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ORIGIN OF THE INDUSTRIAL REVOLUTION

The problem of the origin of the Industrial Revolution is not an easy one, but it is made even more difficult if we fail to clarify it. So it is as well to begin with a little clarification.

First, the Industrial Revolution is not merely an acceleration of economic growth, but an acceleration of growth because of, and through, economic and social transformation. The early observers, who concentrated their attention on the qualitatively new ways of producing - the machines, the factory system and the rest - had the right instinct, though they sometimes followed it too uncritically. It was not Birmingham, a city which produced a great deal more in 1850 than in 1750, but essentially in the old way, which made contemporaries speak of an industrial revolution, but Manchester, a city which produced more in a more obviously revolutionary manner. In the late eighteenth century this economic and social transformation took place in and through a capitalist economy. As we know from the twentieth century, this is not the only form industrial revolution can take, though it was the earliest and probably, in the eighteenth century, the only practicable one. Capitalist industrialization requires in some ways a rather different analysis from non-capitalist, because we must explain why the pursuit of private profit led to technological transformation, and it is by no means obvious that it automatically does so. In other ways, doubtless, capitalist industrialization can be treated as a special case of a more general phenomenon, but it is not clear to what extent this is helpful to the historian of the British Industrial Revolution.

Second, the British revolution was the first in history. This does not mean that it started from zero, or that earlier phases of rapid industrial and technological development cannot be found. Nevertheless, none of these initiated the characteristic modern phase of history, self-sustained economic growth by means of perpetual technological revolution and social transformation. Being the first, it is therefore also in crucial respects unlike all subsequent industrial revolutions. It cannot be explained primarily, or to any extent, in terms of outside factors such as - for instance - the imitation of more advanced techniques, the import of capital, the impact of an already industrialized world economy. Subsequent revolutions could use the British experience, example and resources. Britain could use those of other countries only to a very limited and minor extent. At the same time, as we have seen, the British revolution was preceded by at least two hundred years of fairly continuous economic development, which laid its foundations. Unlike, say, nineteenth- or twentieth-century Russia, Britain entered industrialization prepared and not virtually unprepared.

However, the Industrial Revolution cannot be explained in purely British terms, for this country formed part of a wider economy, which we may call the ‘European economy’ or the ‘world economy of the European maritime states’. It was part of a larger network of economic relationships, which included several ‘advanced’ areas, some of which were also areas of potential or aspiring industrialization, and areas of ‘dependent economy’, as well as the margins of foreign economies not yet substantially involved with Europe. These dependent economies consisted partly of formal colonies (as in the Americas) or points of trade and domination (as in the Orient), partly of regions which were to some extent economically specialized in response to the demands of the ‘advanced’ areas (as in some parts of eastern Europe). The ‘advanced’ world was linked to the dependent world by a certain division of economic activity: a relatively urbanized area on one hand, zones producing and largely exporting agricultural products or raw materials on the other. These relations may be described as a system of economic flows - of trade, of international payments, of capital transfers, of migration, and so on. The ‘European economy’ had shown marked signs of expansion and dynamic development for several centuries, though it had also experienced major economic setbacks or shifts, notably in the fourteenth to fifteenth and seventeenth centuries.
Nevertheless it is important to observe that it also tended to be divided, at least from the sixteenth century, into independent and competing politico-economic units (territorial ‘states’) like Britain and France, each with its own economic and social structure, and containing within itself advanced and backward or dependent sectors and regions. By the sixteenth century it was fairly obvious that, if industrial revolution occurred anywhere in the world, it would be somewhere within the European economy. Why this was so cannot be discussed here, for the question belongs to an earlier era of history than the one with which this book is concerned. However, it was not clear which of the competing units would turn out to be the first to industrialize. The problem of the origins of the Industrial Revolution which concerns us here is, essentially, why it was Britain which became the first ‘workshop of the world’. A second and connected question is why this breakthrough occurred towards the end of the eighteenth century and not before or after.

Before setting about the answer (which remains a matter of debate and uncertainty), it may be useful to eliminate a number of explanations or pseudo-explanations which have long been current, and are still sometimes maintained. Most of them leave more unexplained than they elucidate.

This is true of theories which attempt to account for the Industrial Revolution in terms of climate, geography, biological change in the population or other exogenous factors. If (as has been held) the stimulus for the revolution came from, say, the unusually long period of good harvests in the earlier eighteenth century, then we have to explain why similar periods before this date (and they have occurred from time to time throughout history) had not similar consequences. If Britain’s ample reserves of coal explain her priority, then we may well wonder why her comparatively scant natural supplies of most other industrial raw materials (for example iron ore) did not hamper her just as much, or alternatively why the great Silesian coalfields did not produce an equally early industrial start. If the moist climate of Lancashire is to explain the concentration of the cotton industry there, then we ought to ask why the many other equally damp regions of the British Isles did not also attract or hold it. And so on. Climatic factors, geography, the distribution of natural resources operate not on their own, but only within a given economic, social and institutional framework. This is true even of the strongest of such factors, ease of access to the sea or to good rivers, that is to the cheapest and most practicable — indeed for bulk goods the only economic form of transport in the pre-industrial age. It is almost inconceivable that a totally landlocked region should have pioneered the modern Industrial Revolution; though such regions are rarer than one thinks. Nevertheless, even here non-geographic factors must not be neglected: the Hebrides have more access to the sea than most of Yorkshire.

The problem of population is somewhat different, for its movements may be explained by exogenous factors, by the changes in human society, or by a combination of both. We shall consider it further below. At present we need note merely that purely exogenous explanations are not at present widely held by historians, and are not accepted in this book.

Explanations of the Industrial Revolution by ‘historic accidents’ ought also to be rejected. The mere fact of overseas discovery in the fifteenth and sixteenth centuries does not account for industrialization, and neither does the ‘scientific revolution’ of the seventeenth. Neither can explain why the Industrial Revolution occurred at the end of the eighteenth century and not, let us say, at the end of the seventeenth, when both the European knowledge of the outer world and scientific technology were potentially quite adequate for the sort of industrialization which developed eventually. Nor can the Protestant Reformation be made responsible for it, either directly or via some special ‘capitalist spirit’ or other change of economic attitude induced by Protestantism; not even for why it occurred in Britain and not in France. The Reformation occurred more than two centuries before the Industrial Revolution. By no means all areas which converted to Protestantism became pioneers of industrial revolution, and — to take an obvious example — the parts of the

*It is irrelevant for our purposes whether these things were purely fortuitous or (as is much more likely) the outcome of earlier European economic and social developments.
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Netherlands which remained Catholic (Belgium) industrialized before the part which became Protestant (Holland).*

Lastly, purely political factors must also be rejected. In the second half of the eighteenth century practically all governments in Europe wanted to industrialize, but only the British succeeded. Conversely, British governments from 1660 on were firmly committed to policies favouring the pursuit of profit above other aims, but the Industrial Revolution did not occur until more than a century later.

To reject such factors as simple, exclusive, or even primary explanations is not, of course, to deny them any importance. That would be foolish. It is merely to establish relative scales of importance, and incidentally to clarify some of the problems of countries setting about their industrialization today, in so far as they are comparable.

*The main preconditions for industrialization were already present in eighteenth-century Britain, or could be easily brought into being. By the standards generally applied to 'underdeveloped' countries today, England was not underdeveloped, though parts of Scotland and Wales were, and Ireland certainly was. The economic, social and ideological links which immobilize most pre-industrial people in traditional situations and occupations were already weak, and could be easily severed. To take the most obvious example, by 1750 it is as we have seen already doubtful whether we can any longer speak of a landholding peasantry in large parts of England, and it is certain that we can no longer speak of subsistence agriculture.† Hence there were no major obstacles to the transfer of men from non-industrial to industrial pursuits. The country had accumulated and was of sufficient size to permit investment in the necessary, but before the railways

†Moreover, the theory that French economic development in the eighteenth century was crippled by the expulsion of the Protestants at the end of the seventeenth is not now widely accepted, or is, at the very least, highly debatable.

†When early-nineteenth-century writers talked of 'the peasantry', they tended to mean 'the farm labourers'.

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not very costly, equipment for economic transformation. Enough of it was concentrated in the hands of men willing to invest in economic progress, while relatively little was in the hands of men likely to divert resources to alternative (and economically less desirable) uses, such as mere display. There was neither a relative nor an absolute shortage of capital. The country was not merely a market economy – one in which the bulk of goods and services outside the family are bought and sold – but in many respects it formed a single national market. And it possessed an extensive and fairly highly developed manufacturing sector and an even more highly developed commercial apparatus.

What is more, problems which are acute in modern underdeveloped countries setting about their industrialization were mild in eighteenth-century Britain. As we have seen, transport and communications were comparatively easy and cheap, since no part of Britain is further than seventy miles from the sea, and even less from some navigable waterway. The technological problems of the early Industrial Revolution were fairly simple. They required no class of men with specialized scientific qualifications, but merely a sufficiency of men with ordinary literacy, familiarity with simple mechanical devices and the working of metals, practical experience and initiative. The centuries since 1500 had certainly provided such a supply. Most of the new technical inventions and productive establishments could be started economically on a small scale, and expanded piecemeal by successive addition. That is to say, they required little initial investment, and their expansion could be financed out of accumulated profits. Industrial development was within the capacities of a multiplicity of small entrepreneurs and skilled traditional artisans. No twentieth-century country setting about industrialization has, or can have, anything like these advantages.

This does not mean that there were no obstacles in the path of British industrialization, but only that they were easy to overcome because the fundamental social and economic conditions for it already existed, because the eighteenth-century type of industrialization was comparatively cheap and simple, and because the country was sufficiently wealthy and flourishing to be untroubled by inefficiencies which might have crippled less
fortunate economies. Perhaps only so lucky an industrial power as this could have ever afforded that distrust of logic and planning (even private planning), that faith in the capacity to muddle through, which became so characteristic of Britain in the nineteenth century. We shall see below how some of the difficulties of growth were overcome. The important thing to note at the outset is that they were never crucial.

