INTRODUCTION

WORDS are witnesses which often speak louder than documents. Let us consider a few English words which were invented, or gained their modern meanings, substantially in the period of sixty years with which this volume deals. They are such words as 'industry', 'industrialist', 'factory', 'middle class', 'working class', 'capitalism' and 'socialism'. They include 'aristocracy' as well as 'railway', 'liberal' and 'conservative' as political terms, 'nationality', 'scientist' and 'engineer', 'proletariat' and (economic) 'crisis'. 'Utilitarian' and 'statistics', 'sociology' and several other names of modern sciences, 'journalism' and 'ideology', are all coinages or adaptations of this period.* So is 'strike' and 'pauperism'.

To imagine the modern world without these words (i.e. without the things and concepts for which they provide names) is to measure the profundity of the revolution which broke out between 1789 and 1848, and forms the greatest transformation in human history since the remote times when men invented agriculture and metallurgy, writing, the city and the state. This revolution has transformed, and continues to transform, the entire world. But in considering it we must distinguish carefully between its long-range results, which cannot be confined to any social framework, political organization, or distribution of international power and resources, and its early and decisive phase, which was closely tied to a specific social and international situation. The great revolution of 1789–1848 was the triumph not of 'industry' as such, but of *capitalist* industry; not of liberty and equality in general but of *middle class* or '*bourgeois*' *liberal* society; not of 'the modern economy' or 'the modern state', but of the economies and states in a particular geographical region of the world (part of Europe and a few patches of North America), whose centre was the neighbouring and rival states of Great Britain and France. The transformation of 1789–1848 is

* Most of these either have international currency, or were fairly literally translated into various languages. Thus 'socialism' or 'journalism' are fairly international, while the combination 'iron road' is the basis of the name of the railway everywhere except in its country of origin.

essentially the twin upheaval which took place in those two countries, and was propagated thence across the entire world.

But it is not unreasonable to regard this dual revolution—the rather more political French and the industrial (British) revolution—not so much as something which belongs to the history of the two countries which were its chief carriers and symbols, but as the twin crater of a rather larger regional volcano. That the simultaneous eruptions should occur in France and Britain, and have slightly differing characters, is neither accidental nor uninteresting. But from the point of view of the historian of, let us say, AD 3000, as from the point of view of the Chinese or African observer, it is more relevant to note that they occurred somewhere or other in North-western Europe and its overseas prolongations, and that they could not with any probability have been expected to occur at this time in any other part of the world. It is equally relevant to note that they are at this period almost inconceivable in any form other than the triumph of a bourgeois-liberal capitalism.

It is evident that so profound a transformation cannot be understood without going back very much further in history than 1789, or even than the decades which immediately preceded it and clearly reflect (at least in retrospect), the crisis of the *ancien régimes* of the North-western world, which the dual revolution was to sweep away. Whether or not we regard the American Revolution of 1776 as an eruption of equal significance to the Anglo-French ones, or merely as their most important immediate precursor and stimulator; whether or not we attach fundamental importance to the constitutional crises and economic reshuffles and stirrings of 1760–89, they can clearly explain at most the occasion and timing of the great breakthrough and not its fundamental causes. How far back into history the analyst should go—whether to the mid-seventeenth century English Revolution, to the Reformation and the beginning of European military world conquest and colonial exploitation in the early sixteenth century, or even earlier, is for our purposes irrelevant, for such analysis in depth would take us far beyond the chronological boundaries of this volume.

Here we need merely observe that the social and economic forces, the political and intellectual tools of this transformation were already prepared, at all events in a part of Europe sufficiently large to revolutionize the rest. Our problem is not to trace the emergence of a world market, of a sufficiently active class of private entrepreneurs, or even (in England) of a state dedicated to the proposition that the maximization of private profit was the foundation of government policy. Nor is it to trace the evolution of the technology, the scientific knowledge, or the

ideology of an individualist, secularist, rationalist belief in progress. By the 1780s we can take the existence of all these for granted, though we cannot yet assume that they were sufficiently powerful or widespread. On the contrary, we must, if anything, safeguard against the temptation to overlook the novelty of the dual revolution because of the familiarity of its outward costume, the undeniable fact that Robespierre's and Saint-Just's clothes, manners and prose would not have been out of place in a drawing-room of the *ancien régime*, that the Jeremy Bentham whose reforming ideas expressed the bourgeois Britain of the 1830s was the very man who had proposed the same ideas to Catherine the Great of Russia, and that the most extreme statements of middle class political economy came from members of the eighteenth-century British House of Lords.

Our problem is thus to explain not the existence of these elements of a new economy and society, but their triumph; to trace not the progress of their gradual sapping and mining in previous centuries, but their decisive conquest of the fortress. And it is also to trace the profound changes which this sudden triumph brought within the countries most immediately affected by it, and within the rest of the world which was now thrown open to the full explosive impact of the new forces, the 'conquering bourgeois', to quote the title of a recent world history of this period.

Inevitably, since the dual revolution occurred in one part of Europe, and its most obvious and immediate effects were most evident there, the history with which this volume deals is mainly regional. Inevitably also, since the world revolution spread outwards from the double crater of England and France it initially took the form of a European expansion in and conquest of the rest of the world. Indeed its most striking consequence for world history was to establish a domination of the globe by a few western régimes (and especially by the British) which has no parallel in history. Before the merchants, the steam-engines, the ships and the guns of the west—and before its ideas—the age-old civilizations and empires of the world capitulated and collapsed. India became a province administered by British pro-consuls, the Islamic states were convulsed by crisis, Africa lay open to direct conquest. Even the great Chinese Empire was forced in 1839–42 to open its frontiers to western exploitation. By 1848 nothing stood in the way of western conquest of any territory that western governments or businessmen might find it to their advantage to occupy, just as nothing but time stood in the way of the progress of western capitalist enterprise.

And yet the history of the dual revolution is not merely one of the triumph of the new bourgeois society. It is also the history of the emergence

of the forces which were, within a century of 1848, to have turned expansion into contraction. What is more, by 1848 this extraordinary future reversal of fortunes was already to some extent visible. Admittedly, the world-wide revolt against the west, which dominates the middle of the twentieth century, was as yet barely discernible. Only in the Islamic world can we observe the first stages of that process by which those conquered by the west have adopted its ideas and techniques to turn the tables on it: in the beginnings of internal westernizing reform within the Turkish empire in the 1830s, and above all in the neglected and significant career of Mohammed Ali of Egypt. But within Europe the forces and ideas which envisaged the supersession of the triumphant new society, were already emerging. The 'spectre of communism' already haunted Europe by 1848. It was exorcized in 1848. For a long time thereafter it was to remain as powerless as spectres in fact are, especially in the western world most immediately transformed by the dual revolution. But if we look round the world of the 1960s we shall not be tempted to underestimate the historic force of the revolutionary socialist and communist ideology born out of reaction against the dual revolution, and which had by 1848 found its first classic formulation. The historic period which begins with the construction of the first factory system of the modern world in Lancashire and the French Revolution of 1789 ends with the construction of its first railway network and the publication of the Communist Manifesto.

Part I

DEVELOPMENTS

CHAPTER 1

THE WORLD IN THE 1780s

Le dix-huitième siècle doit être mis au Panthéon.—Saint-Just[1]

I

THE first thing to observe about the world of the 1780s is that it was at once much smaller and much larger than ours. It was smaller geographically, because even the best-educated and best-informed men then living—let us say a man like the scientist and traveller Alexander von Humboldt (1769–1859)—knew only patches of the inhabited globe. (The 'known worlds' of less scientifically advanced and expansionist communities than those of Western Europe were clearly even smaller, diminishing to the tiny segments of the earth within which the illiterate Sicilian peasant or the cultivator in the Burmese hills lived out his life, and beyond which all was and always would forever be unknown.) Much of the surface of the oceans, though by no means all, had already been explored and mapped thanks to the remarkable competence of eighteenth-century navigators like James Cook, though human knowledge of the sea-bed was to remain negligible until the mid-twentieth century. The main outlines of the continents and most islands were known, though by modern standards not too accurately. The size and height of the mountain ranges in Europe were known with some approach to precision, those in parts of Latin America very roughly, those in Asia hardly at all, those in Africa (with the exception of the Atlas) for practical purposes not at all. Except for those of China and India, the course of the great rivers of the world was mysterious to all but a handful of trappers, traders or *coureurs-de-bois*, who had, or may have had, knowledge of those in their regions. Outside of a few areas—in several continents they did not reach more than a few miles inland from the coast—the map of the world consisted of white spaces crossed by the marked trails of traders or explorers. But for the rough-and-ready second- or third-hand information collected by travellers or officials in remote outposts, these white spaces would have been even vaster than in fact they were.

Not only the 'known world' was smaller, but the real world, at any rate in human terms. Since for practical purposes no censuses are

available, all demographic estimates are sheer guesses, but it is evident that the earth supported only a fraction of today's population; probably not much more than one-third. If the most usually quoted guesses are not too wide of the mark Asia and Africa supported a somewhat larger proportion of the world's people than today, Europe, with about 187 million in 1800 (as against about 600 million today), a somewhat smaller one, the Americas obviously a much smaller one. Roughly, two out of every three humans would be Asians in 1800, one out of every five European, one out of ten African, one out of thirty-three American or Oceanian. It is obvious that this much smaller population was much more sparsely distributed across the face of the globe, except perhaps for certain small regions of intensive agriculture or high urban concentration, such as parts of China, India and Western or Central Europe, where densities comparable to those of modern times may have existed. If population was smaller, so also was the area of effective human settlement. Climatic conditions (probably somewhat colder and wetter than today, though no longer quite so cold or wet as during the worst period of the 'little ice age' of *c.* 1300–1700) held back the limits of settlement in the Arctic. Endemic disease, such as malaria, still restricted it in many areas, such as Southern Italy, where the coastal plains, long virtually unoccupied, were only gradually peopled during the nineteenth century. Primitive forms of the economy, notably hunting and (in Europe) the territorially wasteful seasonal transhumance of livestock, kept large settlements out of entire regions—such as the plains of Apulia: the early nineteenth-century tourist's prints of the Roman campagna, an empty malarial space with a few ruins, a few cattle, and the odd picturesque bandit, are familiar illustrations of such landscapes. And of course much land which has since come under the plough was still, even in Europe, barren heath, waterlogged fen, rough grazing or forest.

Humanity was smaller in yet a third respect: Europeans were, on the whole, distinctly shorter and lighter than they are today. To take one illustration from the abundance of statistics about the physique of conscripts on which this generalization is based: in one canton on the Ligurian coast 72 per cent of the recruits in 1792–9 were less than 1·50 metres (5 ft. 2 in.) tall.[2] That did not mean that the men of the later eighteenth century were more fragile than we are. The scrawny, stunted, undrilled soldiers of the French Revolution were capable of a physical endurance equalled today only by the undersized guerillas in colonial mountains. A week's unbroken marching, with full equipment, at the rate of thirty miles a day, was common. However, the fact remains that human physique was then, by our standards, very poor,

as is indicated by the exceptional value kings and generals attached to the 'tall fellows', who were formed into the *élite* regiments of guards, cuirassiers and the like.

Yet if the world was in many respects smaller, the sheer difficulty or uncertainty of communications made it in practice much vaster than it is today. I do not wish to exaggerate these difficulties. The later eighteenth century was, by medieval or sixteenth century standards, an age of abundant and speedy communications, and even before the revolution of the railways, improvements in roads, horse-drawn vehicles and postal services are quite remarkable. Between the 1760s and the end of the century the journey from London to Glasgow was shortened from ten or twelve days to sixty-two hours. The system of mail-coaches or *diligences*, instituted in the second half of the eighteenth century, vastly extended between the end of the Napoleonic wars and the coming of the railway provided not only relative speed—the postal service from Paris to Strasbourg took thirty-six hours in 1833—but also regularity. But the provision for overland passenger-transport was small, that for overland goods transport both slow and prohibitively expensive. Those who conducted government business or commerce were by no means cut off from one another: it is estimated that twenty million letters passed through the British mails at the beginning of the wars with Bonaparte (at the end of our period there were ten times as many); but for the great majority of the inhabitants of the world letters were useless, as they could not read, and travel—except perhaps to and from markets—altogether out of the ordinary. If they or their goods moved overland, it was overwhelmingly on foot or by the slow speeds of carts, which even in the early nineteenth century carried five-sixths of French goods traffic at somewhat less than twenty miles a day. Couriers flew across long distances with dispatches; postillions drove mail-coaches with a dozen or so passengers each shaking their bones or, if equipped with the new leather suspension, making them violently sea-sick. Noblemen raced along in private carriages. But for the greater part of the world the speed of the carter walking beside his horse or mule governed land transport.

