contemporaries that the three richest countries in the world were Holland, England and France. This was the view of Gregory King writing in the 1690's and Adam Smith ranked them similarly in the 1770's. Probably there was little difference between the standards of living of English and Dutch by the middle of the eighteenth century, but there seems little doubt that the average Englishman was appreciably better off than his French counterpart. Foreign observers travelling in England remarked on the fact that 'the English labourer is better cloathed, better fed and better lodged

[1] J. L. and B. Hammond, *The Village Labourer 1760–1832* (1911), p. 129.