



British Economic Growth during the Industrial Revolution.

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spot. Improvement in communications made possible the evolution of a quite different "colonial system." Governors could henceforth be expected to follow their instructions more carefully and to communicate more frequently. Colonial legislation in many areas could be required to have suspending clauses delaying implementation until royal concurrence had been obtained. But dissatisfied interests in the colonies could also use improved communications to alert their friends, agents, and correspondents at home and bring different kinds of influences to bear in shaping London's colonial decisions. This thoroughly researched and clearly written work gives us a new way to think about colonial economy and polity. One only wishes that Ian Steele had carried his account down to 1775 and hopes that he may some day.

The North Sea was a smaller but much more ancient maritime world whose history embraces the Viking wanderers and raiders of the past as well as the offshore oil wells of today, and countless fishing craft and freight carrying vessels in between. In 1978-1979 the Stavanger Maritime Museum in Norway and the National Maritime Museum at Greenwich in England sponsored two conferences at which papers were presented on various aspects of the maritime history of the North Sea. Seventeen very interesting ones are printed in *The North Sea*. Covering as they do so many and such varied topics (from geology to shipbuilding), their appeal will be to quite varied audiences. Medievalists will naturally turn to the papers by Helen Clarke and Alan Binns on the Germanic invasions and the Vikings as well as the more specialized papers by Angela Evans and Detlev Ellmers on medieval ship-types. Specialists in the early modern centuries will wish to note the rich group of papers on Dutch trade with and cultural influences on Scandinavia by P.M. Bosscher, J.R. Bruijn, J. Bjorklund, and C.O. Cederlund. Historians of naval warfare will find much of interest in some of the preceding as well as in Bard Kolltveit's paper on naval warfare in the seventeenth and eighteenth century, A. N. Ryan's on northern maritime resistance to the Continental System between 1808 and 1812, and G. Till's on the North Sea in the wars of the twentieth century. Modern economic historians can enjoy A. Pearsall's paper on the introduction of steam navigation there, A. H. Rasmussen on the development of modern deep-sea fishing, and A. Thowsen on North Sea shipping since 1945. The volume ends appropriately with a paper by J. Hagland on the development of the Norwegian oil fields.

The North Sea is well illustrated and the footnotes will call North American readers' attention to some interesting recent Dutch and Scandinavian work.

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British Economic Growth during the Industrial Revolution. By N.F.R. Crafts. New York: Oxford University Press, 1985. Pp. 193. \$27.50

N.F.R. Crafts skillfully fulfills his intended task: to present and draw out the implications of his work and that of C. K. Harley, C. H. Feinstein, Peter Lindert, Jeffrey Williamson, and others, which revises estimates of British economic growth during the industrial revolution. The revisions proposed are large, important, and pregnant with implications.

Industrialization in Britain as set out by Phyllis Deane and W. A. Cole in *British Economic Growth* (Cambridge, 1962) is close to the vision of W. W. Rostow in his *The Stages of Economic Growth* (Cambridge, 1960). The preconditions for modern growth fall into place. Thereafter accumulation is high, structural change swift, income growth rapid, and innovation widespread. Industrialization in the revised view laid out by Crafts is more restrained. Income growth is slow, structural change less rapid, productivity growth confined to a few industries centered around cotton, coal, and steam.

If this revised picture is correct, then historians have mistakenly thought that Britain was industrial earlier than was the case. The industrial revolution may have been a gentler process; the decades 1780 to 1850 may mark less of a divide from previous economic structure; and Britain before 1800 may have been richer than previously recognized: slower growth from 1780 to 1850 implies that British income must have been high and the British agricultural sector small in 1780.

These revisions change how debates on the industrial revolution should be assessed. Just as Deane and Cole changed our perceptions a generation ago, these revisions of their work shift the grand agenda facing economic historians. Some pieces of evidence become less puzzling, fit better with growth at the slower pace than at the pace of Deane and Cole. Pieces that had seemed in place fit badly with the view of growth Crafts presents.

The heart of this book is chapter 2 in which Crafts lays out his estimates of industrial production and criticizes the accepted estimates of Deane and Cole. Deane and Cole use overseas trade heavily as a proxy. Crafts uses primary estimates of output by industry as the raw material for his indices of industrial growth. The differences are large. Crafts asserts that industrial production from 1780 to 1830 grew 1.5 percent per year less than Deane and Cole claim it did. Compound interest implies that industrial output in 1780 may have been twice what Deane and Cole thought.

The revisions also upset the accepted distribution of innovation across industries. The old view had seen the industrial revolution as an economy-wide leap in productivity, as the spreading out of a broad wave of innovation. Donald McCloskey, for example, argued in *The Economic History of Britain Since 1700* (Cambridge, 1981) that progress in "modernized" sectors—textiles, iron, and transport—accounted for less than half of aggregate productivity growth from 1780 to 1860. Other sectors had also been caught up in the process; the "invisible" revolution outside leading sectors had an impact on economy-wide productivity equal to the "visible" revolution. But the estimates Crafts makes of agricultural and aggregate productivity hold that productivity in nonmodernized industry stagnated. The contribution of "modernized" industry to aggregate productivity is enough to account for *all* nonagricultural gains from 1780 to 1860.