Under the circumstances transport by water was therefore not only easier and cheaper, but often also (except for the uncertainties of wind and weather) faster. It took Goethe four and three days respectively to sail from Naples to Sicily and back during his Italian tour. The mind boggles at the time it would have taken him to travel overland in anything like comfort. To be within reach of a port was to be within reach of the world: in a real sense London was closer to Plymouth or Leith than to villages in the Breckland of Norfolk; Seville was more accessible

from Veracruz than from Valladolid, Hamburg from Bahia than from the Pomeranian hinterland. The chief drawback of water transport was its intermittency. Even in 1820 the London mails for Hamburg and Holland were made up only twice a week, those for Sweden and Portugal once weekly, those for North America once a month. Yet there can be no doubt that Boston and New York were in much closer contact with Paris than, let us say, the Carpathian county of Maramaros was with Budapest. And just as it was easier to transport goods and men in quantity over the vast distances of the oceans—easier, for instance, for 44,000 to set sail for America from Northern Irish ports in five years (1769–74) than to get five thousand to Dundee in three generations—so it was easier to link distant capitals than country and city. The news of the fall of the Bastille reached the populace of Madrid within thirteen days; but in Péronne, a bare 133 kilometres from the capital, 'the news from Paris' was not received until the 28th.

The world of 1789 was therefore, for most of its inhabitants, incalculably vast. Most of them, unless snatched away by some awful hazard, such as military recruitment, lived and died in the county, and often in the parish, of their birth: as late as 1861 more than nine out of ten in seventy of the ninety French departments lived in the department of their birth. The rest of the globe was a matter of government agents and rumour. There were no newspapers, except for a tiny handful of the middle and upper classes—5,000 was the usual circulation of a French journal even in 1814—and few could read in any case. News came to most through travellers and the mobile section of the population: merchants and hawkers, travelling journeymen, migratory craftsmen and seasonal labourers, the large and mixed population of the vagrant and footloose ranging from itinerant friars or pilgrims to smugglers, robbers and fairground folk; and, of course, through the soldiers who fell upon the population in war or garrisoned them in peace. Naturally news also came through official channels—through state or church. But even the bulk of the local agents of such state-wide or ecumenical organizations were local men, or men settled for a lifetime's service among those of their kind. Outside the colonies the official nominated by his central government and sent to a succession of provincial posts was only just coming into existence. Of all the subaltern agents of the state perhaps only the regimental officer habitually expected to live an unlocalized life, consoled only by the variety of wine, women and horses of his country.

II

Such as it was, the world of 1789 was overwhelmingly rural, and nobody can understand it who has not absorbed this fundamental fact. In countries like Russia, Scandinavia or the Balkans, where the city had never flourished excessively, between 90 and 97 per cent of the population were rural. Even in areas with a strong though decayed urban tradition, the rural or agricultural percentage was extraordinarily high: 85 per cent in Lombardy, 72–80 per cent in Venetia, more than 90 per cent in Calabria and Lucania, according to available estimates.[3] In fact, outside of a few very flourishing industrial or commercial areas we should be hard put to it to find a sizeable European state in which at least four out of every five inhabitants were not countrymen. And even in England itself, the urban population only just outnumbered the rural population for the first time in 1851.

The word 'urban' is, of course, ambiguous. It includes the two European cities which by 1789 can be called genuinely large by our standards, London, with about a million, and Paris, with about half a million, and the score or so with a population of 100,000 or more: two in France, two in Germany, perhaps four in Spain, perhaps five in Italy (the Mediterranean was traditionally the home of cities), two in Russia, and one each in Portugal, Poland, Holland, Austria, Ireland, Scotland, and European Turkey. But it also includes the multitude of small provincial towns in which the majority of city-dwellers actually lived; the ones where a man could stroll in a few minutes from the cathedral square surrounded by the public buildings and the houses of the notables, to the fields. Of the 19 per cent of Austrians who, even at the end of our period (1834), lived in towns, well over three-quarters lived in towns of less than 20,000 inhabitants; about half in towns of between two and five thousand. These were the towns through which the French journeymen wandered on their Tour de France; whose sixteenth-century profiles, preserved like flies in amber by the stagnation of subsequent centuries, the German romantic poets evoked in the background of their tranquil landscapes; above which the cliffs of Spanish cathedrals towered; among whose mud the Chassidic Jews venerated their miracle-working rabbis and the orthodox ones disputed the divine subtleties of the law; into which Gogol's inspector-general drove to terrify the rich, and Chichikov to ponder on the purchase of dead souls. But these also were the towns out of which the ardent and ambitious young men came to make revolutions or their first million; or both. Robespierre came out of Arras, Gracchus Babeuf out of Saint-Quentin, Napoleon out of Ajaccio.

These provincial towns were none the less urban for being small. The genuine townsmen looked down upon the surrounding countryside with the contempt of the quick-witted and knowledgeable for the strong, slow, ignorant and stupid. (Not that by the standards of the real man of the world the sleepy back-country township had anything to boast about: the German popular comedies mocked 'Kraehwinkel'—the petty municipality—as cruelly as the more obvious rural hayseeds.) The line between town and country, or rather between town occupations and farm occupations, was sharp. In many countries the excise barrier, or sometimes even the old line of the wall, divided the two. In extreme cases, as in Prussia, the government, anxious to keep its taxable citizens under proper supervision, secured a virtually total separation of urban and rural activities. Even where there was no such rigid administrative division, townsmen were often physically distinct from peasants. In a vast area of Eastern Europe they were German, Jewish or Italian islands in a Slav, Magyar or Rumanian lake. Even townsmen of the same religion and nationality as the surrounding peasantry *looked* different: they wore different dress, and indeed were in most cases (except for the exploited indoor labouring and manufacturing population) taller, though perhaps also slenderer.* They were probably, and certainly prided themselves on being, quicker in mind and more literate. Yet in their mode of life they were almost as ignorant of what went on outside their immediate district, almost as closed-in, as the village.

The provincial town still belonged essentially to the economy and society of the countryside. It lived by battening on the surrounding peasantry and (with relatively few exceptions) by very little else except taking in its own washing. Its professional and middle classes were the dealers in corn and cattle, the processers of farm-products, the lawyers and notaries who handled the affairs of noble estates or the interminable litigations which are part of land-owning or land-holding communities; the merchant-entrepreneurs who put out and collected for and from the rural spinners and weavers; the more respectable of the representatives of government, lord or church. Its craftsmen and shopkeepers supplied the surrounding peasantry or the townsmen, who lived off the peasantry. The provincial city had declined sadly since its heyday in the later middle ages. It was only rarely a 'free city' or city state; only rarely any longer a centre of manufactures for a wider market or a staging-post in international trade. As it had declined, it clung with increasing stubbornness to that local monopoly of its market

* Thus in 1823–7 townsmen in Brussels were on average 3 cm. taller than men from the surrounding rural communes, townsmen in Louvain 2 cm. There is a considerable body of military statistics on this point, though all from the nineteenth century.[4]

which it defended against all comers: much of the provincialism which the young radicals and big city slickers mocked, derived from this movement of economic self-defence. In Southern Europe the gentlemen and even sometimes the nobles lived in it on the rents of their estates. In Germany the bureaucracies of the innumerable small principalities, themselves barely more than large estates, administered the wishes of Serenissimus there with the revenues collected from a dutiful and silent peasantry. The provincial town of the late eighteenth century might be a prosperous and expanding community, as its townscape, dominated by stone buildings in a modest classical or rococo style still bears witness in parts of Western Europe. But that prosperity came from the countryside.

III

The agrarian problem was therefore the fundamental one in the world of 1789, and it is easy to see why the first systematic school of continental economists, the French Physiocrats, assumed as a matter of course that the land, and the land rent, was the sole source of net income. And the crux of the agrarian problem was the relation between those who cultivated the land and those who owned it, those who produced its wealth and those who accumulated it.

From the point of view of agrarian property relations, we may divide Europe—or rather the economic complex whose centre lay in Western Europe—into three large segments. To the west of Europe there lay the overseas colonies. In these, with the notable exception of the Northern United States of America and a few less significant patches of independent farming, the typical cultivator was an Indian working as a forced labourer or virtual serf, or a Negro working as a slave; somewhat more rarely, a peasant tenant, share-cropper or the like. (In the colonies of the Eastern Indies, where direct cultivation by European planters was rarer, the typical form of compulsion by the controllers of the land was the forced delivery of quotas of crops, e.g. spice or coffee in the Dutch islands.) In other words the typical cultivator was unfree or under political constraint. The typical landlord was the owner of the large quasi-feudal estate (hacienda, finca, estancia) or of a slave plantation. The characteristic economy of the quasi-feudal estate was primitive and self-contained, or at any rate geared to purely regional demands: Spanish America exported mining products, also produced by what were virtually Indian serfs, but nothing much in the way of farm-products. The characteristic economy of the slave-plantation zone, whose centre lay in the Caribbean islands, along the northern coasts of

South America (especially in Northern Brazil) and the southern ones of the USA, was the production of a few vitally important export crops, sugar, to a lesser extent tobacco and coffee, dye-stuffs and, from the Industrial Revolution onwards, above all cotton. It therefore formed an integral part of the European economy and, through the slave-trade, of the African. Fundamentally the history of this zone in our period can be written in terms of the decline of sugar and the rise of cotton.

To the east of Western Europe, more specifically to the east of a line running roughly along the river Elbe, the western frontiers of what is today Czechoslovakia, and then south to Trieste, cutting off Eastern from Western Austria, lay the region of agrarian serfdom. Socially, Italy south of Tuscany and Umbria, and Southern Spain belonged to this region, though Scandinavia (with the partial exception of Denmark and Southern Sweden) did not. This vast zone contained its patches of technically free peasants: German peasant colonists scattered all over it from Slovenia to the Volga, virtually independent clans in the savage rocks of the Illyrian hinterland, almost equally savage peasant-warriors like the Pandurs and Cossacks on what had until lately been the military frontier between Christian and Turk or Tartar, free pioneer squatters beyond the reach of lord and state, or those who lived in the vast forests, where large-scale farming was out of the question. On the whole, however, the typical cultivator was unfree, and indeed almost drenched by the flood of serfdom which had risen almost without a break since the later fifteenth or early sixteenth centuries. It was least obvious in the Balkan areas which had been, or still were, under the direct administration of the Turks. Though the original agrarian system of the Turkish pre-feudalism, a rough division of the land in which each unit supported a non-hereditary Turkish warrior, had long degenerated into a system of hereditary landed estates under Mohammedan lords, these lords seldom engaged in farming. They merely sucked what they could from their peasantry. This is why the Balkans, south of the Danube and Save, emerged from Turkish domination in the nineteenth and twentieth centuries substantially as peasant countries, though extremely poor ones, and not as countries of concentrated agricultural property. Still, the Balkan peasant was legally unfree as a Christian, and *de facto* unfree as a peasant, at least so long as he was within reach of the lords.

Over the rest of the area, however, the typical peasant was a serf, devoting a large part of the week to forced labour on the lord's land, or its equivalent in other obligations. His unfreedom might be so great as to be barely distinguishable from chattel slavery, as in Russia and those parts of Poland where he could be sold separately from the land: a notice in the *Gazette de Moscou* in 1801 advertised 'For sale, three

coachmen, well-trained and very presentable, also two girls, aged 18 and 15, both of good appearance and skilled in different kinds of manual work. The same house has for sale two hairdressers, one, aged 21, can read, write, play a musical instrument and do duty as postilion, the other suitable for dressing ladies' and gentlemen's hair; also pianos and organs.' (A large proportion of serfs served as domestics; in Russia almost 5 per cent of *all* serfs in 1851.[5]) In the hinterland of the Baltic Sea—the main trade-route with Western Europe—servile agriculture produced largely export crops for the importing countries of the west: corn, flax, hemp and forest products mostly used for shipping. Elsewhere it relied more on the regional market, which contained at least one accessible region of fairly advanced manufacturing and urban development, Saxony and Bohemia and the great capital of Vienna. Much of it, however, remained backward. The opening of the Black Sea route and the increasing urbanization of Western Europe, and notably of England, had only just begun to stimulate the corn-exports of the Russian black earth belt, which were to remain the staple of Russian foreign trade until the industrialization of the USSR. The eastern servile area may therefore also be regarded as a food and raw-material producing 'dependent economy' of Western Europe, analogous to the overseas colonies.

The servile areas of Italy and Spain had similar economic characteristics, though the legal technicalities of the peasants' status were somewhat different. Broadly, they were areas of large noble estates. It is not impossible that in Sicily and Andalusia several of these were the lineal descendants of Roman latifundia, whose slaves and *coloni* had turned into the characteristic landless day-labourers of these regions. Cattle-ranching, corn-production (Sicily is an ancient export-granary) and the extortion of whatever was to be extorted from the miserable peasantry, provided the income of the dukes and barons who owned them.

