

Economy'—includes a valuable analysis of trends in wages and working hours. The remarkable company loyalty displayed by many railwaymen is explained through the exceptional security of employment, the opportunities for promotion in a rapidly expanding industry, and the perquisites in the form of company housing, savings banks, and pension schemes available to some of the staff of the larger concerns. All these aspects are given full coverage by the author. The value of the book is enhanced by large-scale and clear maps of the railway network in 1839, 1852, and 1872 and an appendix containing a complete list of railwaymen's friendly societies and the benefits they provided in 1871. Although one could wish for the occasional comparison with working conditions in other industries to highlight the differences in employment on the railways, Dr Kingsford's book is an indispensable work of reference and interpretation on the labour force of the much glamorized railway industry of the years before 1870.

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G. R. HAWKE. *Railways and Economic Growth in England and Wales, 1840-1870*. (Oxford: Clarendon Press. 1970. Pp. xiv + 421. £6.)

Prof. Hawke, a New Zealand scholar, has written an important book, one that sheds light on the history of the Victorian railway and the Victorian economy generally by the skilful use of the tools of the economist and the historian in the style of the best of the American "new economic historians". The book is not original in broad plan, as it follows rather closely the questions and methods used by Robert Fogel and Albert Fishlow in their books on the American railways, but is very original in detail. The breadth of scholarship exhibited in it is impressive, encompassing without strain a mass of literature ranging from railway minute books to recent articles on economic theory. The book bulges with facts, from the tonnage of dead meat brought into London to the pattern of distribution of coal from the mines. Both of these facts happen to be irrelevant to the main argument, which illustrates another, and less desirable, feature of the book. It bulges with reasoning as well, and, again, the reasoning is not always germane. Still, one learns a lot from the book. The learning, furthermore, is less painful for the reader than it often is in monographic works in economic history because the author in his turn has taken pains with the style. It is clearly written and the voice behind the writing is sceptical, hard-minded, and sometimes amusingly sharp, as when antiquarian railway history is characterized as having "only the adult equivalent of the appeal to children of model trains".

There is no playing with model trains here, only the serious business of estimating the impact of the railway on economic growth in England and Wales. The central task of the book is calculating the social saving of railways in 1865 and for this task the pertinent chapters are those on 'Passenger Traffic' (ii), 'Railways and Freight Traffic, 1840-1870: An Aggregate View' (iii), and 'The Social Saving: An Interim Summary' (vii), as well as the 'Introduction' and 'Conclusion'. The other ten chapters are either supporting material for this calculation, much of it tangential, such as the two long chapters on agricultural freight—when it is known at the outset that agricultural products were a small part of the railway's traffic in Britain—or extensions of the calculation to take account of dynamic effects, many of them unconvincing, such as the attempt in the chapter on changes in the total productivity of the railways to demonstrate that improved utilization, not better management, accounted for most of the productivity change after 1852—when the very high implied rate of change of utilization (2.7 per

cent per year) would, given any reasonable base, quickly yield utilization rates in excess of 100 per cent.

The social saving of railways in 1865 is estimated at 4.1 per cent of the income of England and Wales from the saving on freight traffic and 2.6 to 7.1 per cent from passenger traffic, depending on how increased comfort of passengers is valued, yielding in total a social saving considerably above the 4-6 per cent estimated by Fogel and Fishlow for the United States. Although the calculations are carefully supported, they are by no means invulnerable and the allocation of research effort devoted to their support is sometimes peculiar. The elaborate yearly estimates of social saving from 1840 to 1870, for example, have a low intellectual marginal product, being essentially extrapolations from the 1865 figure, with no variations permitted in the costs of the alternative modes of travel (canal for freight and coach for passengers). The estimates of the costs of the alternative modes for freight and passenger in 1865, on the other hand, in view of their central place in the argument, are made too briefly. The hypothetical cost of freight on canals in 1865 is estimated, for some reason on the basis of information for the 1840's and earlier years, at 2.3d. per ton-mile, and this figure is applied to coal, which was by far the most important traffic on English railways and accounts for much of the social saving on freight. The railway cost is estimated at 0.6d. per ton-mile. Multiplying the difference in cost by the amount of coal carried in 1865 yields the high estimate of social saving on freight. Now it may be true that it would have cost nearly four times more to carry coal on canals than on the railways in England, but the evidence in the American work on this subject suggests that the costs of the two modes were roughly the same (on longer hauls by both modes than in England, to be sure, but it does not seem plausible that the differential would change as drastically as a factor of four in consequence). At the very least it should be a matter of priority to inquire into the reasons for the startling difference in the relative costs of canals and railways in the two countries. The estimate of the cost of the alternative mode of travel for passengers, which is accomplished in one page (p. 44), is also somewhat doubtful. To give one example of how the analysis might have been extended, the average trip by train was only ten miles, with of course many shorter trips, and at this range it becomes relevant to ask whether the focus on the line-haul is justified. For short journeys, as modern studies of commuter transport systems have emphasized, a major part of a rail trip is spent getting to and from the station and waiting for trains. Coaches, as their name suggests, could well have been the motor buses of the 1860's, with more frequent scheduling on a greater variety of short routes compensating in some degree for their higher cost than the railways. In any case, the value relative to railways that people put on the entire coaching service, frequent scheduling along with a rough ride, needs to be brought into the comparison, preferably by observing consumers' choices when faced with both modes rather than by appealing to the expert opinion of parliamentary commissioners and engineers alone.

These difficulties, if they are significant, bias the estimate of social saving upwards. Since it is the purpose of the book to develop the Schumpeterian theme that the railway was one example of a Great Innovation, which "cannot be sacrificed after its development without some compensation for at least 10 per cent of national income" (p. 409), it is unfortunate that it may be possible to show that the case depends on these biases in the measure. More important still, the entire method yields an estimate of social saving biased upwards relative to the truth. Without the railway less transportation would have been consumed, especially perhaps less passenger transportation. Ignoring this elasticity of demand by using the volume of traffic after the introduction of the railway exaggerates the true loss from compelling the economy to move to canals and coaches. The economy would always have been able to adjust to some extent to the absence of

railways: to use the existing output of transportation and its pattern by product and by region as the only material for a calculation of social saving is to make at the outset the assumption that the economy was capable of no adjustment at all. In short, the book cannot make its central point with the tools it uses.

These strictures do not detract from the importance of the book. Whether the main argument is correct or not, it is still a big book in more than mere number of pages. Any serious student of the economic history of the English railway or of the many related histories in nineteenth-century England will need to begin with this book. It will amply repay his close study.

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