Two conclusions follow. First, the industrial revolution in Britain no longer appears to present the emergence of a structural bias toward rapid innovation in all sectors. Instead, the industrial revolution is a burst of innovations in a few dynamic industries. In the "modern" sectors innovation is rapid and ongoing; elsewhere, techniques remain much as they had been.

Second, Crafts has overdone it. His estimates of growth are too low *because* they remove productivity growth in nonmodernized industry. Adam Smith did not see a steam engine. He did not know that the *Wealth of Nations* would be followed by the creation of industrial Manchester. Yet Smith saw a bright future, for the market would naturally generate improvements in technique and exploitations of dynamic economies of scale. Smith could have been wrong, but it is hard to believe that productivity outside the textiles-iron-transport triangle was as stagnant as is necessary for the productivity estimates Crafts makes. In addition Thomas Carlyle—and the general fear for what the industrial revolution was doing to the "condition of England"—makes no sense if industrialization was as gentle as Crafts imagines. Either the estimates of productivity growth within "modern" industry are too high, or the estimates of aggregate productivity growth are too low.

Crafts's estimates of agriculture are more puzzling than those of industry. Crafts claims agricultural productivity grew faster than industrial productivity. In "Debating the British Industrial Revolution," *Explorations in Economic History*, 1987, Jeffrey Williamson objects that this implies Britain should have become not the first industrial but rather the first agricultural nation, exporting agricultural goods for handicrafts, and Joel Mokyr, in his "Has the Industrial Revolution Been Crowded out?" (*Explorations*

in *Economic History*, 1987), protests that agricultural output data are too weak to support the argument Crafts makes. This puzzle must be left to future research.

In chapters 3 and 6 Crafts considers what slower growth implies for our vision of structural change. Just as growth was slower, so the shift of labor from agriculture to industry was slower. Britain in 1750 had been far more prosperous and commercial than the Continent. Britain's relative advance in income and in the sectoral distribution of economic life appears to owe more to the period from 1600 to 1750 than to the next century; "England's Apprenticeship" is in need of more attention.

Crafts is weakest in his chapter on sources of growth. He notes that only "30% of the extra growth [in total output] in 1801-31 . . . [over] 1700-60 came from productivity" and concludes that factor inputs played a large role, that "thrift" has been understated compared to "invention." But the same data expressed in terms of per capita output paint another picture: productivity contributes 150 percent of extra growth from 1801 to 1831 over the period 1700 to 1760 in per capita income, for the rate of growth of the capital-labor ratio falls.

Chapter 5 tackles the standard-of-living debate. The central puzzle in this debate has never been that pessimists are right—standards of living did not fall—but that there are pessimists. Elsewhere the jump in wealth during industrialization is so striking that respected historians simply do not claim that working-class real incomes fell. Broad productivity growth in the style of Deane and Cole fits uneasily with even the existence of pessimists, but by revising downward the rate of growth of output and by concentrating technological advance in a few sectors Crafts makes the existence of pessimists more compatible with the path of output.

The slowing down of the industrial revolution also reduces dissonances that have always existed between economic and other forms of history. Political history saw the glacierlike cession of power by traditional elites. Mass society emerged only very gradually. These Whig continuities fit less well with the growth pace of Deane and Cole than with the slower, revised pace of growth.

The chapter on Britain's relative decline shows Crafts at his most provocative. Deane and Cole claim that the period from 1750 to 1870 sees Britain acquiring in all industries both a technical edge and the means to maintain and recreate this edge. The subsequent failure—given Britain's wealth, capital, science, and technology—to gain a leading position in the "high tech" industries of 1900 appears extraordinary. Crafts argues that coal and cotton supported a cluster of innovations that gave Britain a large edge in a small number of industries. Britain's failure to maintain its broad edge in the period from 1870 to 1914 is thus unsurprising, for it had never held such an edge.

British Economic Growth During the Industrial Revolution is a fine book, quite possibly the best new book of economic history I have read in years. But I expect the book to succeed not as a synthesis for students but as a base camp for researchers. The claim that Deane and Cole's industrial production index grows too fast is convincing. The way Crafts draws out the implications of the new industrial production estimates is exciting. But the interpretation given still has many loose ends and awkwardnesses. The volume is, therefore, primarily one that defines a future research agenda, not one that summarizes settled conclusions.

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The Decline of the British Economy. Edited by Bernard Elbaum and William Lazonick.
New York: Oxford University Press, 1986. Pp. 310. \$49.00.

Britain's decline is an enigma. Absolute growth has been impressive: per capita incomes are six times 1870 levels. Yet absolute advance has been coupled with relative decline. Britain was the industrial economy with the highest per capita income in 1870.