The characteristic landlord of the servile area was thus a noble owner and cultivator or exploiter of large estates. Their vastness staggers the imagination: Catherine the Great gave between forty and fifty thousand serfs to individual favourites; the Radziwills of Poland had estates as large as half of Ireland; Potocki owned three million acres in the Ukraine; the Hungarian Esterhazy's (Haydn's patrons) at one time owned nearly seven million acres. Estates of several hundreds of thousands of acres were common.* Neglected, primitive and inefficient

* Eighty estates of over (roughly) 25,000 acres (10,000 ha) were confiscated in Czechoslovakia after 1918, among them 500,000 acres each from the Schoenborns and the Schwarzenbergs, 400,000 from the Liechtensteins, 170,000 from the Kinskys.[6]

though these often were, they yielded princely incomes. The Spanish grandee might, as a French visitor observed of the desolate Medina Sidonia estates, 'reign like a lion in the forests whose roar frightens away whatever might approach him',[7] but he was not short of cash, even by the ample standards of the British milord.

Below the magnates, a class of country gentlemen of varying size and economic resources exploited the peasantry. In some countries it was inordinately large, and consequently poor and discontented; distinguished from the non-noble chiefly by its political and social privileges and its disinclination to engage in ungentlemanly pursuits such as work. In Hungary and Poland it amounted to something like one in ten of the total population, in Spain at the end of the eighteenth century to almost half a million—or, in 1827, to 10 per cent of the total European nobility;[8] elsewhere it was much smaller.

IV

In the rest of Europe the agrarian structure was socially not dissimilar. That is to say that for the peasant or labourer anybody who owned an estate was a 'gentleman' and a member of the ruling class, and conversely noble or gentle status (which gave social and political privileges and was still nominally the only road to the highest offices of state) was inconceivable without an estate. In most countries of Western Europe the feudal order implied by such ways of thinking was still politically very alive, though economically increasingly obsolete. Indeed, its very economic obsolescence, which made noble and gentle incomes limp increasingly far behind the rise in prices and expenditure, made the aristocracy exploit its one inalienable economic asset, the privileges of birth and status, with ever-greater intensity. All over continental Europe the nobleman elbowed his low-born rivals out of offices of profit under the crown: from Sweden, where the proportion of commoner officers fell from 66 per cent in 1719 (42 per cent in 1700) to 23 per cent in 1780,[9] to France, where this 'feudal reaction' precipitated the French Revolution (see below Chapter 3). But even where it was in some ways distinctly shaky, as in France where entry into the landed nobility was relatively easy, or even more in Britain where landed and noble status was the reward for any kind of wealth, provided it was large enough, the link between estate-ownership and ruling-class status remained, and had indeed lately become somewhat closer.

Economically, however, western rural society was very different. The characteristic peasant had lost much of his servile status in the late middle ages, though still often retaining a great many galling marks of

legal dependence. The characteristic estate had long ceased to be a unit of economic enterprise and had become a system of collecting rents and other money incomes. The more or less free peasant, large, medium or small, was the characteristic cultivator of the soil. If a tenant of some sort he paid rent (or, in a few areas, a share of the crop) to a landlord. If technically a freeholder, he probably still owed the local lord a variety of obligations which might or might not be turned into money (such as the obligation to send his corn to the lord's mill), as well as taxes to the prince, tithes to the church, and some duties of forced labour, all of which contrasted with the relative exemption of the higher social strata. But if these political bonds were stripped away, a large part of Europe would emerge as an area of peasant agriculture; generally one in which a minority of wealthy peasants tended to become commercial farmers selling a permanent crop surplus to the urban market, and a majority of small and medium peasants lived in something like self-sufficiency off their holdings unless these were so small as to oblige them to take part-time work in agriculture or manufacture for wages.

Only a few areas had pushed agrarian development one stage further towards a purely capitalist agriculture. England was the chief of these. There landownership was extremely concentrated, but the characteristic cultivator was a medium-sized commercial tenant-farmer operating with hired labour. A large undergrowth of smallholders, cottagers and the like still obscured this. But when this was stripped away (roughly between 1760 and 1830) what emerged was not peasant agriculture but a class of agricultural entrepreneurs, the farmers, and a large agrarian proletariat. A few European areas where commercial investment traditionally went into farming, as in parts of Northern Italy and the Netherlands, or where specialized commercial crops were produced, also showed strong capitalist tendencies, but this was exceptional. A further exception was Ireland, an unhappy island which combined the disadvantages of the backward areas of Europe with those of proximity to the most advanced economy. Here a handful of absentee latifundists similar to the Andalusian or Sicilian ones exploited a vast mass of tenants by means of extortionate money-rents.

Technically European agriculture was still, with the exception of a few advanced regions, both traditional and astonishingly inefficient. Its products were still mainly the traditional ones: rye, wheat, barley, oats and in Eastern Europe buckwheat, the basic food of the people, beef cattle, sheep, goats and their dairy products, pigs and fowl, a certain amount of fruit and vegetables, wine, and a certain number of industrial raw materials such as wool, flax, hemp for cordage, barley for beer, etc.

The food of Europe was still regional. The products of other climates were still rarities, verging on luxury, except perhaps for sugar, the most important foodstuff imported from the tropics and the one whose sweetness has created more human bitterness than any other. In England (admittedly the most advanced country) the average annual consumption per head in the 1790s was 14 lb. But even in England the average *per capita* consumption of tea in the year of the French Revolution was hardly 2 ounces per month.

The new crops imported from the Americas or other parts of the tropics had made some headway. In Southern Europe and the Balkans maize (Indian corn) was already quite widespread—it had helped fix mobile peasants to their plots in the Balkans—and in Northern Italy rice had made some progress. Tobacco was cultivated in various principalities, mostly as a government monopoly for revenue purposes, though its use by modern standards was negligible: the average Englishman in 1790 smoked, snuffed or chewed about one and a third ounces a month. Silkwork culture was common in parts of Southern Europe. The chief of the new crops, the potato, was only just making its way, except perhaps in Ireland where its ability to feed more people per acre at subsistence level than any other food had already made it a staple of cultivation. Outside England and the Low Countries the systematic cultivation of root and fodder crops (other than hay) was still rather exceptional; and only the Napoleonic wars brought about the massive production of beet for sugar.

The eighteenth century was not, of course, one of agricultural stagnation. On the contrary, a long era of demographic expansion, of growing urbanization, trade and manufacture, encouraged agricultural improvement and indeed required it. The second half of the century saw the beginning of that startling and henceforward unbroken rise in population which is so characteristic of the modern world: between 1755 and 1784, for instance, the rural population of Brabant (Belgium) rose by 44 per cent.[10] But what impressed the numerous campaigners for agricultural improvement, who multiplied their societies, government reports and propagandist publications from Spain to Russia, was the size of the obstacles to agrarian advance rather than its progress.

V

The world of agriculture was sluggish, except perhaps for its capitalist sector. That of commerce, manufactures, and the technological and intellectual activities which went with both, was confident, brisk and expansive, and the classes which benefited from them, active, deter-

mined and optimistic. The contemporary observer would be mo immediately struck by the vast deployment of trade, which was closely tied to colonial exploitation. A system of maritime trade currents, growing rapidly in volume and capacity, circled the earth, bringing its profits to the mercantile communities of North Atlantic Europe. They used colonial power to rob the inhabitants of the East Indies* of the commodities exported thence to Europe and Africa, where these and European goods were used to buy slaves for the rapidly growing plantation systems of the Americas. The American plantations in turn exported their sugar, cotton, etc. in ever vaster and cheaper quantities to the Atlantic and North Sea ports whence they were redistributed eastwards, together with the traditional manufactures and commodities of European East-West trade: textiles, salt, wine and the rest. From 'the Baltic' in turn came the grain, timber, flax. From Eastern Europe came the grain, timber, flax and linen (a profitable export to the tropics), hemp and iron of this second colonial zone. And between the relatively developed economies of Europe—which included, economically speaking, the increasingly active communities of white settlers in the northern British colonies of America (after 1783, the Northern USA)—the web of trade became ever more dense.

The *nabob* or planter returned from the colonies with wealth beyond the dreams of provincial avarice, the merchant and shipper whose splendid ports—Bordeaux, Bristol, Liverpool—had been built or rebuilt in the century, appeared to be the true economic victors of the age, comparable only with the great officials and financiers who drew their wealth from the profitable service of states, for this was still the age when the term 'office of profit under the crown' had its literal meaning. Beside him the middle class of lawyers, estate managers, local brewers, traders and the like, who accumulated a modest wealth from the agricultural world, lived low and quiet lives, and even the manufacturer appeared little better than a very poor relation. For though mining and manufactures were expanding rapidly, and in all parts of Europe, the merchant (and in Eastern Europe also often the feudal lord) remained their chief controllers.

This was because the chief form of expanding industrial production was the so-called domestic or putting-out system, in which the merchant bought the products of the handicraftsman or of the part-time non-agricultural labour of the peasantry for sale in a wider market. The mere growth of such trade inevitably created rudimentary conditions

* Also to some extent of the Far East, where they bought the tea, silks, china, etc. for which there was a growing European demand. But the political independence of China and Japan made this trade as yet a somewhat less piratical one.

for an early industrial capitalism. The craftsman selling his wares might turn into little more than a worker paid on piece-rates (especially when the merchant supplied him with his raw material, and perhaps leased out productive equipment). The peasant who also wove might become the weaver who also had a small plot. Specialization of processes and functions might divide the old craft or create a complex of semi-skilled workers from among peasants. The old master-craftsmen, or some special group of crafts, or some group of local intermediaries might turn into something like subcontractors or employers. But the key controller of these decentralized forms of production, the one who linked the labour of lost villages or back streets with the world market, was some kind of merchant. And the 'industrialists' who were emerging or about to emerge from the ranks of the producers themselves were petty operators beside him, even when they were not directly dependent upon him. There were a few exceptions, especially in industrial England. Ironmasters, men like the great potter Josiah Wedgwood, were proud and respected, their establishments visited by the curious from all over Europe. But the typical industrialist (the word had not yet been invented) was as yet a petty-officer rather than a captain of industry.

Nevertheless, whatever their status, the activities of commerce and manufacture flourished brilliantly. The most brilliantly successful of eighteenth-century European states, Britain, plainly owed its power to its economic progress, and by the 1780s all continental governments with any pretence to a rational policy were consequently fostering economic growth, and especially industrial development, though with very varying success. The sciences, not yet split by nineteenth-century academicism into a superior 'pure' and an inferior 'applied' branch, devoted themselves to the solution of productive problems: the most striking advances of the 1780s were those of chemistry, which was by tradition most closely linked to workshop practice and the needs of industry. The Great Encyclopaedia of Diderot and d'Alembert was not merely a compendium of progressive social and political thought, but of technological and scientific progress. For indeed the conviction of the progress of human knowledge, rationality, wealth, civilization and control over nature with which the eighteenth century was deeply imbued, the 'Enlightenment', drew its strength primarily from the evident progress of production, trade, and the economic and scientific rationality believed to be associated inevitably with both. And its greatest champions were the economically most progressive classes, those most directly involved in the tangible advances of the time: the mercantile circles and economically enlightened landlords, financiers, scientifically-minded economic and social administrators, the educated

middle class, manufacturers and entrepreneurs. Such men hailed a Benjamin Franklin, working printer and journalist, inventor, entrepreneur, statesman and shrewd businessman, as the symbol of the active, self-made, reasoning citizen of the future. Such men in England, where the new men had no need of transatlantic revolutionary incarnations, formed the provincial societies out of which both scientific, industrial and political advance sprang. The *Lunar Society* of Birmingham included the potter Josiah Wedgwood, the inventor of the modern steam engine James Watt and his business partner Matthew Boulton, the chemist Priestley, the gentleman-biologist and pioneer of evolutionary theories Erasmus Darwin (grandfather of a greater Darwin), the great printer Baskerville. Such men everywhere flocked into the lodges of Freemasonry, where class distinctions did not count and the ideology of the Enlightenment was propagated with a disinterested zeal.

It is significant that the two chief centres of the ideology were also those of the dual revolution, France and England; though in fact its ideas gained widest international currency in their French formulations (even when these were merely gallicized versions of British ones). A secular, rationalist and progressive individualism dominated 'enlightened' thought. To set the individual free from the shackles which fettered him was its chief object: from the ignorant traditionalism of the Middle Ages, which still threw their shadow across the world, from the superstition of the churches (as distinct from 'natural' or 'rational' religion), from the irrationality which divided men into a hierarchy of higher and lower ranks according to birth or some other irrelevant criterion. Liberty, equality and (it followed) the fraternity of all men were its slogans. In due course they became those of the French Revolution. The reign of individual liberty could not but have the most beneficent consequences. The most extraordinary results could be looked for—could indeed already be observed to follow from—the unfettered exercise of individual talent in a world of reason. The passionate belief in progress of the typical 'enlightened' thinker reflected the visible increases in knowledge and technique, in wealth, welfare and civilization which he could see all round him, and which he ascribed with some justice to the growing advance of his ideas. At the beginning of his century witches were still widely burned; at its end enlightened governments like the Austrian had already abolished not only judicial torture but also slavery. What might not be expected if the remaining obstacles to progress such as the vested interests of feudality and church, were swept away?