The question about the origin of the Industrial Revolution which concerns us here is not, therefore, how the material for the economic explosion was accumulated, but how it was ignited; and we may add, what stopped the first explosion from fizzling out after an impressive initial bang. But was a special mechanism necessary at all? Was it not inevitable that a sufficiently long period of accumulating explosive material would, sooner or later, somehow, somewhere, produce spontaneous combustion? Perhaps so. Nevertheless it is the ‘somehow’ and ‘somewhere’ which must be explained; all the more so as the way in which an economy of private enterprise brings about industrial revolution raises a number of puzzles. We know that in fact it did so in some parts of the world; but we also know that it failed to do so in other parts, and took a rather long time doing so even in western Europe.

The puzzle lies in the relationship between making profit and technological innovation. It is often assumed that an economy of private enterprise has an automatic bias towards innovation, but this is not so. It has a bias only towards profit. It will revolutionize manufactures only if greater profits are to be made in this way than otherwise. But in pre-industrial societies this is hardly ever the case. The available and prospective market – and it is the market which determines what a businessman produces – consists of the rich, who require luxury goods in small quantities, but with a high profit-margin per sale, and the poor, who – if they are in the market economy at all, and do not produce their own consumer goods domestically or locally – have little money, are unaccustomed to novelties and suspicious of them, unwilling to consume standardized products and may not even be concentrated in cities or accessible to national manufacturers. What is more, though a market for ‘the middling sort of people’

could develop in the prosperous eighteenth century, the true mass market is not likely to grow very much more rapidly than the relatively slow rate of population increase. It will make more sense to dress princesses in haute couture models than to speculate on the chances of capturing peasants’ daughters for artificial silk stockings. The sound businessman, if he has any choice. will produce very expensive jewelled timepieces for aristocrats rather than cheap wrist-watches, and the more expensive the process of launching revolutionary cheap goods, the more he will hesitate to risk his money in it. A French millionaire in the mid nineteenth century, operating in a country in which the conditions for modern industrialism were relatively poor, expressed this admirably. ‘There are three ways of losing your money,’ said the great Rothschild, ‘women, gambling and engineers. The first two are pleasanter, but the last is much the most certain.’ Nobody could accuse a Rothschild of not knowing the best way to the biggest profits. In a non-industrialized country it was not through industry.

Industrialization changes all this, by enabling production – within certain limits – to expand its own markets, if not actually to create them. When Henry Ford produced his model-T, he also produced what had not existed before, namely a vast number of customers for a cheap, standardized and simple automobile. Of course his enterprise was no longer as wildly speculative as it seemed. A century of industrialization had already demonstrated that mass-production of cheap goods can multiply their markets, accustomed men to buy better goods than their fathers had bought and to discover needs which their fathers had not dreamed of. The point is that before the Industrial Revolution, or in countries not yet transformed by it, Henry Ford would not have been an economic pioneer, but a crank, inviting bankruptcy.

How then did conditions come about in eighteenth-century Britain which led businessmen nevertheless to revolutionize production? How did entrepreneurs come to see before them, not the modest if solid expansion of demand which could be filled in the traditional manner, or by a little extension and improvement of the old ways, but the rapid and limitless expansion which required revolution? A small, simple and cheap
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revolution by our standards, but nevertheless a revolution, a leap into the dark. There are two schools of thought about this question. One emphasizes chiefly the domestic market, which was clearly by far the largest outlet for the country’s products, the other stresses the foreign or export market, which was equally clearly, far more dynamic and expandable. The right answer is probably that both were essential in different ways, as was a third, and often neglected factor: government.

The domestic market, large and expanding as it was, could grow in only four important ways, three of which were not likely to be exceptionally rapid. There could be growth of population, which creates more consumers (and, of course, producers); a transfer of people from non-monetary to monetary incomes, which creates more customers; an increase of income per head, which creates better customers; and a substitution of industrially produced goods for older forms of manufacture or imports.

The question of population is so important, and has in recent years been the subject of so large and flourishing a concentration of research, that it must be briefly discussed here. It raises three questions of which only the third is directly relevant to the problem of market expansion, but all of which are important for the more general problem of British economic and social development. They are: (1) What happened to British population and why? (2) What effect did these population changes have on the economy? (3) What effect did they have on the structure of the British people?

Reliable measures of the British population hardly exist before about 1840, when the public registration of births and deaths was introduced, but its general movement is not in much dispute. Between the end of the seventeenth century when there were perhaps five and a quarter million inhabitants of England and Wales, and the middle of the eighteenth century, it rose only very slightly, and may at times have been static or even falling. After the 1740s it rose substantially and from the 1770s very rapidly indeed by contemporary, though not by our standards.*

*In 1965 the population of the fastest-growing continent, Latin America, was increasing at not far short of double this rate.

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It doubled in fifty to sixty years after 1780, and again in the sixty years from 1841 to 1901, though in fact both birth and death rates began to drop rapidly from the 1870s. However, these global figures conceal very substantial variations, both chronological and regional. Thus for instance, while in the first half of the eighteenth century, and even up to 1780, the London area would have been depopulated but for massive immigration from the countryside, the future centre of industrialization, the North-West, and the East Midlands were already increasing quite rapidly. After the real start of the Industrial Revolution, rates of natural increase of the major regions (though not of migration) tended to become similar, except for the murderous environment of London.

These movements were clearly not much affected, before the nineteenth century, by international migration, not even of the Irish. Were they due to variations in the rate of births or in mortality, and what were the causes of these? Quite apart from the deficiency of our information, these questions, though of great interest, are immensely complicated.* They concern us here only in so far as they throw light on the question of how far the rise in population was a cause, how far a consequence of economic factors, for example how far people married or conceived children earlier because of better chances of getting a piece of land to cultivate or a job or – as has been argued – because of the demand for child labour, how far their mortality declined because they were fed better or more regularly or because of environmental improvements. (Since one of the few facts we know with any certainty is that most of the fall in death rates was due to fewer infants, children and perhaps young adults dying, rather than to any real prolongation of life beyond the biblical span of three score years and ten,† such falls might entail a rise in the birth rate. For instance, if fewer women die before,


†This remained true until about 1970 when, for reasons which remain to be fully investigated, but which may be nutritional, more old people began to actually go on living in good working order well beyond the biblical age.
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say, thirty, more of them are likely to have the children they might be expected to have between thirty and the menopause.

We cannot answer these questions with certainty, but it seems fairly clear that such population growth as there was - rapid by previous Western standards, but not by those to which we have become accustomed in the twentieth century - was due primarily to a rise in the birth rate. Young women married earlier - on average at the age of twenty-three in 1825–49, compared to over twenty-six in 1700–24 - and therefore had a longer child-bearing period. There was also a substantial rise in illegitimate births. It seems clear that people were much more responsive to economic factors in marrying and/or having children than had sometimes been supposed, and that some social changes (for instance, the decline in the practice of workers 'living in' with their employers) must have encouraged, or even required, earlier and perhaps larger families. It is also clear that a family economy which can be balanced only by the labour of all its members, and forms of production which used child labour, would also encourage population. Contemporaries certainly thought of population as something which responded to changes in the demand for labour. Mortality, especially infantile mortality, did not decline significantly until quite late in the nineteenth century, and when it did, it was almost certainly for economic, social or other environmental reasons. Medical progress can have played no part in its reduction, except maybe for the reduction in deaths from smallpox.

What were the economic effects of these changes? More people means more labour and cheaper labour, and it has often been supposed that this is in itself a stimulus to economic growth, at any rate under capitalism. As we can see in many underdeveloped countries today, it is not. It may produce merely distress and stagnation, perhaps catastrophe, as in Ireland and the Scottish Highlands in the early nineteenth century (see pp. 284–7 below). Cheap labour may actually retard industrialization. If in eighteenth-century England a growing labour force assisted development, as it undoubtedly did, it was because the economy was already dynamic, not because some extraneous demographic injection made it so. In any case population grew rapidly all over northern Europe, but industrialization did not occur everywhere. On the other hand more people certainly means more consumers, and it has been argued with more force that this certainly provides a stimulus both for agriculture (for they must be fed) and for manufactures.

But as we have seen, the national population grew only very gradually in the century before 1750, and its rapid rise coincided with the Industrial Revolution but did not (except here and there) precede it. If Britain had been a less developed economy, there might have been more room for sudden and large transfers of people from, say, a subsistence to a cash economy, or from domestic and artisan manufacture to industry. But, as we have seen, England was already a market economy with a large and growing manufacturing sector. The average English income probably increased substantially in the first half of the eighteenth century, thanks if anything to a stagnant population and labour shortage, so that this period is rightly described in the Vicar of Bray's song as 'pudding time'. People were better off and could buy more; what is more, they probably at this time included a smaller percentage of children (who divert the expenditure of poor parents sharply towards the purchase of necessities) and a larger proportion of young small-family adults (who have income to spare). It is quite likely that in this period many Englishmen learned to cultivate new wants and establish new levels of expectation, and there is some evidence that around 1750 they began to prefer to take out their extra productivity in more consumer goods rather than in more leisure. Some excessively enthusiastic historians have gone so far as to speak of a 'consumer revolution'. Still, this increase also resembled the movement of a respectable river rather than the exhilarating leaps of a waterfall. It explains why so many English towns were rebuilt (without any technological revolution) in the rural elegance of classical architecture, but not in itself why there was an industrial revolution. Except perhaps in three special cases: transport, food and capital goods, particularly coal.

Very substantial and expensive improvements in inland transport - by river, canal and even road - were undertaken from the early eighteenth century, in order to diminish the prohibitive
cost of moving goods overland: in the middle of the century twenty miles’ land transport might double the cost of a ton of goods. How important these were for the development of industrialism is uncertain, but there is no doubt that the impetus for them came from the home market, and more especially from the growing demand of the cities for food and fuel. The landlocked manufacturers of household goods in the West Midlands (potters in Staffordshire, makers of various metal goods in the Birmingham region) also pressed for cheaper transport. The difference in transport costs was so dramatic that major investments were patently worth while. Canals cut the cost per ton between Liverpool and Manchester or Birmingham by eighty per cent.