It is not strictly accurate to call the 'enlightenment' a middle class

ideology, though there were many enlighteners—and politically they were the decisive ones—who assumed as a matter of course that the free society would be a capitalist society.[11] In theory its object was to set all human beings free. All progressive, rationalist and humanist ideologies are implicit in it, and indeed came out of it. Yet in practice the leaders of the emancipation for which the enlightenment called were likely to be the middle ranks of society, the new, rational men of ability and merit rather than birth, and the social order which would emerge from their activities would be a 'bourgeois' and capitalist one.

It is more accurate to call the 'enlightenment' a revolutionary ideology, in spite of the political caution and moderation of many of its continental champions, most of whom—until the 1780s—put their faith in enlightened absolute monarchy. For illuminism implied the abolition of the prevailing social and political order in most of Europe. It was too much to expect the *anciens régimes* to abolish themselves voluntarily. On the contrary, as we have seen, in some respects they were reinforcing themselves against the advance of the new social and economic forces. And their strongholds (outside Britain, the United Provinces and a few other places where they had already been defeated) were the very monarchies to which moderate enlighteners pinned their faith.

VI

With the exception of Britain, which had made its revolution in the seventeenth century, and a few lesser states, absolute monarchies ruled in all functioning states of the European continent; those in which they did not rule fell apart into anarchy and were swallowed by their neighbours, like Poland. Hereditary monarchs by the grace of God headed hierarchies of landed nobles, buttressed by the traditional organization and orthodoxy of churches and surrounded by an increasing clutter of institutions which had nothing but a long past to recommend them. It is true that the sheer needs of state cohesion and efficiency in an age of acute international rivalry had long obliged monarchs to curb the anarchic tendencies of their nobles and other vested interests, and to staff their state apparatus so far as possible with non-aristocratic civil servants. Moreover, in the latter part of the eighteenth century these needs, and the obvious international success of capitalist British power, led most such monarchs (or rather their advisers) to attempt programmes of economic, social, administrative and intellectual modernization. In those days princes adopted the slogan of 'enlightenment' as governments in our time, and for analogous reasons, adopt those of

'planning'; and as in our day some who adopted them in theory did very little about them in practice, and most who did so were less interested in the general ideals which lay behind the 'enlightened' (or the 'planned') society, than in the practical advantage of adopting the most up-to-date methods of multiplying their revenue, wealth and power.

Conversely, the middle and educated classes and those committed to progress often looked to the powerful central apparatus of an 'enlightened' monarchy to realize their hopes. A prince needed a middle class and its ideas to modernize his state; a weak middle class needed a prince to batter down the resistance of entrenched aristocratic and clerical interests to progress.

Yet in fact absolute monarchy, however modernist and innovatory, found it impossible—and indeed showed few signs of wanting—to break loose from the hierarchy of landed nobles to which, after all, it belonged, whose values it symbolized and incorporated, and on whose support it largely depended. Absolute monarchy, however theoretically free to do whatever it liked, in practice belonged to the world which the enlightenment had baptized *féodalité* or feudalism, a term later popularized by the French Revolution. Such a monarchy was ready to use all available resources to strengthen its authority and taxable revenue within and its power outside its frontiers, and this might well lead it to foster what were in effect the forces of the rising society. It was prepared to strengthen its political hand by playing off one estate, class or province against another. Yet its horizons were those of its history, its function and its class. It hardly ever wanted, and was never able to achieve, the root-and-branch social and economic transformation which the progress of the economy required and the rising social groups called for.

To take an obvious example. Few rational thinkers, even among the advisers of princes, seriously doubted the need to abolish serfdom and the surviving bonds of feudal peasant dependence. Such a reform was recognized as one of the primary points of any 'enlightened' programme, and there was virtually no prince from Madrid to St Petersburg and from Naples to Stockholm who did not, at one time or another in the quarter-century preceding the French Revolution, subscribe to such a programme. Yet in fact the only peasant liberations which took place from above before 1789 were in small and untypical states like Denmark and Savoy, and on the personal estates of some other princes. One major such liberation was attempted, by Joseph II of Austria, in 1781; but it failed, in the face of the political resistance of vested interests and of peasant rebellion in excess of what had been anticipated, and had to

remain uncompleted. What *did* abolish agrarian feudal relations all over Western and Central Europe was the French Revolution, by direct action, reaction or example, and the revolution of 1848.

There was thus a latent, and would soon be an overt, conflict between the forces of the old and the new 'bourgeois' society, which could not be settled within the framework of the existing political régimes, except of course where these already embodied bourgeois triumph, as in Britain. What made these régimes even more vulnerable, was that they were subject to pressure from three directions: from the new forces, from the entrenched, and increasingly stiff resistance of the older vested interests, and from foreign rivals.

Their most vulnerable point was the one where the opposition of old and new tended to coincide: in the autonomist movements of the remoter or the least firmly controlled provinces or colonies. Thus in the Habsburg monarchy the reforms of Joseph II in the 1780s produced uproar in the Austrian Netherlands (the present Belgium) and a revolutionary movement which in 1789 joined naturally with that of the French. More commonly, communities of white settlers in the overseas colonies of European states resented the policy of their central government, which subordinated the colonial interests strictly to the metropolitan. In all parts of the Americas, Spanish, French and British, as well as in Ireland, such settler movements demanded autonomy—not always for régimes which represented economically more progressive forces than the metropolis—and several British colonies either won it peacefully for a time, like Ireland, or took it by revolution, like the USA. Economic expansion, colonial development and the tensions of the attempted reforms of 'enlightened absolutism' multiplied the occasions for such conflicts in the 1770s and 1780s.

In itself provincial or colonial dissidence was not fatal. Old-established monarchies could survive the loss of a province or two, and the main victim of colonial autonomism, Britain, did not suffer from the weaknesses of the old régimes and therefore remained as stable and dynamic as ever in spite of the American revolution. There were few regions in which the purely domestic conditions for a major transfer of power existed. What made the situation explosive was international rivalry.

For international rivalry, i.e. war, tested the resources of a state as nothing else did. When they could not pass this test, they shook, cracked, or fell. One major such rivalry dominated the European international scene for most of the eighteenth century, and lay at the core of its recurrent periods of general war: 1689–1713, 1740–8, 1756–63, 1776–83 and, overlapping into our period, 1792–1815. This was the

conflict between Britain and France, which was also, in a sense, that between the old and the new régimes. For France, though rousing British hostility by the rapid expansion of its trade and colonial empire, was also the most powerful, eminent and influential, in a word the classical, aristocratic absolute monarchy. Nowhere is the superiority of the new to the old social order more vividly exemplified than in the conflict between these two powers. For the British not only won, with varying degrees of decisiveness in all but one of these wars. They supported the effort of organizing, financing and waging them with relative ease. The French monarchy, on the other hand, though very much larger, more populous, and, in terms of her potential resources, wealthier than Britain, found the effort too great. After its defeat in the Seven Years' War (1756–63) the revolt of the American colonies gave it the opportunity to turn the tables on its adversary. France took it. And indeed, in the subsequent international conflict Britain was badly defeated, losing the most important part of her American empire; and France, the ally of the new USA, was consequently victorious. But the cost was excessive, and the French government's difficulties led it inevitably into that period of domestic political crisis, out of which, six years later, the Revolution emerged.

VII

It remains to round off this preliminary survey of the world on the eve of the dual revolution with a glance at the relations between Europe (or more precisely North-western Europe) and the rest of the world. The complete political and military domination of the world by Europe (and her overseas prolongations, the white settler communities) was to be the product of the age of the dual revolution. In the late eighteenth century several of the great non-European powers and civilizations still confronted the white trader, sailor and soldier on apparently equal terms. The great Chinese empire, then at the height of its effectiveness under the Manchu (Ch'ing) dynasty, was nobody's victim. On the contrary, if anything the current of cultural influence ran from east to west, and European philosophers pondered the lessons of the very different but evidently high civilization, while artists and craftsmen embodied the often misunderstood motifs of the Far East in their works and adapted its new materials·('china') to European uses. The Islamic powers, though (like Turkey) periodically shaken by the military forces of neighbouring European states (Austria and above all Russia), were far from the helpless hulks they were to become in the nineteenth century. Africa remained virtually immune to European military pene-

tration. Except for small areas round the Cape of Good Hope, the whites were confined to coastal trading posts.

Yet already the rapid and increasingly massive expansion of European trade and capitalist enterprise undermined their social order; in Africa through the unprecedented intensity of the awful traffic in slaves, around the Indian Ocean through the penetration of the rival colonizing powers, in the Near and Middle East through trade and military conflict. Already direct European conquest began to extend significantly beyond the area long since occupied by the pioneer colonization of the Spaniards and Portuguese in the sixteenth century, the white North American settlers in the seventeenth. The crucial advance was made by the British, who had already established direct territorial control over part of India (notably Bengal), virtually overthrowing the Mughal empire, a step which was to lead them in our period to become the rulers and administrators of all India. Already the relative feebleness of the non-European civilizations when confronted with the technological and military superiority of the west was predictable. What has been called 'the age of Vasco da Gama', the four centuries of world history in which a handful of European states and the European force of capitalism established a complete, though as is now evident, a temporary, domination of the entire world, was about to reach its climax. The dual revolution was to make European expansion irresistible, though it was also to provide the non-European world with the conditions and equipment for its eventual counter-attack.

CHAPTER 2

THE INDUSTRIAL REVOLUTION

Such works, however their operations, causes, and consequences, have infinite merit, and do great credit to the talents of this very ingenious and useful man, who will have the merit, wherever he goes, of setting men to think. . . . *Get rid of that dronish, sleepy, and stupid indifference, that lazy negligence, which enchains men in the exact paths of their forefathers, without enquiry, without thought, and without ambition, and you are sure of doing good. What trains of thought, what a spirit of exertion, what a mass and power of effort have sprung in every path of life, from the works of such men as Brindley, Watt, Priestley, Harrison, Arkwright. . . . In what path of life can a man be found that will not animate his pursuit from seeing the steam-engine of Watt?*

Arthur Young, *Tours in England and Wales*[1]

From this foul drain the greatest stream of human industry flows out to fertilize the whole world. From this filthy sewer pure gold flows. Here humanity attains its most complete development and its most brutish, here civilization works its miracles and civilized man is turned almost into a savage.

A. de Toqueville on Manchester in 1835[2]

I

Let us begin with the Industrial Revolution, that is to say with Britain. This is at first sight a capricious starting-point, for the repercussions of this revolution did not make themselves felt in an obvious and unmistakable way—at any rate outside England—until quite late in our period; certainly not before 1830, probably not before 1840 or thereabouts. It is only in the 1830s that literature and the arts began to be overtly haunted by that rise of the capitalist society, that world in which all social bonds crumbled except the implacable gold and paper ones of the cash nexus (the phrase comes from Carlyle). Balzac's *Comédie Humaine*, the most extraordinary literary monument of its rise, belongs to that decade. It is not until about 1840 that the great stream of official and unofficial literature on the social effects of the Industrial Revolution begins to flow: the major Bluebooks and statistical enquiries in England, Villermé's *Tableau de l'état physique et moral des ouvriers*, Engels's *Condition of the Working Class in England*, Ducpetiaux's work in Belgium, and scores of troubled or appalled observers from Germany to Spain and the USA. It was not until the 1840s that the proletariat, that child of the Industrial Revolution, and Communism, which was now

attached to its social movements—the spectre of the Communist Manifesto—walked across the continent. The very name of the Industrial Revolution reflects its relatively tardy impact on Europe. The thing existed in Britain before the word. Not until the 1820s did English and French socialists—themselves an unprecedented group—invent it, probably by analogy with the political revolution of France.[3]

Nevertheless it is as well to consider it first, for two reasons. First, because in fact it 'broke out'—to use a question-begging phrase—before the Bastille was stormed; and second because without it we cannot understand the impersonal groundswell of history on which the more obvious men and events of our period were borne; the uneven complexity of its rhythm.

What does the phrase 'the Industrial Revolution broke out' mean? It means that some time in the 1780s, and for the first time in human history, the shackles were taken off the productive power of human societies, which henceforth became capable of the constant, rapid and up to the present limitless multiplication of men, goods and services. This is now technically known to the economists as the 'take-off into self-sustained growth'. No previous society had been able to break through the ceiling which a pre-industrial social structure, defective science and technology, and consequently periodic breakdown, famine and death, imposed on production. The 'take-off' was not, of course, one of those phenomena which, like earthquakes and large meteors, take the non-technical world by surprise. Its pre-history in Europe can be traced back, depending on the taste of the historian and his particular range of interest, to about AD 1000, if not before, and earlier attempts to leap into the air, clumsy as the experiments of young ducklings, have been flattered with the name of 'industrial revolution' —in the thirteenth century, in the sixteenth, in the last decades of the seventeenth. From the middle of the eighteenth century the process of gathering speed for the take-off is so clearly observable that older historians have tended to date the Industrial Revolution back to 1760. But careful enquiry has tended to lead most experts to pick on the 1780s rather than the 1760s as the decisive decade, for it was then that, so far as we can tell, all the relevant statistical indices took that sudden, sharp, almost vertical turn upwards which marks the 'take-off'. The economy became, as it were, airborne.

To call this process the Industrial Revolution is both logical and in line with a well-established tradition, though there was at one time a fashion among conservative historians—perhaps due to a certain shyness in the presence of incendiary concepts—to deny its existence, and substitute instead platitudinous terms like 'accelerated evolution'.

If the sudden, qualitative and fundamental transformation, which happened in or about the 1780s, was not a revolution then the word has no commonsense meaning. The Industrial Revolution was not indeed an episode with a beginning and an end. To ask when it was 'complete' is senseless, for its essence was that henceforth revolutionary change became the norm. It is still going on; at most we can ask when the economic transformations had gone far enough to establish a substantially industrialized economy, capable of producing, broadly speaking, anything it wanted within the range of the available techniques, a 'mature industrial economy' to use the technical term. In Britain, and therefore in the world, this period of initial industrialization probably coincides almost exactly with the period with which this book deals, for if it began with the 'take-off' in the 1780s, it may plausibly be said to be concluded with the building of the railways and the construction of a massive heavy industry in Britain in the 1840s. But the Revolution itself, the 'take-off period', can probably be dated with as much precision as is possible in such matters, to some time within the twenty years from 1780 to 1800: contemporary with, but slightly prior to, the French Revolution.

By any reckoning this was probably the most important event in world history, at any rate since the invention of agriculture and cities. And it was initiated by Britain. That this was not fortuitous, is evident. If there was to be a race for pioneering the Industrial Revolution in the eighteenth century, there was really only one starter. There was plenty of industrial and commercial advance, fostered by the intelligent and economically far from naive ministers and civil servants of every enlightened monarchy in Europe, from Portugal to Russia, all of whom were at least as much concerned with 'economic growth' as present-day administrators. Some small states and regions did indeed industrialize quite impressively for example, Saxony and the bishopric of Liège, though their industrial complexes were too small and localized to exert the world-revolutionary influence of the British ones. But it seems clear that even before the revolution Britain was already a long way ahead of her chief potential competitor in *per capita* output and trade, even if still comparable to her in total output and trade.

Whatever the British advance was due to, it was not scientific and technological superiority. In the natural sciences the French were almost certainly ahead of the British; an advantage which the French Revolution accentuated very sharply, at any rate in mathematics and physics, for it encouraged science in France while reaction suspected it in England. Even in the social sciences the British were still far from that superiority which made—and largely kept—economics a pre-

eminently Anglo-Saxon subject; but here the Industrial Revolution put them into unquestioned first place. The economist of the 1780s would read Adam Smith, but also—and perhaps more profitably—the French physiocrats and national income accountants, Quesnay, Turgot, Dupont de Nemours, Lavoisier, and perhaps an Italian or two. The French produced more original inventions, such as the Jacquard loom (1804)—a more complex piece of apparatus than any devised in Britain—and better ships. The Germans possessed institutions of technical training like the Prussian *Bergakademie* which had no parallel in Britain, and the French Revolution created that unique and impressive body, the *Ecole Polytechnique*. English education was a joke in poor taste, though its deficiencies were somewhat offset by the dour village schools and the austere, turbulent, democratic universities of Calvinist Scotland which sent a stream of brilliant, hard-working, career-seeking and rationalist young men into the south country: James Watt, Thomas Telford, Loudon McAdam, James Mill. Oxford and Cambridge, the only two English universities, were intellectually null, as were the somnolent public or grammar schools, with the exception of the Academies founded by the Dissenters who were excluded from the (Anglican) educational system. Even such aristocratic families as wished their sons to be educated, relied on tutors or Scottish universities. There was no system of primary education whatever before the Quaker Lancaster (and after him his Anglican rivals) established a sort of voluntary mass-production of elementary literacy in the early nineteenth century, incidentally saddling English education forever after with sectarian disputes. Social fears discouraged the education of the poor.

Fortunately few intellectual refinements were necessary to make the Industrial Revolution.* Its technical inventions were exceedingly modest, and in no way beyond the scope of intelligent artisans experimenting in their workshops, or of the constructive capacities of carpenters, millwrights and locksmiths: the flying shuttle, the spinning jenny, the mule. Even its scientifically most sophisticated machine, James Watt's rotary steam-engine (1784), required no more physics than had been available for the best part of a century—the proper

* 'On the one hand it is gratifying to see that the English derive a rich treasure for their political life, from the study of the ancient authors, however pedantically this might be conducted; so much so that parliamentary orators not infrequently cited the ancients to good purpose, a practice which was favourably received by, and not without effect upon, their Assembly. On the other hand it cannot but amaze us that a country in which the manufacturing tendencies are predominant, and hence the need to familiarize the people with the sciences and arts which advance these pursuits is evident, the absence of these subjects in the curriculum of youthful education is hardly noticed. It is equally astonishing how much is nevertheless achieved by men lacking any formal education for their professions.' W. Wachsmuth, *Europaeische Sittengeschichte 5, 2* (Leipzig 1839), p. 736.

theory of steam engines was only developed *ex post facto* by the Frenchman Carnot in the 1820s—and could build on several generations of practical employment for steam engines, mostly in mines. Given the right conditions, the technical innovations of the Industrial Revolution practically made themselves, except perhaps in the chemical industry. This does not mean that early industrialists were not often interested in science and on the look-out for its practical benefits.[4]

But the right conditions were visibly present in Britain, where more than a century had passed since the first king had been formally tried and executed by his people, and since private profit and economic development had become accepted as the supreme objects of government policy. For practical purposes the uniquely revolutionary British solution of the agrarian problem had already been found. A relative handful of commercially-minded landlords already almost monopolized the land, which was cultivated by tenant-farmers employing landless or smallholders. A good many relics of the ancient collective economy of the village still remained to be swept away by Enclosure Acts (1760–1830) and private transactions, but we can hardly any longer speak of a 'British peasantry' in the same sense that we can speak of a French, German or Russian peasantry. Farming was already predominantly for the market; manufacture had long been diffused throughout an unfeudal countryside. Agriculture was already prepared to carry out its three fundamental functions in an era of industrialization: to increase production and productivity, so as to feed a rapidly rising non-agricultural population; to provide a large and rising surplus of potential recruits for the towns and industries; and to provide a mechanism for the accumulation of capital to be used in the more modern sectors of the economy. (Two other functions were probably less important in Britain: that of creating a sufficiently large market among the agricultural population—normally the great mass of the people—and of providing an export surplus which helps to secure capital imports.) A considerable volume of social overhead capital—the expensive general equipment necessary for the entire economy to move smoothly ahead—was already being created, notably in shipping, port facilities, and the improvement of roads and waterways. Politics were already geared to profit. The businessman's specific demands might encounter resistance from other vested interests; and as we shall see, the agrarians were to erect one last barrier to hold up the advance of the industrialists between 1795 and 1846. On the whole, however, it was accepted that money not only talked, but governed. All the industrialist had to get to be accepted among the governors of society was enough money.

The businessman was undoubtedly in the process of getting more money, for the greater part of the eighteenth century was for most of Europe a period of prosperity and comfortable economic expansion; the real background to the happy optimism of Voltaire's Dr Pangloss. It may well be argued that sooner or later this expansion, assisted by a gentle inflation, would have pushed some country across the threshold which separates the pre-industrial from the industrial economy. But the problem is not so simple. Much of eighteenth-century industrial expansion did not in fact lead immediately, or within the foreseeable future, to industrial *revolution*, i.e. to the creation of a mechanized 'factory system' which in turn produces in such vast quantities and at such rapidly diminishing cost, as to be no longer dependent on existing demand, but to create its own market.* For instance the building trade, or the numerous small scale industries producing domestic metal goods —nails, pots, knives, scissors, etc.—in the British Midlands and Yorkshire, expanded very greatly in this period, but always as a function of the existing market. In 1850, while producing far more than in 1750, they produced in substantially the old manner. What was needed was not any kind of expansion, but the special kind of expansion which produced Manchester rather than Birmingham.

Moreover, the pioneer industrial revolutions occurred in a special historical situation, in which economic growth emerges from the criss-crossing decisions of countless private entrepreneurs and investors, each governed by the first commandment of the age, to buy in the cheapest market and to sell in the dearest. How were they to discover that maximum profit was to be got out of organizing industrial revolution rather than out of more familiar (and in the past more profitable) business activities? How were they to learn, what nobody could as yet know, that industrial revolution would produce an unexampled acceleration in the expansion of their markets? Given that the main social foundations of an industrial society had already been laid, as they almost certainly had in the England of the later eighteenth century, they required two things: first, an industry which already offered exceptional rewards for the manufacturer who could expand his output quickly, if need be by reasonably cheap and simple innovations, and second, a *world* market largely monopolized by a single producing nation.†

* The modern motor industry is a good example of this. It is not the demand for motor-cars existing in the 1890s which created an industry of the modern size, but the capacity to produce cheap cars which produced the modern mass demand for them.

† 'Only slowly did purchasing power expand with population, income per head, transport costs and restraints on trade. But the market was expanding, and the vital question was when would a producer of some mass consumption goods capture enough of it to allow fast and continuous expansion of their production.'[5]

These considerations apply in some ways to all countries in our period. For instance, in all of them the lead in industrial growth was taken by the manufacturers of goods of mass consumption—mainly, but not exclusively, textiles[6]—because the mass market for such goods already existed, and businessmen could clearly see its possibilities of expansion. In other ways, however, they apply to Britain alone. For the pioneer industrialists have the most difficult problems. Once Britain had begun to industrialize, other countries could begin to enjoy the benefits of the rapid economic expansion which the pioneer industrial revolution stimulated. Moreover, British success proved what could be achieved by it, British technique could be imitated, British skill and capital imported. The Saxon textile industry, incapable of making its own inventions, copied the English ones, sometimes under the supervision of English mechanics; Englishmen with a taste for the continent, like the Cockerills, established themselves in Belgium and various parts of Germany. Between 1789 and 1848 Europe and America were flooded with British experts, steam engines, cotton machinery and investments.

Britain enjoyed no such advantages. On the other hand it possessed an economy strong enough and a state aggressive enough to capture the markets of its competitors. In effect the wars of 1793–1815, the last and decisive phase of a century's Anglo-French duel, virtually eliminated all rivals from the non-European world, except to some extent the young USA. Moreover, Britain possessed an industry admirably suited to pioneering industrial revolution under capitalist conditions, and an economic conjuncture which allowed it to: the cotton industry, and colonial expansion.

II

The British, like all other cotton industries, had originally grown up as a by-product of overseas trade, which produced its raw material (or rather one of its raw materials, for the original product was *fustian*, a mixture of cotton and linen), and the Indian cotton goods or *calicoes* which won the markets that the European manufacturers were to attempt to capture with their own imitations. To begin with they were not very successful, though better able to reproduce the cheap and coarse goods competitively than the fine and elaborate ones. Fortunately, however, the old-established and powerful vested interest of the woollen trade periodically secured import prohibitions of Indian calicoes (which the purely mercantile interest of the East India Company sought to export from India in the largest possible quantities), and

thus gave the native cotton industry's substitutes a chance. Cheaper than wool, cotton and cotton mixtures won themselves a modest but useful market at home. But their major chances of rapid expansion were to lie overseas.

Colonial trade had created the cotton industry, and continued to nourish it. In the eighteenth century it developed in the hinterland of the major colonial ports, Bristol, Glasgow but especially Liverpool, the great centre of the slave trades. Each phase of his inhuman but rapidly expanding commerce stimulated it. In fact, during the entire period with which this book is concerned slavery and cotton marched together. The African slaves were bought, in part at least, with Indian cotton goods; but when the supply of these was interrupted by war or revolt in and about India, Lancashire was able to leap in. The plantations of the West Indies, where the slaves were taken, provided the bulk of the raw cotton for the British industry, and in return the planters bought Manchester cotton checks in appreciable quantities. Until shortly before the 'take-off' the overwhelming bulk of Lancashire cotton exports went to the combined African and American markets.[7] Lancashire was later to repay its debt to slavery by preserving it; for after the 1790s the slave plantations of the Southern United States were extended and maintained by the insatiable and rocketing demands of the Lancashire mills, to which they supplied the bulk of their raw cotton.