Food industries compete with textiles as the pace-setters of private-enterprise industrialization, because a vast market for both exists visibly and (at least in the cities) at all times, merely awaiting exploitation. The least imaginative businessman can realize that everybody, however poor, eats, drinks and wears clothes. The demand for manufactured food and drink is admittedly more limited than that for textiles, except for such products as flour and alcoholic drinks, which are domestically manufactured only in rather primitive economies, but on the other hand food products are much more immune to foreign competition than textiles. Their industrialization therefore tends to play a rather more important part in underdeveloped than in advanced countries. Still, flour-milling and beer-brewing were important pioneers of technological revolution even in Britain, though they attract less attention than textiles, because they do not so much transform the surrounding economy as appear, like giant monuments of modernity, within it, as the Guinness brewery did in Dublin and the celebrated Albion steam mills (which so impressed the poet William Blake) in London. The larger the city (and London was by far the greatest in Western Europe), and the more rapid the urbanization, the greater the scope for such developments. Was not the invention of the beer-handle, known to every drinker in Britain, one of the first triumphs of Henry Maudslay, one of the great pioneers of engineering?

The home market also provided a major outlet for what later became capital goods. Coal grew almost entirely with the number of urban – and especially metropolitan – fireplaces; iron – to a much smaller extent – reflected the demand for domestic pots, pans, nails, stoves and the like. Since the quantities of coal burned in British homes were very much greater than their needs of iron (thanks in part to the unusual inefficiency of the British fireplace compared to the continental stove), the pre-industrial base of the coal industry was much sounder than that of the iron industry. Even before the Industrial Revolution its output could already be measured in millions of tons, the first commodity to which such astronomical criteria were applicable. And steam-engines were the product of the mines: in 1769 a hundred ‘atmospheric engines’ had already been erected round Newcastle-on-Tyne, and fifty-seven were actually at work. (However, the more modern engines of James Watt’s type, which were really the foundation of industrial technology, made their way only slowly in the mines.)

On the other hand the total British consumption of iron in 1720 was less than 50,000 tons, and even in 1788, after the Industrial Revolution was well under way, it cannot have been much more than 100,000 tons. The demand for steel was negligible at the then price of this metal. The greatest civilian market for iron was probably still agricultural – ploughs and other implements, horse-shoes, wheel-rims, and so on – which increased substantially, but was hardly large enough yet to start an industrial transformation. In fact, as we shall see, the real Industrial Revolution in iron and coal had to wait until the era of the railway provided a mass market not only for consumer goods but for capital goods. The pre-industrial domestic market, and even the first phase of industrialization, did not yet do so on a sufficient scale.

The main advantage of the pre-industrial home market was therefore its size and steadiness. It may not have promoted much in the way of industrial revolution, but it undoubtedly promoted economic growth, and what is more, it was always available to cushion the more dynamic export industries against the sudden fluctuations and collapses which were the price they paid for their superior dynamism. It came to their rescue in the 1780s, when war and the American Revolution disrupted them, and probably again after the Napoleonic Wars. But more than
this, it provided the broad foundations for a generalized industrial economy. If England thought tomorrow what Manchester thought today, it was because the rest of the country was prepared to take its lead from Lancashire. Unlike Shanghai in pre-communist China, or Ahmedabad in colonial India, Manchester did not remain a modern enclave in the general backwardness, but became the model for the rest of the country. The domestic market may not have provided the spark, but it provided fuel and sufficient draught to keep it burning.

Export industries worked in very different, and potentially much more revolutionary conditions. They fluctuated wildly — up to fifty per cent in a single year — so that the manufacturer who could leap in fast enough to catch the expansions could make a killing. In the long run they also expanded much more, and more rapidly, than home markets. Between 1700 and 1750 home industries increased their output by seven per cent, export industries by seventy-six per cent; between 1750 and 1770 (which we may regard as the runway for the industrial ‘take-off’) by another seven per cent and eighty per cent respectively. Home demand increased — but foreign demand multiplied. If a spark was needed, this is where it came from. Cotton manufacture, the first to be industrialized, was essentially tied to overseas trade. Every ounce of its raw material had to be imported from the sub-tropics or tropics, and, as we shall see, its products were to be overwhelmingly sold abroad. From the end of the eighteenth century it was already an industry which exported the greater part of its total output — perhaps two thirds by 1805.

The reason for this extraordinary potential of expansion was that export industries did not depend on the modest ‘natural’ rate of growth of any country’s internal demand. They could create the illusion of rapid growth by two major means: capturing a series of other countries’ export markets, and destroying domestic competition within particular countries, that is by the political or semi-political means of war and colonization. The country which succeeded in taking over other people’s export markets, or even in monopolizing the export markets of a large part of the world in a sufficiently brief period of time, could expand its export industries at a rate which made industrial

revolution not only practicable for its entrepreneurs, but sometimes virtually compulsory. And this is what Britain succeeded in doing in the eighteenth century.*

Yet conquering markets by war and colonization required not merely an economy capable of exploiting those markets, but also a government willing to wage war and colonize for the benefit of British manufacturers. This brings us to the third factor in the genesis of the Industrial Revolution, government. Here the advantage of Britain over her potential competitors is quite evident. Unlike some of them (such as France) she was prepared to subordinate all foreign policy to economic ends. Her war aims were commercial and (what amounted to much the same thing) naval. The great Chatham gave five reasons in his memorandum advocating the conquest of Canada: the first four were purely economic. Unlike others (such as the Dutch), her economic aims were not completely dominated by commercial and financial interests, but shaped also, and increasingly, by the pressure group of manufacturers, originally the fiscally important woollen industry, later the rest. The tussle between industry and commerce (represented most dramatically by the East India Company) was decided in the home market by 1700, when British producers won protection against Indian textile imports; it was not won in the foreign market until 1813, when the East India Company was deprived of its monopoly in India, and that sub-continent opened to deindustrialization and the massive import of Lancashire cottons. Lastly, unlike all its other rivals, British policy in the eighteenth century was one of systematic aggressiveness — most obviously against the chief rival, France. Of the five great wars of the period, Britain was clearly on the defensive in only one.† The result of this century of intermittent warfare was

*It follows that if one country did this others would be unlikely to develop the basis for industrial revolution. In other words, under pre-industrial conditions there was probably room for only one pioneer national industrialization (as it turned out the British), but not the simultaneous industrialization of several ‘advanced economies’, consequently also — at least for some time — for only one ‘workshop of the world’.

†The Spanish Succession (1702–13), the Austrian Succession (1739–48), the Seven Years War (1756–63), the War of American Independence (1776–83) and the Revolutionary and Napoleonic Wars (1793–1815).
the greatest triumph ever achieved by any state up to that time: the virtual monopoly among European powers of overseas colonies, and the virtual monopoly of world-wide naval power. Moreover, war itself - by crippling Britain's major competitors in Europe - tended to boost exports; peace, if anything, tended to slow them up.

Furthermore, war - and especially that very commercially-minded and middle-class organization, the British Navy - contributed even more directly to technological innovation and industrialization. Its demands were not negligible: the tonnage of the Navy multiplied from about 100,000 in 1685 to about 325,000 in 1760, and its demand for guns grew substantially, though in a less dramatic manner. War was pretty certainly the greatest consumer of iron, and firms like Wilkinson, the Walkers, and the Carron Works owed the size of their undertakings partly to government contracts for cannon, while the South Wales iron industry depended on battle. More generally, government contracts, or those of vast quasi-government bodies like the East India Company, came in large blocks and had to be filled on time. It was worth a businessman's while to introduce revolutionary methods to supply them. Time and again we find some inventor or entrepreneur stimulated by so lucrative a prospect. Henry Cort, who revolutionized iron manufacture, began in the 1760s as a Navy agent, anxious to improve the quality of the British product 'in connexion with the supply of iron to the navy'.

Henry Maudsley, the pioneer of machine-tools, began his career in the Woolwich Arsenal and his fortunes (like those of the great engineer Marc Isambard Brunel, formerly of the French Navy) remained closely bound up with naval contracts.

If we are to sum up the role of the three main sectors of demand in the genesis of industrialism, we can therefore do so as follows. Exports, backed by the systematic and aggressive help of government, provided the spark, and - with cotton textiles - the 'leading sector' of industry. They also provided major improvements in sea transport. The home market provided the

*The pioneering role of the government's own establishments must not be forgotten. During the Napoleonic Wars they anticipated, among other things, conveyor belts and the canning industry.

broad base for a generalized industrial economy and (through the process of urbanization) the incentive for major improvements in inland transport, a powerful base for the coal industry and for certain important technological innovations. Government provided systematic support for merchant and manufacturer, and some by no means negligible incentives for technical innovation and the development of capital goods industries.

If we finally return to our original questions - why Britain and not another country? why at the end of the eighteenth century and not before or after? - the answer cannot be so simple. By 1750, indeed, there was not much doubt that if any state was to win the race to be the first industrial power it would be Britain. The Dutch had retired to that comfortable role of old-established business, the exploitation of their vast commercial and financial apparatus, and their colonies. The French, though expanding about as fast as the British (when the British did not prevent them by war), could not regain the ground they had lost in the great era of economic depression, the seventeenth century. In absolute figures they might look until the Industrial Revolution - like a power of equivalent size, but per capita their trade and manufactures were even then far behind the British.

On the other hand this does not explain why the industrial breakthrough came when it actually did - in the last third or quarter of the eighteenth century. The precise answer to this question is still uncertain, but it is clear that we can find it only by turning back to the general European or 'world' economy of which Britain was a part, that is to the 'advanced' areas of (mainly) Western Europe and their relations with the colonial and semi-colonial dependent economies, the marginal trading partners, and the regions not as yet substantially involved in the European system of economic flows.