The cotton industry was thus launched, like a glider, by the pull of the colonial trade to which it was attached; a trade which promised not only great, but rapid and above all unpredictable expansion, which encouraged the entrepreneur to adopt the revolutionary techniques required to meet it. Between 1750 and 1769 the export of British cottons increased more than ten times over. In such situations the rewards for the man who came into the market first with the most cotton checks were astronomical and well worth the risks of leaps into technological adventure. But the overseas market, and especially within it the poor and backward 'under-developed areas', not only expanded dramatically from time to time, but expanded constantly without apparent limit. Doubtless any given section of it, considered in isolation, was small by industrial standards, and the competition of the different 'advanced economies' made it even smaller for each. But, as we have seen, supposing any one of the advanced economies managed, for a sufficiently long time, to monopolize *all* or almost all of it, then its prospects really were limitless. This is precisely what the British cotton industry succeeded in doing, aided by the aggressive support of the British Government. In terms of sales, the Industrial Revolution can be described except for a few initial years in the 1780s as the triumph of

the export market over the home: by 1814 Britain exported about four yards of cotton cloth for every three used at home, by 1850 thirteen for every eight.[8] And within this expanding export market, in turn, the semi-colonial and colonial markets, long the main outlets for British goods abroad, triumphed. During the Napoleonic Wars, when the European markets were largely cut off by wars and blockades, this was natural enough. But even after the wars they continued to assert themselves. In 1820 Europe, once again open to free British imports, took 128 million yards of British cottons; America outside the USA, Africa and Asia took 80 millions; but by 1840 Europe took 200 million yards, while the 'under-developed' areas took 529 millions.

For within these areas British industry had established a monopoly by means of war, other people's revolutions and her own imperial rule. Two regions deserve particular notice. *Latin America* came to depend virtually entirely on British imports during the Napoleonic Wars, and after it broke with Spain and Portugal (see pp. 109–10, 239 below) it became an almost total economic dependency of Britain, being cut off from any political interference by Britain's potential European competitors. By 1820 this impoverished continent already took more than a quarter as much of British cotton cloths as Europe; by 1840 it took almost half as much again as Europe. The East Indies had been, as we have seen, the traditional exporter of cotton goods, encouraged by the East India Company. But as the industrialist vested interest prevailed in Britain, the East India mercantile interests (not to mention the Indian ones) were pressed back. India was systematically deindustrialized and became in turn a market for Lancashire cottons: in 1820 the subcontinent took only 11 million yards; but by 1840 it already took 145 million yards. This was not merely a gratifying extension of Lancashire's markets. It was a major landmark in world history. For since the dawn of time Europe had always imported more from the East than she had sold there; because there was little the Orient required from the West in return for the spices, silks, calicoes, jewels, etc., which it sent there. The cotton shirtings of the Industrial Revolution for the first time reversed this relationship, which had been hitherto kept in balance by a mixture of bullion exports and robbery. Only the conservative and self-satisfied Chinese still refused to buy what the West, or western-controlled economies offered, until between 1815 and 1842 western traders, aided by western gun-boats, discovered an ideal commodity which could be exported *en masse* from India to the East: opium.

Cotton therefore provided prospects sufficiently astronomical to tempt private entrepreneurs into the adventure of industrial revolution, and an expansion sufficiently sudden to require it. Fortunately it also pro-

vided the other conditions which made it possible. The new inventions which revolutionized it—the spinning-jenny, the water-frame, the mule in spinning, a little later the power-loom in weaving—were sufficiently simple and cheap, and paid for themselves almost immediately in terms of higher output. They could be installed, if need be piecemeal, by small men who started off with a few borrowed pounds, for the men who controlled the great accumulations of eighteenth-century wealth were not greatly inclined to invest large amounts in industry. The expansion of the industry could be financed easily out of current profits, for the combination of its vast market conquests and a steady price-inflation produced fantastic rates of profit. 'It was not five per cent or ten per cent,' a later English politician was to say, with justice, 'but hundreds per cent and thousands per cent that made the fortunes of Lancashire.' In 1789 an ex-draper's assistant like Robert Owen could start with a borrowed £100 in Manchester; by 1809 he bought out his partners in the New Lanark Mills for £84,000 *in cash*. And his was a relatively modest story of business success. It should be remembered that around 1800 less than 15 per cent of British families had an income of more than £50 per year, and of these only one-quarter earned more than £200 a year.[9]

But the cotton manufacture had other advantages. All its raw material came from abroad, and its supply could therefore be expanded by the drastic procedures open to white men in the colonies—slavery and the opening of new areas of cultivation—rather than by the slower procedures of European agriculture; nor was it hampered by the vested interests of European agriculturalists.* From the 1790s on British cotton found its supply, to which its fortunes remained linked until the 1860s, in the newly-opened Southern States of the USA. Again, at crucial points of manufacture (notably spinning) cotton suffered from a shortage of cheap and efficient labour, and was therefore pushed into mechanization. An industry like *linen*, which had initially rather better chances of colonial expansion than cotton, suffered in the long run from the very ease with which cheap, non-mechanized production could be expanded in the impoverished peasant regions (mainly in Central Europe, but also in Ireland) in which it mainly flourished. For the *obvious* way of industrial expansion in the eighteenth century, in Saxony and Normandy as in England, was not to construct factories, but to extend the so-called 'domestic' or 'putting-out' system, in which workers—sometimes former independent craftsmen, sometimes former peasants with time on their hands in the dead season—worked up the

* Overseas supplies of wool, for instance, remained of negligible importance during our entire period, and only became a major factor in the 1870s.

raw material in their own homes, with their own or rented tools, receiving it from and delivering it back to merchants who were in the process of becoming employers.* Indeed, both in Britain and in the rest of the economically progressive world, the bulk of expansion in the initial period of industrialization continued to be of this kind. Even in the cotton industry such processes as weaving were expanded by creating hosts of domestic handloom weavers to serve the nuclei of mechanized spinneries, the primitive handloom being a rather more efficient device than the spinning-wheel. Everywhere weaving was mechanized a generation after spinning, and everywhere, incidentally, the handloom weavers died a lingering death, occasionally revolting against their awful fate, when industry no longer had any need of them.

III

The traditional view which has seen the history of the British Industrial Revolution primarily in terms of cotton is thus correct. Cotton was the first industry to be revolutionized, and it is difficult to see what other could have pushed a host of private entrepreneurs into revolution. As late as the 1830s cotton was the only British industry in which the factory or 'mill' (the name was derived from the most widespread pre-industrial establishment employing heavy power-operated machinery) predominated; at first (1780–1815) mainly in spinning, carding and a few ancillary operations, after 1815 increasingly also in weaving. The 'factories' with which the new Factory Acts dealt were, until the 1860s, assumed to be exclusively textile factories and predominantly cotton mills. Factory production in other textile branches was slow to develop before the 1840s, and in other manufactures was negligible. Even the steam engine, though applied to numerous other industries by 1815, was not used in any quantity outside mining, which had pioneered it. In 1830 'industry' and 'factory' in anything like the modern sense still meant almost exclusively the cotton areas of the United Kingdom.

This is not to underestimate the forces which made for industrial innovation in other consumer goods, notably in other textiles,† in food and drink, in pottery and other household goods, greatly stimulated by the rapid growth of cities. But in the first place these employed far fewer people: no industry remotely approached the million-and-a-half

* The 'domestic system', which is a universa lstage of manufacturing development on the road from home or craft production to modern industry, can take innumerable forms, some of which can come fairly close to the factory. If an eighteenth-century writer speaks of 'manufactures' this is almost invariably and in all western countries what he means.

† In all countries possessing any kind of marketable manufactures, textiles tended to predominate: in Silesia (1800) they formed 74 per cent of the value of all manufacture.[10]

people directly employed by or dependent on employment in cotton in 1833.[11] In the second place their power to transform was much smaller: *brewing*, which was in most respects a technically and scientifically much more advanced and mechanized business, and one revolutionized well before cotton, hardly affected the economy around it, as may be proved by the great Guinness brewery in Dublin, which left the rest of the Dublin and Irish economy (though not local tastes) much as it was before its construction.[12] The demand derived from cotton—for more building and all activities in the new industrial areas, for machines, for chemical improvements, for industrial lighting, for shipping and a number of other activities—is itself enough to account for a large proportion of the economic growth in Britain up to the 1830s. In the third place, the expansion of the cotton industry was so vast and its weight in the foreign trade of Britain so great, that it dominated the movements of the entire economy. The quantity of raw cotton imported into Britain rose from 11 million lb. in 1785 to 588 million lb. in 1850; the output of cloth from 40 million to 2,025 million yards.[13] Cotton manufactures formed between 40 and 50 per cent of the annual declared value of *all* British exports between 1816 and 1848. If cotton flourished, the economy flourished, if it slumped, so did the economy. Its price movements determined the balance of the nation's trade. Only agriculture had a comparable power, and that was visibly declining.

Nevertheless, though the expansion of the cotton industry and the cotton-dominated industrial economy 'mocks all that the most romantic imagination could have previously conceived possible under any circumstances',[14] its progress was far from smooth, and by the 1830s and early 1840s produced major problems of growth, not to mention revolutionary unrest unparalleled in any other period of recent British history. This first general stumbling of the industrial capitalist economy is reflected in a marked slowing down in the growth, perhaps even in a decline, in the British national income at this period.[15] Nor was this first general capitalist crisis a purely British phenomenon.

Its most serious consequences were social: the transition to the new economy created misery and discontent, the materials of social revolution. And indeed, social revolution in the form of spontaneous risings of the urban and industrial poor did break out, and made the revolutions of 1848 on the continent, the vast Chartist movement in Britain. Nor was discontent confined to the labouring poor. Small and inadaptable businessmen, petty-bourgeois, special sections of the economy, were also the victims of the Industrial Revolution and of its ramifications. Simple-minded labourers reacted to the new system by smashing the machines which they thought responsible for their troubles; but a

surprisingly large body of local businessmen and farmers sympathized profoundly with these Luddite activities of their labourers, because they too saw themselves as victims of a diabolical minority of selfish innovators. The exploitation of labour which kept its incomes at subsistence level, thus enabling the rich to accumulate the profits which financed industrialization (and their own ample comforts), antagonized the proletarian. However, another aspect of this diversion of national income from the poor to the rich, from consumption to investment, also antagonized the small entrepreneur. The great financiers, the tight community of home and foreign 'fund-holders' who received what all paid in taxes (cf. chapter on War)—something like 8 per cent of the entire national income[16]—were perhaps even more unpopular among small businessmen, farmers and the like than among labourers, for these knew enough about money and credit to feel a personal rage at their disadvantage. It was all very well for the rich, who could raise all the credit they needed, to clamp rigid deflation and monetary orthodoxy on the economy after the Napoleonic Wars: it was the little man who suffered, and who, in all countries and at all times in the nineteenth century demanded easy credit and financial unorthodoxy.* Labour and the disgruntled petty-bourgeois on the verge of toppling over into the unpropertied abyss, therefore shared common discontents. These in turn united them in the mass movements of 'radicalism', 'democracy' or 'republicanism' of which the British Radicals, the French Republicans and the American Jacksonian Democrats were the most formidable between 1815 and 1848.

From the point of view of the capitalists, however, these social problems were relevant to the progress of the economy only if, by some horrible accident, they were to overthrow the social order. On the other hand there appeared to be certain inherent flaws of the economic process which threatened its fundamental motive-force: profit. For if the rate of return on capital fell to nothing, an economy in which men produced for profit only must slow down into that 'stationary state' which the economists envisaged and dreaded.[17]

The three most obvious of these flaws were the trade cycle of boom and slump, the tendency of the rate of profit to decline, and (what amounted to the same thing) the shortage of profitable investment opportunities. The first of these was not regarded as serious, except by the critics of capitalism as such, who were the first to investigate it and to consider it as an integral part of the capitalist economic process and

* From the post-napoleonic Radicalism in Britain to the Populists in the USA, all protest movements including farmers and small entrepreneurs can be recognized by their demand for financial unorthodoxy: they were all 'currency cranks'.

as a symptom of its inherent contradictions.* Periodic crises of the economy leading to unemployment, falls in production, bankruptcies, etc. were well known. In the eighteenth century they generally reflected some agrarian catastrophe (harvest failures, etc.) and on the continent of Europe, it has been argued, agrarian disturbances remained the primary cause of the most widespread depressions until the end of our period. Periodic crises in the small manufacturing and financial sectors of the economy were also familiar, in Britain at least from 1793. After the Napoleonic Wars the periodic drama of boom and collapse—in 1825–6, in 1836–7, in 1839–42, in 1846–8—clearly dominated the economic life of a nation at peace. By the 1830s, that crucial decade in our period of history, it was vaguely recognized that they were regular periodic phenomena, at least in trade and finance.[18] However, they were still commonly regarded by businessmen as caused either by particular mistakes—e.g. overspeculation in American stocks—or by outside interference with the smooth operations of the capitalist economy. They were not believed to reflect any fundamental difficulties of the system.