The traditional pattern of European expansion - Mediterranean, and based on Italian merchants and their associates, Spanish and Portuguese conquerors, or Baltic, and based on German city states - had perished in the great economic

*The word must be understood to mean only that the European economy was the centre of a world-wide network, but not that all parts of the world were involved in this network.
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depression of the seventh century. The new centres of expansion were the maritime states bordering the North Sea and North Atlantic. The shift was not merely geographical, but structural. The new kind of relationship between the 'advanced' areas and the rest of the world, unlike the old, tended constantly to intensify and widen the flows of commerce. The powerful, growing and accelerating current of overseas trade which swept the infant industries of Europe with it—-which, in fact, sometimes actually created them—was hardly conceivable without this change. It rested on three things: in Europe, the rise of a market for overseas products for everyday use, whose market could be expanded as they became available in larger quantities and more cheaply; and overseas the creation of economic systems for producing such goods (such as, for instance, slave-operated plantations) and the conquest of colonies designed to serve the economic advantage of their European owners.

To illustrate the first fact: around 1650 one-third of the value of East India goods sold in Amsterdam consisted of pepper—the typical commodity in which profits are made by 'cornering' a small supply and selling it at monopoly prices—by 1780 this proportion had fallen to eleven per cent. Conversely, by 1780 56 per cent of such sales consisted of textiles, tea and coffee, whereas in 1650 they had only amounted to 17.5 per cent. Sugar, tea, coffee, tobacco and similar products rather than gold and spices were now the characteristic imports from the tropics, as wheat, linen, iron, hemp and timber were those from the east of Europe, and not furs. The second fact can be illustrated by the expansion of that most inhuman traffic, the slave trade. In the sixteenth century fewer than half a million Negroes were transferred from Africa to the Americas; in the seventeenth perhaps 1.5 millions—mainly in the second half, or if earlier, to the Brazilian plantations which anticipated the later colonial pattern; in the eighteenth century perhaps seven millions.* The third fact hardly requires illustration. In 1650 neither Britain nor France had much in the way of empires, and much of the old Spanish and Portuguese empires lay in ruins, or consisted of

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mere outlines on a world map. The eighteenth century saw not merely a revival of the older empires (for example in Brazil and Mexico), but the expansion and exploitation of new ones—British, French, not to mention now forgotten essays by Danes, Swedes and others. What is more, the sheer size of these empires as economies increased vastly. In 1701 the future USA had fewer than 300,000 inhabitants, in 1790 almost four millions; and even Canada grew from 14,000 in 1695 to almost half a million in 1801.

And as the network of international trade grew tighter, so did the role of such overseas trade in the commerce of Europe. In 1680 the East India trade amounted to perhaps eight per cent of the total foreign commerce of the Dutch, but in the second half of the eighteenth century to something like one quarter, and the evolution of French trade was similar. The British relied on colonial trade earlier. Around 1700 it amounted already to fifteen per cent of our commerce— but by 1775 to as much as a third. The general expansion of trading in the eighteenth century was impressive enough, in almost all countries, but the expansion of trade connected with the colonial system was stupendous. To take a single example: after the War of the Spanish Succession between two and three thousand tons of British ships cleared from England every year for Africa, mainly as slaves; after the Seven Years War between fifteen and nineteen thousand; after the American War of Independence (1787) twenty-two thousand.

This vast and growing circulation of goods did not merely bring to Europe new needs, and the stimulus to manufacture foreign imports at home. *If Saxony and other countries of Europe make up fine China*, wrote the Abbé Raynal in 1776,* 'if Valencia manufactures Pekins superior to those of China; if Switzerland imitates the muslims and worked calicoes of Bengal; if England and France print linens with great elegance; if so many stuffs, formerly unknown in our climates, now employ our best artists, are we not indebted to India for all these advantages?'* More than this, it provided a limitless horizon of sales and profit

*The estimates vary, but not the orders of magnitude.

*Within a few years he would not have failed to mention the most successful imitator of the Indians, Manchester.*
for merchant and manufacturer. And it was the British who—by their policy and force as much as by their enterprise and inventive skill—captured these markets.

Behind our Industrial Revolution there lies this concentration on the colonial and ‘underdeveloped’ markets overseas, the successful battle to deny them to anyone else. We defeated them in the East: in 1766 we already outsold even the Dutch in the China trade. We defeated them in the West: by the early 1780s more than half of all slaves exported from Africa (and almost twice as many as those carried by the French) made profits for British slavers. And we did so for the benefit of British goods. For some three decades after the War of the Spanish Succession British ships bound for Africa still carried mainly foreign (including Indian) goods; from shortly after the War of the Austrian Succession they carried overwhelmingly British ones. Our industrial economy grew out of our commerce, and especially our commerce with the underdeveloped world. And throughout the nineteenth century it was to retain this peculiar historical pattern: commerce and shipping maintained our balance of payments, and the exchange of overseas primary products for British manufactures was to be the foundation of our international economy.

While the stream of international exchanges swelled, sometime in the second third of the eighteenth century a general quickening of the domestic economies became noticeable. This was not a specifically British phenomenon, but one which occurred very generally, and is registered in the movements of prices (which began a long period of slow inflation, after a century of fluctuating and indeterminate movement), in what little we know about population, production and in other ways. The Industrial Revolution was generated in these decades—after the 1740s, when this massive but slow growth in the domestic economies combined with the rapid—after 1750 extremely rapid—expansion of the international economy; and it occurred in the country which seized its international opportunities to corner a major share of the overseas markets.
3  
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1780–1840

Whoever says Industrial Revolution says cotton. When we think of it we see, like the contemporary foreign visitors to England, the new and revolutionary city of Manchester, which multiplied tenfold in size between 1760 and 1830 (from 17,000 to 180,000 inhabitants), where ‘we observe hundreds of five- and six-storied factories, each with a towering chimney by its side, which exhales black coal vapour’, which proverbially thought today what England would think tomorrow, and gave its name to the school of liberal economics that dominated the world. And there can be no doubt that this perspective is right. The British Industrial Revolution was by no means only cotton, or Lancashire or even textiles, and cotton lost its primacy within it after a couple of generations. Yet cotton was the pacemaker of industrial change, and the basis of the first regions which could not have existed but for industrialization, and which expressed a new form of society, industrial capitalism, based on a new form of production, the ‘factory’. Other towns were smoky and filled with steam-engines in 1830, though not to anything like the same extent as the cotton towns – in 1838 Manchester and Salford possessed almost three times as much steampower as Birmingham – but they were not towns dominated by factories until the second half of the century, if then. Other industrial regions possessed large-scale enterprises operated by proletarian masses, and surrounded by impressive machinery, like coal-mines and ironworks, but their often isolated or rural location, the traditional background of their labour force and its different social environment made them somehow less typical of the new era, except in their capacity to transform buildings and landscapes into an unprecedented scene of fire, slag and iron structures. The miners were – and have largely remained – villagers, and their ways of life and struggle were strange to the non-miners with whom they had little contact. The iron-masters might, like the Crawshays of Cyfartha, demand – and often receive – political loyalty from ‘their’ men which recalls the relation between squires and the farming population rather than between industrial employers and their operatives. The new world of industrialism in its most obvious form was not to be seen there, but in and around Manchester.

The cotton manufacture was a typical by-product of that accelerating current of international and especially colonial commerce without which, as we have seen, the Industrial Revolution cannot be explained. Its raw material, first used in Europe mixed with linen to produce a cheaper version of that textile (‘fustian’), was almost entirely colonial. The only pure cotton industry known to Europe in the early eighteenth century was that of India, whose products (‘calicoes’) the Eastern trading companies sold abroad and at home, where they were bitterly opposed by the domestic manufacturers of wool, linen and silk. The English woollen industry succeeded in 1700 in banning their import altogether, thus accidentally succeeding in giving the domestic cotton manufacturers of the future something like a free run of the home market. They were as yet too backward to supply it, though the first form of the modern cotton industry, calico-printing, established itself as a partial import substitution in several European countries. Modest local manufacturers established themselves in the hinterland of the great colonial and slave-trading ports, Bristol, and even more Glasgow and Liverpool, though the new industry was finally localized near the last of these. For the home market it produced a substitute for linen or wool and silk hosiery; for the foreign market, so far as it could, a substitute for the superior Indian goods, particularly when wars or other crises temporarily disrupted the Indian supply to export markets. Until 1770 over ninety per cent of British cotton exports went to colonial markets in this way, mainly to Africa. The vast expansion of exports after 1750 gave the industry its

*The respective populations of the two urban areas in 1841 were about 280 and 180 thousand.
impetus: between then and 1770 cotton exports multiplied ten times over.

Cotton thus acquired its characteristic link with the underdeveloped world, which it retained and strengthened through all the various fluctuations of fortune. The slave plantations of the West Indies provided its raw material until in the 1790s it acquired a new and virtually unlimited source in the slave plantations of the southern USA, which therefore became in the main a dependent economy of Lancashire. The most modern centre of production thus preserved and extended the most primitive form of exploitation. From time to time the industry had to fall back on the British domestic market, where it increasingly substituted for linen, but from the 1790s on it always exported the greater part of its output; towards the end of the nineteenth century something like ninety per cent of it. Cotton was and remained essentially an export industry. From time to time it broke into the rewarding markets of Europe and the USA, but wars and the rise of native competition, put a brake on such expansion and the industry returned, time and again, to some old or new region of the undeveloped world. After the middle of the nineteenth century it found its staple outlet in India and the Far East. The British cotton industry was certainly in its time the best in the world, but it ended as it had begun by relying not on its competitive superiority but on a monopoly of the colonial and underdeveloped markets which the British Empire, the British Navy and British commercial supremacy gave it. Its days were numbered after the First World War, when the Indians, Chinese and Japanese manufactured or even exported their own cotton goods and could no longer be prevented from doing so by British political interference.