Not so the falling margin of profit, which the cotton industry illustrated very clearly. Initially this industry benefited from immense advantages. Mechanization greatly increased the productivity (i.e. reduced the cost per unit produced) of its labour, which was in any case abominably paid, since it consisted largely of women and children.† Of the 12,000 operatives in the cotton mills of Glasgow in 1833, only 2,000 earned an average of over 11*s.* a week. In 131 Manchester mills average wages were less than 12*s.*, in only twenty-one were they higher.[19] And the building of factories was relatively cheap: in 1846 an entire weaving plant of 410 machines, including the cost of ground and buildings, could be constructed for something like £11,000.[20] But above all the major cost, that of raw material, was drastically cut by the rapid expansion of cotton cultivation in the Southern USA after the invention of Eli Whitney's cotton-gin in 1793. If we add that entrepreneurs enjoyed the bonus of a profit-inflation (i.e. the general tendency for prices to be higher when they sold their product than when they made it), we shall understand why the manufacturing classes felt buoyant,

After 1815 these advantages appeared increasingly offset by the

* The Swiss Simonde de Sismondi, and the conservative and country-minded Malthus, were the first to argue along these lines, even before 1825. The new socialists made their crisis-theory into a keystone of their critique of capitalism.

† E. Baines in 1835 estimated the average wages of all the spinning and weaving operatives at 10*s.* a week—allowing for two unpaid weeks holiday a year—and of the handloom weavers at 7*s.*

narrowing margin of profit. In the first place industrial revolution and competition brought about a constant and dramatic fall in the price of the finished article but not in several of the costs of production.[21] In the second place after 1815 the general atmosphere of prices was one of deflation and not inflation, that is to say profits, so far from enjoying an extra boost, suffered from a slight lag. Thus, while in 1784 the selling-price of a lb. of spun yarn had been 10*s.* 11*d.*, the cost of its raw material 2*s.* (margin, 8*s.* 11*d.*), in 1812 its price was 2*s.* 6*d.*, its raw material cost 1*s.* 6*d.* (margin 1*s.*) and in 1832 its price 11½*d.*, its raw material cost 7½*d.*, and the margin for other costs and profits therefore only 4*d.*[22] Of course the situation, which was general throughout British—and indeed all advanced—industry was not too tragic. 'Profits are still sufficient', wrote the champion and historian of cotton in 1835, in extreme understatement, 'to allow of a great accumulation of capital in the manufacture.'[23] As the total sales soared upwards, so did the total of profits even at their diminishing rate. All that was needed was continued and astronomic expansion. Nevertheless, it seemed that the shrinking of profit-margins had to be arrested or at least slowed down. This could only be done by cutting costs. And of all the costs *wages*—which McCulloch reckoned at three times the amount per year of the raw material—were the most compressible.

They could be compressed by direct wage-cutting, by the substitution of cheaper machine-tenders for dearer skilled workers, and by the competition of the machine. This last reduced the average weekly wage of the handloom weaver in Bolton from 33*s.* in 1795 and 14*s.* in 1815 to 5*s.* 6*d.* (or more precisely a net income of 4*s.* 1½*d.*) in 1829–34.[24] And indeed money wages fell steadily in the post-Napoleonic period. But there was a physiological limit to such reductions, unless the labourers were actually to starve, as of course the 500,000 handloom weavers did. Only if the cost of living fell could wages also fall beyond that point. The cotton manufacturers shared the view that it was kept artificially high by the monopoly of the landed interest, made even worse by the heavy protective tariffs which a Parliament of landlords had wrapped around British farming after the wars—the *Corn Laws*. These, moreover, had the additional disadvantage of threatening the essential growth of British exports. For if the rest of the not yet industrialized world was prevented from selling its agrarian products, how was it to pay for the manufactured goods which Britain alone could—and had to—supply? Manchester business therefore became the centre of militant and increasingly desperate opposition to landlordism in general and the Corn Laws in particular and the backbone of the Anti-Corn Law League of 1838–46. But the Corn Laws were not

abolished until 1846, their abolition did not immediately lead to a fall in the cost of living, and it is doubtful whether before the age of railways and steamers even free food-imports would have greatly lowered it.

The industry was thus under immense pressure to mechanize (i.e. to lower costs by labour-saving) to rationalize and to expand its production and sales, thus making up by the mass of small profits per unit for the fall in the margins. Its success was variable. As we have seen the actual rise in production and exports was gigantic; so, after 1815, was the mechanization of hitherto manual or partly-mechanized occupations, notably weaving. This took the form chiefly of the general adoption of existing or slightly improved machinery rather than of further technological revolution. Though the pressure for technical innovation increased significantly—there were thirty-nine new patents in cotton spinning, etc., in 1800–20, fifty-one in the 1820s, eighty-six in the 1830s and a hundred and fifty-six in the 1840s[25]—the British cotton industry was technologically stabilized by the 1830s. On the other hand, though the production per operative increased in the post-Napoleonic period, it did not do so to any revolutionary extent. The really substantial speed-up of operations was to occur in the second half of the century.

There was comparable pressure on the rate of interest on capital, which contemporary theory tended to assimilate to profit. But consideration of this takes us to the next phase of industrial development—the construction of a basic capital-goods industry.

IV

It is evident that no industrial economy can develop beyond a certain point until it possesses adequate capital-goods capacity. This is why even today the most reliable single index of any country's industrial potential is the quantity of its iron and steel production. But it is also evident that under conditions of private enterprise the extremely costly capital investment necessary for much of this development is not likely to be undertaken for the same reasons as the industrialization of cotton or other consumer goods. For these a mass market already exists, at least potentially: even very primitive men wear shirts or use household equipment and foodstuffs. The problem is merely how to put a sufficiently vast market sufficiently quickly within the purview of businessmen. But no such market exists, e.g., for heavy iron equipment such as girders. It only comes into existence in the course of an industrial revolution (and not always then), and those who lock up their money in the very heavy investments required even by quite modest iron-

works (compared to quite large cotton-mills) before it is visibly there, are more likely to be speculators, adventurers and dreamers than sound businessmen. In fact in France a sect of such speculative technological adventurers, the Saint-Simonians (cf. pp. 176, 241), acted as chief propagandists of the kind of industrialization which needed heavy and long-range investment.

These disadvantages applied particularly to metallurgy, especially of iron. Its capacity increased, thanks to a few simple innovations such as that of puddling and rolling in the 1780s, but the non-military demand for it remained relatively modest, and the military, though gratifyingly large thanks to a succession of wars between 1756 and 1815, slackened off sharply after Waterloo. It was certainly not large enough to make Britain into an outstandingly large producer of iron. In 1790 she out-produced France by only forty per cent or so, and even in 1800 her output was considerably less than half of the combined continental one, and amounted to the, by later standards, tiny figure of a quarter of a million tons. If anything the British share of world iron output tended to sink in the next decades.

Fortunately they applied less to mining, which was chiefly the mining of *coal*. For coal had the advantage of being not merely the major source of industrial power in the nineteenth century, but also a major form of domestic fuel, thanks largely to the relative shortage of forests in Britain. The growth of cities, and especially of London, had caused coal mining to expand rapidly since the late sixteenth century. By the early eighteenth it was substantially a primitive modern industry, even employing the earliest steam engines (devised for similar purposes in non-ferrous metal mining, mainly in Cornwall) for pumping. Hence coal mining hardly needed or underwent major technological revolution in our period. Its innovations were improvements rather than transformations of production. But its capacity was already immense and, by world standards, astronomic. In 1800 Britain may have produced something like ten million tons of coal, or about 90 per cent of the world output. Its nearest competitor, France, produced less than a million.

This immense industry, though probably not expanding fast enough for really massive industrialization on the modern scale, was sufficiently large to stimulate the basic invention which was to transform the capital goods industries: the railway. For the mines not only required steam engines in large quantities and of great power, but also required efficient means of transporting the great quantities of coal from coal-face to shaft and especially from pithead to the point of shipment. The 'tramway' or 'railway' along which trucks ran was an obvious answer;

to pull these trucks by stationary engines was tempting; to pull them by moving engines would not seem too impractical. Finally, the costs of overland transport of bulk goods were so high that it was likely to strike coal-owners in inland fields that the use of these short-term means of transport could be profitably extended for long-term haulage. The line from the inland coalfield of Durham to the coast (Stockton–Darlington 1825) was the first of the modern railways. Technologically the railway is the child of the mine, and especially the northern English coalmine. George Stephenson began life as a Tyneside 'engine-man', and for years virtually all locomotive drivers were recruited from his native coalfield.

No innovation of the Industrial Revolution has fired the imagination as much as the railway, as witness the fact that it is the only product of nineteenth century industrialization which has been fully absorbed into the imagery of popular and literate poetry. Hardly had they been proved technically feasible and profitable in England (*c.* 1825–30), before plans to build them were made over most of the Western world, though their execution was generally delayed. The first short lines were opened in the USA in 1827, in France in 1828 and 1835, in Germany and Belgium in 1835 and even in Russia by 1837. The reason was doubtless that no other invention revealed the power and speed of the new age to the layman as dramatically; a revelation made all the more striking by the remarkable technical maturity of even the very earliest railways. (Speeds of up to sixty miles per hour, for instance, were perfectly practicable in the 1830s, and were not substantially improved by later steam-railways.) The iron road, pushing its huge smoke-plumed snakes at the speed of wind across countries and continents, whose embankments and cuttings, bridges and stations, formed a body of public building beside which the pyramids and the Roman aqueducts and even the Great Wall of China paled into provincialism, was the very symbol of man's triumph through technology.

In fact, from an economic point of view, its vast expense was its chief advantage. No doubt in the long run its capacity to open up countries hitherto cut off by high transport costs from the world market, the vast increase in the speed and bulk of overland communication it brought for men and goods, were to be of major importance. Before 1848 they were economically less important: outside Britain because railways were few, in Britain because for geographical reasons transport problems were much less intractable then in large landlocked countries.* But from the perspective of the student of economic develop-

* No point in Britain is more than 70 miles from the sea, and all the chief industrial areas of the nineteenth century, with one exception, are either on the sea or within easy reach of it.

ment the immense appetite of the railways for iron and steel, for coal, for heavy machinery, for labour, for capital investment, was at this stage more important. For it provided just that massive demand which was needed if the capital goods industries were to be transformed as profoundly as the cotton industry had been. In the first two decades of the railways (1830–50) the output of iron in Britain rose from 680,000 to 2,250,000, in other words it trebled. The output of coal between 1830 and 1850 also trebled from 15 million tons to 49 million tons. That dramatic rise was due primarily to the railway, for on average each mile of line required 300 tons of iron merely for track.[26] The industrial advances which for the first time made the mass production of steel possible followed naturally in the next decades.

The reason for this sudden, immense, and quite essential expansion lay in the apparently irrational passion with which businessmen and investors threw themselves into the construction of railways. In 1830 there were a few dozen miles of railways in all the world—chiefly consisting of the line from Liverpool to Manchester. By 1840 there were over 4,500 miles, by 1850 over 23,500. Most of them were projected in a few bursts of speculative frenzy known as the 'railway manias' of 1835–7 and especially in 1844–7; most of them were built in large part with British capital, British iron, machines and know-how.* These investment booms appear irrational, because in fact few railways were much more profitable to the investor than other forms of enterprise, most yielded quite modest profits and many none at all: in 1855 the average interest on capital sunk in the British railways was a mere 3·7 per cent. No doubt promoters, speculators and others did exceedingly well out of them, but the ordinary investor clearly did not. And yet by 1840 £28 millions, by 1850 £240 millions had been hopefully invested in them.[28]

Why? The fundamental fact about Britain in the first two generations of the Industrial Revolution was, that the comfortable and rich classes accumulated income so fast and in such vast quantities as to exceed all available possibilities of spending and investment. (The annual investible surplus in the 1840s was reckoned at about £60 millions.[29]) No doubt feudal and aristocratic societies would have succeeded in throwing a great deal of this away in riotous living, luxury building and other uneconomic activities.† Even in Britain the sixth Duke of Devonshire, whose normal income was princely enough succeeded in leaving his heir £1,000,000 of debts in the mid-nineteenth century

* In 1848 one third of the capital in the French railways was British.[27]

† Of course such spending also stimulates the economy, but very inefficiently, and hardly at all in the direction of industrial growth.