As every schoolchild knows, the technical problem which determined the nature of mechanization in the cotton industry was the imbalance between the efficiency of spinning and weaving. The spinning wheel, a much less productive device than the hand-loom (especially as speeded up by the ‘flying shuttle’ which was invented in the 1730s and spread in the 1760s), could not supply the weavers fast enough. Three familiar inventions tipped the balance: the ‘spinning jenny’ of the 1760s, which enabled one cottage spinner to spin several threads at once; the ‘water frame’ of 1768, which used the original idea of spinning by a combination of rollers and spindles; and the fusion of the two, the ‘mule’ of the 1780s,* to which steam power was soon applied. The last two innovations implied factory production. The cotton factories of the Industrial Revolution were essentially spinning-mills (and establishments for carding the cotton preparatory to spinning it).

Weaving kept pace with these innovations by a multiplication of hand-loom and manual weavers. Though a power-loom had also been invented in the 1780s, this branch of manufacture was not mechanized on any scale until after the Napoleonic Wars. Thereafter the weavers who had been attracted into the industry before were eliminated from it by the simple device of starvation, and replaced by women and children in factories. In the meantime their starvation wages delayed the mechanization of weaving. The years from 1815 to the 1840s therefore saw the spread of factory production throughout the industry, and its perfection by the introduction of ‘self-acting’ devices in the 1820s and other improvements. However, there was no further technical revolution. The ‘mule’ remained the basis of British spinning, and ‘ring-spinning’ (invented in the 1840s and general today) was left to the foreigners. The power-loom dominated weaving. The overwhelming world predominance which Lancashire had established by this time had begun to make it technically conservative, though not stagnant.

The technology of cotton manufacture was thus fairly simple, and so, as we shall see, was that of most of the rest of the changes which collectively made up the ‘Industrial Revolution’. It required little scientific knowledge or technical skill beyond the scope of a practical mechanic of the early eighteenth century. It hardly even required steam power, for though cotton adopted the new steam engine rapidly, and to a greater extent than other industries (except mining and metallurgy), as late as 1838 one quarter of its power was still provided by water. This does not

*It was not the original idea of its patentee, Richard Arkwright (1732–92), an entrepreneur who — unlike most real inventors of the period — became very rich.
reflect either a shortage of scientific innovation or a lack of interest by the new industrialists in technical revolution. On the contrary, scientific innovation abounded, and was readily applied to practical matters by scientists who still refused to make the subsequent distinction between 'pure' and 'applied' thought. And industrialists absorbed these innovations with great speed, where necessary or advantageous, and above all, applied a rigorous rationalism to their methods of production such as is highly characteristic of a scientific age. Cotton-masters soon learned to build in a purely functional way ('often', as a foreign observer out of tune with modernity said, 'at the cost of external beauty'), and from 1805 lengthened the working day by illuminating their factories with gas. Yet the first experiments in gaslighting went no farther back than 1792. They immediately bleached and dyed textiles by the most recent inventions of chemistry, a science which can be said to have come of age in the 1770s and 1780s, with the Industrial Revolution. Yet the chemical industry which flourished in Scotland by 1800 on this basis went back to the suggestion, made as recently as 1786 by Berthollet to James Watt, that chlorine could be used for bleaching.

The early Industrial Revolution was technically rather primitive not because no better science and technology were available, or because men took no interest in it or could not be persuaded to use it. It was simple because, by and large, the application of simple ideas and devices, often of ideas available for centuries, often by no means expensive, could produce striking results. The novelty lay not in the innovations, but in the readiness of practical men to put their minds to using the science and technology which had long been available and within reach; and in the wide market which lay open to goods as prices and costs fell rapidly. It lay not in the flowering of individual inventive genius, but in the practical situation which turned men's thoughts to soluble problems.

This situation was very fortunate, for it gave the pioneer Industrial Revolution an immense, perhaps an essential, push forward. It put it within the reach of an enterprising, not particularly well-educated or subtle, not particularly wealthy body of businessmen and skilled artisans, operating in a flourishing and expanding economy whose opportunities they could easily seize. In other words, it minimized the basic requirements of skills, of capital, of large-scale business or government organization and planning, without which no industrialization can succeed. Let us consider, by way of contrast, the situation in the so-called 'Third World' country of the twentieth century which sets about its own industrial revolution. The most elementary steps forward — say, the construction of an adequate air transport system — assume a command of science and technology which is centuries removed from the skills familiar to more than a tiny fraction of the population until yesterday. The most characteristic kinds of modern production — say, the manufacture of motor-vehicles — are of a size and complexity which put them beyond the experience of most of the small class of local businessmen who may have hitherto emerged, and require a quantity of initial capital investment far beyond their independent powers of capital accumulation. Even the minor skills and habits whose existence we take for granted in developed societies, but whose absence would totally disrupt them, are scarce as rubies: literacy, a sense of punctuality and regularity, the conduct of routines. To take a simple example: it was still possible in the eighteenth century to develop a coal-mining industry by digging relatively shallow shafts and lateral galleries, putting men at the end with picks and transporting the coal back to the surface by hauling small carts manually or by ponies and raising the mineral in baskets. It would be utterly impossible to develop oilwells in any comparable way today, at all events in competition with the giant and sophisticated international petroleum industry.

Similarly, the crucial problem of the backward country's economic development today is, more often than not, the one expressed in the phrase of the late J. V. Stalin, who had plenty of experience of it: 'Cadres decide everything.' It is a great deal easier to find the capital for the construction of a modern industry than to run it; much easier to staff a central planning commission.

* I am not implying that this did not require a great deal of accumulated know-how, and some quite elaborate techniques, or that the British coal industry did not possess or develop more sophisticated and powerful equipment, such as the steam engine.
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with the handful of Ph.D.s which most countries can supply, than to acquire the mass of persons with intermediate skills, technical and administrative competence and so on without whom any modern economy risks grinding into inefficiency. Successfully industrializing backward economies have also been the ones which have found ways of rapidly multiplying such cadres, and of using them in the context of a general population still lacking the skills and habits of modern industry. They have found the history of British industrialization irrelevant to their needs in this respect, simply because Britain hardly faced this problem. At no stage, for instance, did this country visibly suffer from a shortage of men competent to work metals, and as the British usage of the word ‘engineer’ indicates, the higher grades of technology could be readily recruited from among the men with practical workshop experience. Britain could even manage to do without a system of state elementary education until 1870, of state secondary education until after 1902.

The British way can best be illustrated by an example. The greatest of the early cotton industrialists was Sir Robert Peel (1790–1830), a man who at his death left almost one and a half million pounds—a vast sum for those days—and a son just about to become Prime Minister of Britain. The Peels were a family of yeoman peasants of middling status who, like others in the Lancashire hills, combined farming and domestic textile production, at any rate from the mid-seventeenth century. Sir Robert’s father (1723–95) still hawked his goods about the countryside, moved into the town of Blackburn only in 1750, and even then had not yet quite abandoned farming. He had some—non-technical—education, some gift for simple design and invention (or at least the sense to appreciate the inventions of such men as his fellow-townsmen James Hargreaves, weaver, carpenter and inventor of the ‘spinning-jenny’), and perhaps £2,000–£4,000’s worth in land, which he mortgaged in the early 1760s when he formed a calico-printing firm with his brother-in-law Haworth and one Yates, who brought into it the

*It stands both for the skilled metal-worker and the specialized higher technologist, such as the ‘civil’ or ‘electrical’ engineer.

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accumulated savings of his family’s innkeeping business at the Black Bull. The family had experience: several members of it were in textiles, and the prospects for calico-printing, hitherto mainly a London speciality, seemed excellent. They were. Three years later—in the middle 1760s—its demand for cotton to print was such that the firm went into the manufacture of cloth itself; a fact which, as a local historian was to observe, ‘affords proof of the facility with which money was then made’. The business prospered and divided: Peel remained in Blackburn, while his two partners moved to Bury, where they were joined in partnership in 1772 by the future Sir Robert with some initial but little subsequent backing from his father.

There was little need for it. Young Peel, an entrepreneur of remarkable energy, had no difficulty in raising additional capital by taking in partners from among local men anxious to invest in the growing industry, or merely useful in establishing the firm in new towns and branches of activity. Since the printing side of the firm alone was to make steady profits of £70,000 a year for long periods, there was no capital shortage. By the middle 1780s it was a very substantial business indeed, easily capable of adopting any useful and profitable new devices that were available, such as steam engines. By 1790—at the age of forty and a mere eighteen years after entering business himself—Robert Peel was a baronet, a member of Parliament and the acknowledged representative of a new class, the industrialists. He differed from other hard-headed Lancashire entrepreneurs of his kind, including several of his partners, chiefly in not retiring into a comfortable affluence—which he might easily have done by the middle 1780s—but rising to even dizzier heights as a captain of industry. Given a modest base of business acumen and energy,

*He was a favourable specimen of a class of men, who, availing themselves in Lancashire of the discoveries of other heads and of their own, and profiting by the peculiar local facilities for making and printing cotton goods as well as the wants and demands, which, half a century and more ago, manifested themselves for the articles manufactured, succeeded in realizing great opulence, without possessing either refinement of manners, culture of intellect, or more than commonplace knowledge. P. A. Whittle, Blackburn As It Is (Preston, 1853), p. 262.
any member of the Lancashire rural middle class going into the cotton business when Peel did could hardly have helped making a very great deal of money very quickly. It is perhaps characteristic of the essentially simple approach to the business that for many years after the firm began printing calicoes it contained no ‘drawing shop’, that is it made only the most primitive provision for designing the patterns on which its fortunes were based. The truth was that at this stage practically anything sold, especially to the unsophisticated customer at home and abroad.