(which he paid off by borrowing another £1,500,000 and going in for the development of real estate values)[30]. But the bulk of the middle classes, who formed the main investing public, were still savers rather than spenders, though by 1840 there are many signs that they felt sufficiently wealthy to spend *as well as* to invest. Their wives began to turn into 'ladies', instructed by the handbooks of etiquette which multiply about this period, their chapels began to be rebuilt in ample and expensive styles, and they even began to celebrate their collective glory by constructing those shocking town halls and other civic monstrosities in Gothic and Renaissance imitations, whose exact and Napoleonic cost their municipal historians recorded with pride.*

Again, a modern socialist or welfare society would no doubt have distributed some of these vast accumulations for social purposes. In our period nothing was less likely. Virtually untaxed, the middle classes therefore continued to accumulate among the hungry populace, whose hunger was the counterpart of their accumulation. And as they were not peasants, content to hoard their savings in woollen stockings or as golden bangles, they had to find profitable investment for them. But where? Existing industries, for instance, had become far too cheap to absorb more than a fraction of the available surplus for investment: even supposing the size of the cotton industry to be doubled, the capital cost would absorb only a part of it. What was needed was a sponge large enough to hold all of it.†

Foreign investment was one obvious possibility. The rest of the world—mostly, to begin with, old governments seeking to recover from the Napoleonic Wars and new ones borrowing with their usual dash and abandon for indeterminate purposes—was only too anxious for unlimited loans. The English investor lent readily. But alas, the South American loans which appeared so promising in the 1820s, the North American ones which beckoned in the 1830s, turned only too often into scraps of worthless paper: of twenty-five foreign government loans sold between 1818 and 1831, sixteen (involving about half of the £42 millions at issue prices) were in default in 1831. In theory these loans should have paid the investor 7 or 9 per cent; in fact in 1831 he received an average of 3·1 per cent. Who would not be discouraged by experiences such as those with the Greek 5 per cent loans of 1824 and 1825 which did not begin to pay any interest at all until the 1870s?[32] Hence it is natural that the capital flooding abroad in the speculative booms

* A few cities with eighteenth century traditions never ceased public building; but a typical new industrial metropolis like Bolton in Lancashire built practically no conspicuous and non-utilitarian structures before 1847–8.[31]

† The total capital—fixed and working—of the cotton industry was estimated by McCulloch at £34 millions in 1833, £47 millions in 1845.

of 1825 and 1835–7, should seek an apparently less disappointing employment.

John Francis, looking back on the mania from 1851, described the rich man who 'saw the accumulation of wealth, which with an industrial people always outstrips the ordinary modes of investment, legitimately and justly employed . . . He saw the money which in his youth had been thrown into war loans and in his manhood wasted on South American mines, forming roads, employing labour and increasing business. (The railway's) absorption of capital was at least an absorption, if unsuccessful, in the country that produced it. Unlike foreign mines and foreign loans, they could not be exhausted or utterly valueless.'[33]

Whether it could have found other forms of home investment—for instance in building—is an academic question to which the answer is still in doubt. In fact it found the railways, which could not conceivably have been built as rapidly and on as large a scale without this torrent of capital flooding into them, especially in the middle 1840s. It was a lucky conjuncture, for the railways happened to solve virtually all the problems of the economy's growth at once.

V

To trace the impetus for industrialization is only one part of the historian's task. The other is to trace the mobilization and redeployment of economic resources, the adaptation of the economy and the society which were required to maintain the new and revolutionary course.

The first and perhaps the most crucial factor which had to be mobilized and redeployed was *labour*, for an industrial economy means a sharp proportionate decline in the agricultural (i.e. rural) and a sharp rise in the non-agricultural (i.e. increasingly in the urban) population, and almost certainly (as in our period) a rapid general increase in population. It therefore implies in the first instance a sharp rise in the supply of food, mainly from home agriculture—i.e. an 'agricultural revolution'.*

The rapid growth of towns and non-agricultural settlements in Britain had naturally long stimulated agriculture, which is fortunately so inefficient in its pre-industrial forms that quite small improvements —a little rational attention to animal-husbandry, crop-rotation, fertilization and the lay-out of farms, or the adoption of new crops—can

* Before the age of railway and the steamship—i.e. before the end of our period—the possibility of importing vast quantities of food from abroad was limited, though Britain became on balance a net importer of food from the 1780s.

produce disproportionately large results. Such agricultural change had preceded the industrial revolution and made possible the first stages of rapid population increases, and the impetus naturally continued, though British farming suffered heavily in the slump which followed the abnormally high prices of the Napoleonic Wars. In terms of technology and capital investment the changes of our period were probably fairly modest until the 1840s, the period when agricultural science and engineering may be said to have come of age. The vast increase in output which enabled British farming in the 1830s to supply 98 per cent of the grain for a population between two and three times the mid-eighteenth century size,[34] was achieved by general adoption of methods pioneered in the earlier eighteenth century, by rationalization and by expansion of the cultivated area.

All these in turn were achieved by social rather than technological transformation: by the liquidation of medieval communal cultivation with its open field and common pasture (the 'enclosure movement'), of self-sufficient peasant farming, and of old-fashioned uncommercial attitudes towards the land. Thanks to the preparatory evolution of the sixteenth to eighteenth centuries this uniquely radical solution of the agrarian problem, which made Britain a country of a few large landowners, a moderate number of commercial tenant farmers and a great number of hired labourers, was achieved with a minimum of trouble, though intermittently resisted not only by the unhappy rural poor but by the traditionalist country gentry. The 'Speenhamland System' of poor relief, spontaneously adopted by gentlemen-justices in several counties in and after the hungry year of 1795, has been seen as the last systematic attempt to safeguard the old rural society against the corrosion of the cash nexus.* The Corn Laws with which the agrarian interest sought to protect farming against the post-1815 crisis, in the teeth of all economic orthodoxy, were in part a manifesto against the tendency to treat agriculture as an industry just like any other, to be judged by the criteria of profitability alone. But these were doomed rearguard actions against the final introduction of capitalism into the countryside; they were finally defeated in the wave of middle class radical advance after 1830, by the new Poor Law of 1834 and the abolition of the Corn Laws in 1846.

In terms of economic productivity this social transformation was an immense success; in terms of human suffering, a tragedy, deepened by the agricultural depression after 1815 which reduced the rural poor to

* Under it the poor were to be guaranteed a living wage by subsidies from the rates where necessary; the system, though well-intentioned, eventually led to even greater pauperization than before.

demoralized destitution. After 1800 even so enthusiastic a champion of enclosure and agricultural progress as Arthur Young was shaken by its social effects.[35] But from the point of view of industrialization these also were desirable consequences; for an industrial economy needs labour, and where else but from the former non-industrial sector was it to come from? The rural population at home or, in the form of (mainly Irish) immigration, abroad, were the most obvious sources supplemented by the miscellaneous petty producers and labouring poor.* Men must be attracted into the new occupations, or if—as was most probable—they were initially immune to these attractions and unwilling to abandon their traditional way of life[36]—they must be forced into it. Economic and social hardship was the most effective whip; the higher money wages and greater freedom of the town the supplementary carrot. For various reasons the forces tending to prise men loose from their historic social anchorage were still relatively weak in our period, compared to the second half of the nineteenth century. It took a really sensational catastrophe such as the Irish hunger to produce the sort of massive emigration (one and a half millions out of a total population of eight and a half millions in 1835–50) which became common after 1850. Nevertheless, they were stronger in Britain than elsewhere. Had they not been, British industrial development might have been as hampered as that of France was by the stability and relative comfort of its peasantry and petty-bourgeoisie, which deprived industry of the required intake of labour.†

To acquire a sufficient number of labourers was one thing; to acquire sufficient labour of the right qualifications and skills was another. Twentieth century experience has shown that this problem is as crucial and more difficult to solve. In the first place *all* labour had to learn how to work in a manner suited to industry, i.e. in a rhythm of regular unbroken daily work which is entirely different from the seasonal ups and downs of the farm, or the self-controlled patchiness of the independent craftsman. It had also to learn to be responsive to monetary incentives. British employers then, like South African ones now, constantly complained about the 'laziness' of labour or its tendency to work until it had earned a traditional week's living wage and then to

* Another view holds that the labour supply comes not from such transfers, but from the rise in the total population, which as we know was increasing very rapidly. But this is to miss the point. In an industrial economy not only the numbers, but the *proportion* of the non-agricultural labour force must increase steeply. This means that men and women who would otherwise have stayed in the village and lived as their forefathers did, *must* move elsewhere at some stage of their lives, for the towns grow faster than their own natural rate of increase, which in any case tended normally to be lower than the villages. This is so whether the farming population actually diminishes, holds its numbers, or even increases.

† Alternatively, like the USA, Britain would have had to rely on massive immigration. In fact she did rely partly on the immigration of the Irish.

stop. The answer was found in a draconic labour discipline (mines, a 'Master and Servant' code mobilizing the law on the side of the employer, etc.), but above all in the practice where possible of paying labour so little that it would have to work steadily all through the week in order to make a minimum income (cf. pp. 198–9). In the factories, where the problem of labour discipline was more urgent, it was often found more convenient to employ the tractable (and cheaper) women and children: out of all workers in the English cotton mills in 1834–47 about one-quarter were adult men, over half women and girls and the balance, boys below the age of eighteen.[37] Another common way of ensuring labour discipline, which reflected the small-scale, piece-meal process of industrialization in this early phase, was sub-contract or the practice of making skilled workers the actual employers of their unskilled helpers. In the cotton industry, for instance, about two-thirds of the boys and one-third of the girls were thus 'in the direct employ of operatives' and hence more closely watched, and outside the factories proper such arrangements were even more widespread. The sub-employer, of course, had a direct financial incentive to see that this hired help did not slack.

It was rather more difficult to recruit or train sufficient skilled or technically trained workers, for few pre-industrial skills were of much use in modern industry, though of course many occupations, like building, continued practically unchanged. Fortunately the slow semi-industrialization of Britain in the centuries before 1789 had built up a rather large reservoir of suitable skills, both in textile technique and in the handling of metals. Thus on the continent the locksmith, one of the few craftsmen used to precision work with metals, became the ancestor of the machine-builder and sometimes provided him with a name, whereas in Britain the millwright, and the 'engineer' or 'engine-man' (already common in and around mines) did so. Nor is it accidental that the English word 'engineer' describes both the skilled metal-worker and the designer and planner; for the bulk of higher technologists could be, and was, recruited from among these mechanically skilled and self-reliant men. In fact, British industrialization relied on this unplanned supply of the higher skills, as continental industrialism could not. This explains the shocking neglect of general and technical education in this country, the price of which was to be paid later.

Beside such problems of labour supply, those of capital supply were unimportant. Unlike most other European countries, there was no shortage of immediately investible capital in Britain. The major difficulty was that those who controlled most of it in the eighteenth century —landlords, merchants, shippers, financiers, etc.—were reluctant to

invest it in the new industries, which therefore had often to be started on small savings or loans and developed by the ploughing back of profits. Local capital shortage made the early industrialists—especially the self-made men—harder, thriftier and more grasping, and their workers therefore correspondingly more exploited; but this reflected the imperfect flow of the national investment surplus and not its inadequacy. On the other hand the eighteenth-century rich were prepared to sink their money in certain enterprises which benefited industrialization; most notably in transport (canals, dock facilities, roads and later also railways) and in mines, from which landowners drew royalties even when they did not themselves manage them.

Nor was there any difficulty about the technique of trade and finance, private or public. Banks and banknotes, bills of exchange, stocks and shares, the technicalities of overseas and wholesale trade, and marketing, were familiar enough and men who could handle them or easily learn to do so, were in abundant supply. Moreover, by the end of the eighteenth century government policy was firmly committed to the supremacy of business. Older enactments to the contrary (such as those of the Tudor social code) had long fallen into desuetude, and were finally abolished—except where they touched agriculture—in 1813–35. In theory the laws and financial or commercial institutions of Britain were clumsy and designed to hinder rather than help economic development; for instance, they made expensive 'private acts' of Parliament necessary almost every time men wished to form a joint-stock company. The French Revolution provided the French—and through their influence the rest of the continent—with far more rational and effective machinery for such purposes. In practice the British managed perfectly well, and indeed considerably better than their rivals.

In this rather haphazard, unplanned and empirical way the first major industrial economy was built. By modern standards it was small and archaic, and its archaism still marks Britain today. By the standards of 1848 it was monumental, though also rather shocking, for its new cities were uglier, its proletariat worse off, than elsewhere,* and the fog-bound, smoke-laden atmosphere in which pale masses hurried to and fro troubled the foreign visitor. But it harnessed the power of a million horses in its steam-engines, turned out two million yards of cotton cloth per year on over seventeen million mechanical spindles, dug almost fifty million tons of coal, imported and exported £170 millions worth of goods in a single year. Its trade was twice that of its nearest competitor, France: in 1780 it had only just exceeded it. Its cotton

* 'On the whole the condition of the working class seems distinctly worse in England than in France in 1830–48,' concludes a modern historian.[38]

consumption was twice that of the USA, four times the French. It produced more than half the total pig-iron of the economically developed world, and used twice as much per inhabitant as the next-most industrialized country (Belgium), three times as much as the USA, more than four times as much as France. Between £200 and £300 million of British capital investment—a quarter in the USA, almost a fifth in Latin America—brought back dividends and orders from all parts of the world.[39] It was, in fact, the 'workshop of the world'.

And both Britain and the world knew that the Industrial Revolution launched in these islands by and through the traders and entrepreneurs, whose only law was to buy in the cheapest market and sell without restriction in the dearest, was transforming the world. Nothing could stand in its way. The gods and kings of the past were powerless before the businessmen and steam-engines of the present.