A new industrial system based on a new technology thus emerged with remarkable speed and ease among the rainy farms and villages of Lancashire. But it emerged, as we have seen, by a combination of the novel and the old-established. The new prevailed over the old. Capital accumulated within industry replaced the mortgages of farms and the savings of innkeepers, engineers the inventive weavers-cum-carpenters, power-looms the hand-weavers, and a factory proletariat the combination of a few mechanized establishments with a mass of dependent domestic workers. In the decades which followed the Napoleonic Wars the old elements in the new industrialism gradually receded, and modern industry, from being the achievement of a pioneering minority, became the norm of Lancashire life. The number of power-looms in England rose from 2,400 in 1813 to 55,000 in 1820, 85,000 in 1833 and 224,000 in 1850, while the number of hand-loom weavers, still rising to a maximum of about a quarter of a million in the 1820s, fell to just over 100,000 by the early 1840s, to little more than 50,000 starving wretches by the middle 1850s. Yet it is unwise to neglect the relative primitiveness of even this second phase of the transformation and the heritage of archaism it left behind.

Two consequences of it may be mentioned. The first is the extremely decentralized and disintegrated business structure of the cotton industry, as indeed of most other British nineteenth-century industries, the product of its emergence from the unplanned activities of small men. It emerged as, and it largely remained, a complex of highly specialized firms of medium size (often highly localized) – merchants of various kinds, spinners, weavers, dyers, finishers, bleachers, printers, and so on, often specialized even within their branches, linked with each other by a complex web of individual business transactions in ‘the market’. Such a form of business structure has the advantage of flexibility and lends itself readily to rapid initial expansion, but at later stages of industrial development, when the technical and economic advantages of planning and integration are far greater, develops considerable rigidities and inefficiencies. The second consequence was the development of a strong trade-union movement in an industry normally characterized by extremely weak or unstable labour organization, because it was working with a labour force consisting largely of women and children, unskilled immigrants, and so on. The Lancashire cotton industry’s unions were based on a minority of skilled male mule spinners, who were not, or could not be, dislodged from their strong bargaining position by more advanced stages of mechanization – attempts to do so in the 1830s failed – and who eventually succeeded in organizing the unskilled majority which surrounded them in subordinate unions largely because it was composed of their wives and children. Cotton thus developed as a factory industry organized by something like the methods of craft unionism, and these methods succeeded because in its crucial phase of development it was a very archaic kind of factory industry.

Nevertheless it was, by the standards of the eighteenth century, revolutionary. When all allowances for its transitional characteristics and continued archaism have been made, that fact must never be forgotten. It represented a new economic relationship between men, a new system of production, a new rhythm of life, a new society, a new historical era, and contemporaries were aware of it almost from the start:

As in a sudden flood, medieval constitutions and limitations upon industry disappeared, and statesmen marvelled at the grandiose phenomenon which they could neither grasp nor follow. The machine obediently served the spirit of man. Yet as machinery dwarfed human strength, capital triumphed over labour and created a new form of serfdom... Mechanization and the incredibly elaborate division of labour diminish the strength and intelligence which is required among the masses, and competition depresses their wages to the minimum of a bare subsistence. In times of those crises of glutted markets, which
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occur at periods of diminishing length, wages fall below this subsistence minimum. Often work ceases altogether for some time . . . and a mass of miserable humanity is exposed to hunger and all the tortures of want.

The words – curiously similar to those of social revolutionaries like Frederick Engels – are those of a German liberal businessman writing in the early 1840s. But even a generation earlier another industrialist – Robert Owen, himself a cotton-master – had underlined the revolutionary character of the change in his Observations on the Effect of the Manufacturing System (1815):

The general diffusion of manufactures throughout a country generates a new character in its inhabitants; and as this character is formed upon a principle quite unfavourable to the individual or general happiness, it will produce the most lamentable and permanent evils, unless its tendency is counteracted by legislative interference and direction. The manufacturing system has already so far extended its influence over the British Empire as to effect an essential change in the general character of the mass of the people.

The new system which contemporaries saw exemplified above all in Lancashire, consisted, so it seemed to them, of three elements. The first was the division of the industrial population into capitalist employers and workers who owned nothing but their power to labour, which they sold for wages. The second was production in the ‘factory’, a combination of specialized machines with specialized human labour, or, as its early theorist Dr Andrew Ure called it, ‘a vast automaton composed of various mechanical and intellectual organs, acting in uninterrupted concert . . . all of them being subordinate to a self-regulating moving force’. The third was the domination of the entire economy – indeed of all life – by the capitalists’ pursuit and accumulation of profit. Some of them – those who saw nothing fundamentally wrong with the new system – did not care to distinguish between its social and its technical aspects. Others – those who were pressed into the new system against their will and got nothing from it but pauperization, like that third of the population of Blackburn in 1833 which lived on a family income of 9s. 2d. a week (or an average sum of about 1s. 8d. per person) – were tempted to reject both altogether. A third group – Robert Owen was its first major spokesman – separated industrialism from capitalism. It accepted the Industrial Revolution and technical progress as the bringers of potential knowledge and plenty for all. It rejected its capitalist form as the bringer of actual exploitation and pauperism.

It is, as usual, easy to criticize the contemporary view in detail, because the structure of industrialism was by no means ‘modern’ as it suggests even on the eve of the railway era, let alone in the year of Waterloo. Neither the ‘capitalist employer’ nor the ‘proletarian’ were at all common in the pure state. There were plenty in ‘the middle rank of society’ (it only came to call itself a middle class in the course of the first third of the nineteenth century) ready to make profits, but only a minority ready to apply to profit-making the full, ruthless logic of technical progress and the commandment to ‘buy in the cheapest market and sell in the dearest’. There were plenty of men and women who lived only by wage-work, though a great many who were still degenerate versions of formerly independent craftsmen, smallholders seeking spare-time employment, part-time petty entrepreneurs and so on. But there were few genuine factory operatives. Between 1778 and 1830, time and again there were revolts against the extension of machinery. That these revolts were often supported and sometimes actually instigated by local businessmen and farmers shows how limited the ‘modern’ sector of the economy still was, for those within it tended to accept, if not to welcome, the machine. It was those not yet within it who tried to hold it up. That, on the whole, they failed shows on the other hand that the ‘modern’ sector had become dominant in the economy.

Again, we had to wait for the technology of the mid twentieth century to make possible the semi-automation or automation in factory production which the ‘steam intellect’ philosophers of the

* A singular estimate was taken in 1833, respecting the income of families, which is as follows: the total income of 1,778 families (all working people) in Blackburn, comprising 9,779 individuals, amounted to only £828 19s. 7d. P. A. Whittle, Blackburn As It Is (Preston, 1852), p. 223. See also Chapter 4 below.
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first half of the nineteenth century anticipated with so much satisfaction, and which they discerned in the very imperfect and archaic cotton-mills of their time. Before the coming of the railways there was probably no enterprise except perhaps the occasional gasworks or chemical plant which a modern production engineer would regard as having anything but archaeological interest. Yet the fact that the cotton-mills inspired such visions of working men narrowed and dehumanized into ‘operatives’ or ‘hands’ before being dispensed with altogether by completely ‘self-acting’ (automated) machinery is equally significant. The ‘factory’ with its logical flow of processes, each a specialized machine tended by a specialized ‘hand’, all linked together by the inhuman and constant pace of the ‘engine’ and the discipline of mechanization, gas-lit, iron-ribbed and smoking, was a revolutionary form of work. Though factory wages tended to be higher than those in domestic industries (other than those of highly skilled and versatile manual workers), workers were reluctant to enter them, because in doing so men lost their birthright, independence. Indeed this is one reason why they were filled, where possible, with the more tractable women and children: in 1838 only twenty-three per cent of textile factory workers were adult men.

No other industry could compare in importance with cotton in this first phase of British industrialization. Its share of the national income was perhaps not impressive in quantity — perhaps seven or eight per cent towards the end of the Napoleonic Wars — though it was larger than that of other industries. But it began to expand earlier and to grow faster than the rest, and in a sense its pace measured that of the economy. * When cotton expanded at the remarkable rate of six to seven per cent per annum, in the twenty-five years following Waterloo, British industrial expansion was at its height. When cotton ceased to expand — as in the last quarter of the nineteenth century, when its rate of growth sank to 0.7 per cent per annum — all British industry sagged. Also unique was its huge contribution to Britain’s international economy. Broadly speaking, in the post-Napoleonic decades something like one half of the value of all British exports consisted of cotton products, and at their peak (in the middle of the 1830s) raw cotton made up twenty per cent of total net imports. In a real sense the British balance of payments depended on the fortunes of this single industry, and so did much of Britain’s shipping and overseas trade in general. Thirdly, it almost certainly contributed more to the accumulation of capital than other industries, if only because rapid mechanization and the massive use of cheap (women’s and juveniles’) labour permitted a very successful diversion of income from labour to capital. In the twenty-five years following 1820 the net output of the industry grew by about forty per cent (in current values), its wage bill by only about five per cent.

That it stimulated industrialization and technical revolution in general need hardly be pointed out. Both the chemical industry and the engineering industry owed much to it: by 1830 only the Londoners contested the superiority of the Lancashire machine-makers. Yet in this respect, it was not unique, and it lacked the direct capacity to stimulate what, as analysts of industrialization, we know needed stimulation most, namely the heavy capital goods industries of coal, iron and steel, for which it provided no outstandingly great market. Fortunately the general process of urbanization provided a substantial stimulus for coal in the early nineteenth century as in the eighteenth. As late as 1842 the smoky fireplace of British homes still consumed two thirds of Britain’s domestic coal supplies, which then stood at about thirty million tons, or perhaps two thirds of the entire output of the Western world. The actual production of coal remained primitive. A squatting man hacking with a pick in an underground passage was its foundation. But the sheer bulk of coal output forced mining to pioneer technical change — to pump the

*Rate of growth of U.K. industrial production (percentage increase per decade)

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<td>1870 to 1880</td>
<td>20.8</td>
</tr>
<tr>
<td>1880 to 1890</td>
<td>17.4</td>
</tr>
<tr>
<td>1890 to 1900</td>
<td>17.9</td>
</tr>
</tbody>
</table>

The drop in the 1850s-60s is due in large part to the ‘Cotton Famine’ which resulted from the American Civil War.
Industry and Empire

increasingly deeper mines and above all to transport the mineral from the coal face to pithead and thence to ports and markets. Mining thus pioneered the steam engine long before James Watt, employed its improved versions for winding gear from the 1790s, and above all invented and developed the railway. It was no accident that the constructors, engineers and drivers of the early railways so often came from Tyneside: beginning with George Stephenson. The steam ship, however, whose development predated the railway, though its general use came later, owed nothing to the mines.

Iron faced greater difficulties. Before the Industrial Revolution Britain produced it neither in large quantity nor in outstanding quality, and even in the 1780s the total demand for it would hardly have exceeded 100,000 tons.* War in general and the Navy in particular gave the iron industry constant encouragement and an intermittent market; fuel economy gave it a permanent incentive to technical improvement. For these reasons — until the railway age — the industry's iron capacity tended to run ahead of the market, and its rapid spurts were followed by dragging depressions which the iron-masters sought to solve by a desperate search for new uses for their metal, and to palliate by price-cartels and cuts in output (steel remained virtually unaffected by the Industrial Revolution). Three major innovations raised its capacity: the smelting of iron with coke (instead of charcoal), the inventions of puddling and rolling, both of which came into wider use in the 1780s, and James Neilson's 'hot blast' after 1829. They also shifted the location of the industry firmly to the coalfields. After the Napoleonic Wars, when industrialization began to develop in other countries, iron acquired an important export market: between fifteen and twenty per cent of output could already be sold abroad. British industrialization produced a miscellaneous domestic demand for the metal, not only for machines and tools, but also for bridges, pipes, building material and domestic utensils, but even so total output remained much below what we would today consider necessary for an industrial

*But British per capita consumption was far higher than that of other comparable countries; for example it was about three and a half times as large as French consumption in 1720–40.

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economy, especially if we bear in mind that non-ferrous metals were then of rather small importance. It probably never reached half a million tons before the 1820s, and barely 700,000 tons at its pre-railway peak in 1828.

Iron stimulated not only all iron-consuming industries but also coal (of which it consumed about one quarter in 1842), the steam engine, and — for the same reasons as coal — transport. Nevertheless, like coal, it did not undergo its real industrial revolution until the middle decades of the nineteenth century, or about fifty years later than cotton; for while consumer goods industries possess a mass market even in pre-industrial economies, capital goods industries acquire such a market only in already industrializing or industrialized ones. It was the age of the railway which trebled the production of coal and iron in twenty years and virtually created a steel industry.*

There was obvious and striking economic growth and some industrial transformation elsewhere, but hardly as yet an industrial revolution. A large number of industries — such as those producing clothing (except hosiery), footwear, building and household furniture — continued to work in entirely traditional ways, except for the use of novel materials here and there. At most they tried to meet the vastly expanded demand by the extension of something like the 'domestic system', which turned independent artisans into impoverished and increasingly specialized sweated labour in urban cellars and garret workshops. Industrialism produced not furniture and clothing factories, but skilled and organized cabinet-makers declining into slum-workers, and those armies of starving and tuberculous seamstresses and shirtmakers which touched the hearts of middle-class opinion even in that extremely insensitive era.

Other industries applied some elementary mechanization and power — including steam power — to the small workshop, notably in the multitude of metal-using industries so characteristic of

<table>
<thead>
<tr>
<th>Year</th>
<th>Coal (thousand tons)</th>
<th>Iron (thousand tons)</th>
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<tbody>
<tr>
<td>1830</td>
<td>16,000</td>
<td>680</td>
</tr>
<tr>
<td>1850</td>
<td>49,000</td>
<td>2,250</td>
</tr>
</tbody>
</table>
Sheffield and the Midlands, but without changing the character of their craft, or domestic production. Some of these complexes of small interlocking workshops were urban, as in Sheffield and Birmingham, some rural, as in the lost villages of the ‘Black Country’; some of their workers were skilled, organized, almost guild−proud journeymen craftsmen (like the cutlery trades in Sheffield).\* others increasingly degenerated into barbarized and murderous villages of men and women hammering out nails, chains and other simple metal goods. (In Dudley, Worcestershire, the average expectation of life at birth in 1841−50 was eighteen and a half years.) Yet others, like the pottery trades, developed something closer to a primitive factory system, or rather comparatively large-scale establishments based on an elaborate internal division of labour. On the whole, however, except for cotton, and the large-scale establishments characteristic of iron and coal, the development of production in mechanized factories, or in analogous establishments, had to wait until the second half of the nineteenth century, and the average size of plant or enterprise was small. Even in 1851, 1,670 cotton-masters included a considerably greater number of establishments employing a hundred or more men than the total put together of all the 41,000 tailors, shoemakers, engine- and machine-makers, builders, wheelwrights, tanners, woollen and worsted manufacturers, silk manufacturers, millers, lace manufacturers and earthenware manufacturers who reported the size of their establishments to the Census.

Yet an industrialization thus limited, and based essentially on one sector of the textile industry, was neither stable nor secure. We, who see the period from the 1780s to the 1840s in the light of later developments, see it simply as the initial phase of industrial capitalism. But might it not also be its final phase? The question seems absurd, because it so obviously was not. This is to underestimate the instability and tension of this initial phase – particularly of the three decades after Waterloo – and the malaise of both the economy and those who thought seriously

\*They were actually described as ‘guild−organized’ by a German visitor, who fancied that he recognized a familiar continental phenomenon there.
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per capita consumption of some goods of general use after the
1840s (during the ‘golden years’ of the Victorians) with the
stagnation in their consumption earlier. Thus the average Briton:
between 1815 and 1844 consumed less than 20 lb. of sugar per
year — in the 1830s and early forties nearer 16—17 lb.; but in the
ten years after 1844 his consumption rose to 34 lb. a year; in the
thirty years after 1844 to 53 lb., and by the 1880s he used between
80 and 90 lb. However, neither the economic theory nor the
economic practice of the early Industrial Revolution relied on
the purchasing power of the labouring population, whose wages,
it was generally assumed, would not be far removed from the
subsistence level. When by any chance some section of them:
earned enough to spend their money on the same sorts of goods
as their ‘betters’ (as happened from time to time during economic
booms), middle-class opinion deplored or ridiculed such pre-
sumptuous lack of thrift. The economic advantages of high:
wages, whether as incentives to higher productivity or as additions
to purchasing-power, were not discovered until after the middle
of the century, and then only by a minority of advanced and
enlightened employers like the railway contractor Thomas Bras-
sey. It was not until 1869 that John Stuart Mill, the guardian
of economic orthodoxy, abandoned the theory of the ‘Wages Fund’,
that is of what amounted to a subsistence theory of wages.*

Conversely, both economic theory and economic practice
stressed the crucial importance of capital accumulation by the
capitalist, that is of the maximum rate of profit and the maximum:
diversion of income from the (non-accumulating) workers to the
employers. Profits were what made the economy work and expand
by reinvestment. They must therefore be expanded at all costs.
This view rested on two assumptions: that industrial progress
required heavy investment and that insufficient savings were
available for it without holding down the incomes of the non-
capitalist masses. The first of these was truer in the long run
than in the short. The early phases of the Industrial Revolution:
say 1780—1815 were, as we have seen, limited and relatively

*Some economists, however, showed signs of dissatisfaction with this
theory from at least the 1830s.

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cheap. Gross capital formation may have amounted to no more
than seven per cent of the national income by the early nineteenth
century, which is below the rate of ten per cent which some
economists have taken as essential for industrialization today,
and far below the rates of up to thirty per cent which have
been encountered in rapid industrializations of emerging, or the
modernization of advanced, countries. Not until the 1830s and
1840s did gross capital formation in Britain pass the ten per cent
threshold, and by then the age of (cheap) industrialization based
on such things as textiles was giving way to the age of railways,
coal, iron and steel. The second assumption that wages must be
kept low was altogether wrong, but had some plausibility initially,
because the wealthiest classes and greatest potential investors in
this period — the great landlords, mercantile and financial interests
— did not invest to any substantial extent in the new industries.
Cotton-masters and other budding industrialists were therefore
left to scrape together a little initial capital and expand it by
ploughing back their profits, not because there was an absolute
capital shortage, but simply because they had little access to the
big money. By the 1830s, once again, there was no capital shortage
anywhere.*

Two things therefore worried the early-nineteenth-century
businessmen and economists: the rate of their profits and the
rate of expansion of their markets. Both gave cause for concern,
though we are today inclined to pay more attention to the second
than the first. With industrialization, production multiplied and
the prices of the finished goods fell dramatically. (Given the
acute competition between small and medium-sized producers,
they could rarely be kept up artificially by cartels or similar
arrangements to fix prices or restrict output.) The costs of
production did not, and most could not, be reduced at the
same rate. When the general economic climate changed from

*In Scotland, however, there was probably such a general shortage. This
is why the Scottish banking system developed joint-stock organization and
participation in industry far ahead of the English, for a poor country requires
some mechanism for concentrating the many driblets of savings into a
reservoir accessible to large-scale productive investment, whereas a rich
country can rely on the numerous local springs and rivers to supply it.
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one of long-term inflation of prices to one of deflation after the end of the wars, the pressure on profit-margins increased, for under inflation profits enjoy an extra boost* and under deflation a slight lag. Cotton was acutely aware of this compression of its profit-rate:

**COST AND SELLING PRICE OF 1 LB. OF SPUN COTTON**

<table>
<thead>
<tr>
<th>Year</th>
<th>Raw materials</th>
<th>Selling cost</th>
<th>Margin for other costs and profits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1784</td>
<td>2s.</td>
<td>10s.11d.</td>
<td>8s.11d.</td>
</tr>
<tr>
<td>1812</td>
<td>15.6d.</td>
<td>28.6d.</td>
<td>1s.</td>
</tr>
<tr>
<td>1832</td>
<td>7½d.</td>
<td>11½d.</td>
<td>3½d.</td>
</tr>
</tbody>
</table>

Of course a hundred times 4d. amounted to more money than a single nine shillings, but what if the rate of profit fell to zero, thus bringing the vehicle of economic expansion to a stop through the failure of its engine and creating that 'stationary state' which the economists dreaded?

Given a rapid expansion of markets, the prospect strikes us as unreal, as indeed it increasingly (perhaps from the 1830s) did the economists. But markets were not expanding fast enough to absorb production at the rate of growth to which the economy had got used. At home, as we can see, they were sluggish, and probably became even more sluggish in the hungry thirties and early forties. Abroad the developing countries were unwilling to import British textiles (and British protectionism made them even less willing), and the undeveloped ones, on which the cotton industry relied, were simply not big enough, or did not expand fast enough as markets to absorb British output. In the post-Napolonic decades the figures of the balance of payments show us the extraordinary spectacle of the only industrial economy in the world and the only serious exporter of manufactured goods unable to maintain an export surplus in its commodity trade (see Chapter 7). After 1826, indeed, the country had a deficit not only on trade but also on its services (shipping, insurance commissions, profits on foreign trade and banking, and so on).*

No period of British history has been as tense, as politically and socially disturbed, as the 1830s and early 1840s, when both the working class and the middle class, separately or in conjunction, demanded what they regarded as fundamental changes. From 1829 to 1832 their discontents fused in the demand for Parliamentary Reform, behind which the masses threw their riots and demonstrations, the businessmen the power of economic boycott. After 1832, when several of the demands of the middle-class radicals were met, the workers' movement fought and failed alone. From the crisis of 1837 on, middle-class agitation revived under the banner of the Anti-Corn-Law League, that of the labouring masses broadened out into the giant movement for the People's Charter, though the two now ran independently of and in opposition to each other. Yet both in their rival ways were prepared for extremes, especially during the worst of nineteenth-century depressions, 1841–2; Chartism for a general strike, the middle-class extremists for a national lock-out which would, by flooding the streets with starving labourers, force the government into action. Much of this tension of the period from 1829 to 1846 was due to this combination of working classes despairing because they had not enough to eat and manufacturers despairing because they genuinely believed the prevailing political and fiscal arrangements to be slowly throttling the economy. And they had cause for alarm. In the 1830s even the crudest accountants' criterion of economic progress, real income per head (which must not be confused with the average standard of living), was actually — and for the first time since 1700 — falling. If nothing was done, would not the capitalist economy break down? And might not, as observers increasingly began to fear around 1840 all over Europe, the impoverished, disinherited masses of the labouring poor revolt? As Marx and Engels rightly pointed out, in the 1840s the spectre of communism haunted Europe. If it

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*Since wages tend to lag behind prices, and in any case the price-level when goods were sold tended to be higher than it had been earlier, when they were produced.

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*To be more precise, this balance was slightly negative in 1826–30, positive 1831–5, and negative again in all the quinquennia from 1836 to 1855.
was relatively less feared in Britain, the spectre of economic breakdown was equally appalling to the middle class.

NOTES


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consists in the greatest such accumulation by the greatest number of individuals (which is not). Such questions are important but also misleading. Whether the Industrial Revolution gave most Britons absolutely or relatively more and better food, clothes and housing is naturally of interest to every historian. But he will miss much of its point if he forgets that it was not merely a process of addition and subtraction, but a fundamental social change. It transformed the lives of men beyond recognition. Or, to be more exact, in its initial stages it destroyed their old ways of living and left them free to discover or make for themselves new ones, if they could and knew how. But it rarely told them how to set about it.

There is, indeed, a relation between the Industrial Revolution as a provider of comforts and as a social transformer. Those classes whose lives were least transformed were also, normally, those which benefited most obviously in material terms (and vice versa), and their failure to grasp what was troubling the rest, or to do anything effective about it, was due not only to material but also to moral contentment. Nobody is more complacent than a well-off or successful man who is also at ease in a world which seems to have been constructed precisely with persons like him in mind.

The British aristocracy and gentry were thus very little affected by industrialization, except for the better. Their rents swelled with the demand for farm produce, the expansion of cities (whose soil they owned) and of mines, forges and railways (which were situated on their estates). And even when times were bad for agricultural, as between 1815 and the 1830s, they were unlikely to be reduced to penury. Their social predominance remained untouched, their political power in the countryside complete, and even in the nation not seriously troubled, though from the 1830s they had to consider the susceptibilities of a powerful and militant provincial middle class of businessmen. It may well be that after 1830 clouds began to appear on the pure sky of the gentlemanly life, but even they looked larger and darker than they were only because the first fifty years of industrialization had been so golden an era for the landed and titled Briton. If the eighteenth century was a glorious age for aristocracy, the era of George IV (as regent and king) was paradise. Their packs of hounds (the modern fox-hunting uniform still reflects its essentially Regency origins) criss-crossed the shires. Their pheasants, protected by spring-guns and keepers against all who had not the equivalent of £100 a year in rent, awaited the baize.

Their Palladian and neo-classical country houses multiplied, more than at any time before or since except the Elizabethan. Since their economics, unlike their social style, were already adjusted to the business methods of the middle class, the age of steam and counting-houses posed no great problems of spiritual adjustment, unless perhaps they belonged to the backwoods of the lesser squirearchy, or their income came from the cruel caricature of a rural economy which was Ireland. They did not have to stop being feudal, for they had long ceased to be so. At most some rude and ignorant baronet from the hinterland faced the novel need to send his son to a proper school (the new ‘public schools’ were constructed from the 1840s to civilize them as well as the rising businessmen’s offspring), or to adjust to more frequent spells of life in London.

Equally placid and prosperous were the lives of the numerous parasites of aristocratic society, high and low — that rural and small-town world of functionaries of and suppliers to the nobility and gentry, and the traditional, somnolent, corrupt and, as the Industrial Revolution proceeded, increasingly reactionary professions; and the metropolitan world of government patronage, sinecure jobbery and nepotism. What the radicals of the time attacked as ‘Old Corruption’ could generate quite dramatic wealth — the number of millionaire judges dropped sharply after it ended. The Church and the English universities slumbered on, cushioned by their incomes, their privileges and abuses, and their relations among the peerage, their corruption attacked with greater consistency in theory than in practice. The lawyers, and what passed for a civil service, were unreformed and unregenerate. Once again the old regime probably reached its peak in the decade after the Napoleonic Wars, after which a few waves began to form on the surface of the quiet backwaters of cathedral close, college, inns of court and the rest. From the 1830s on change came to them, though in a gentlemanly manner (except for the
savage and contemptuous, but not notably effective, attacks upon them by outsiders, of which Charles Dickens' novels are the most familiar example). But the respectable Victorian clergy of Trollope's Barchester, though very far from the Hogarthian hunting parson/magistrates of the Regency, were the product of a carefully moderate adjustment, not of disruption. Nobody was as tender of the susceptibilities of weavers and farm-labourers as of parsons and dons, when it came to introducing them into a new world.

One important effect of this continuity—part reflection of the established power of the old upper class, part deliberate unwillingness to exacerbate political tensions among the men of money or influence—was that the rising new business class found a firm pattern of life waiting for them. Success brought no uncertainty, so long as it was great enough to lift a man into the ranks of the upper class. He would become a 'gentleman', doubtless with a country house, perhaps eventually a knighthood or peerage, a seat in Parliament for himself or his Oxbridge-educated son, and a clear and prescribed social role. His wife would become a 'lady', instructed in her duties by a multitude of handbooks of etiquette which slid off the presses from the 1840s on. The older brand of businessman had long benefited from this process of assimilation, above all the merchant and financier—especially the merchant involved in overseas trade, who remained the most respected and most crucial form of entrepreneur long after the mills, factories and foundries covered the northern skies with smoke and fog. Probably this type of business, concentrated in London and described as 'the City', continued to generate the greatest accumulations of entrepreneurial wealth until the end of the nineteenth century. For the merchant the Industrial Revolution brought no major transformations, except perhaps in the commodities which he bought and sold. Indeed, as we have seen, it inserted itself into the powerful, world-wide and prosperous framework of trading which was the basis of British eighteenth-century power. Economically and socially their activities and status were familiar, whatever the rung on the ladder of success which they had climbed. By the Industrial Revolution the descendants of Abel

Smith, banker of Nottingham, were already established in country seats, sitting in Parliament and intermarried with the gentry (though not yet, as later, with royalty). The Glyns had already moved up from a dry-salting business in Hatton Garden to a similar position, the Barings had expanded from the West Country clothing manufacture into what was soon to become a great power in international trade and finance, and their social ascent had kept step with their economic. Peerages were already achieved or round the corner. Nothing was more natural than that other types of businessmen—like Robert Peel Sen., the cotton-master—should climb the same slope of wealth and public honour, at the peak of which there beckoned government, or even (as for Peel's son and the son of Gladstone, the Liverpool merchant) the post of Prime Minister. Indeed the so-called 'Peelite' group in Parliament in the second third of the nineteenth century represented very much this group of business families assimilated into a landed oligarchy, though at odds with it when the economic interests of land and business clashed.

However, absorption into an aristocratic oligarchy is, by definition, available only for a minority—in this instance of the exceptionally rich, or those in businesses which had acquired respectability through tradition.* The great mass of men, rising from modest, though rarely from really poverty-stricken, beginnings to business affluence, the even greater mass of those pressing below them out of the labouring poor into the middle classes, were too numerous to be absorbed, and in the early stages of their progress unconcerned about absorption (though their wives might often feel less neutral in the matter). They recognized themselves increasingly—and after 1830 generally—as a 'middle class', and not merely a 'middle rank' in society. They claimed rights and power as such. Moreover—especially when, as so often, they came from non-Anglican stock, and from regions lacking a solid aristocratic traditional structure—they did not possess emotional attachments to the old regime. Such were the pillars of the Anti-Corn Law League, rooted in the new business world of Manchester—Henry Ashworth, John Bright of Rochdale

*As, for instance, retail trade and certain kinds of industry had not.