**The Penguin Dictionary of Economics** *by Graham Bannock, R. E. Baxter and Ray Rees*
(Penguin Books, Harmondsworth, Middlesex, 1984) pp. 495, $8.95(pb), ISBN 0 14 051.134 2.

Now into a third edition, the *Penguin Dictionary of Economics* continues to be a valuable basic reference for people requiring some knowledge of economic terms in their work, for economics students, as well as for those wishing to follow economic discussion in the media. But readers of *Prometheus* may be disappointed. There is scant treatment of the economics of technological change, innovation, communication and science policy, while information economics appears to be non-existent.

This latest edition does contain entries for research and development, innovation, and technology — an improvement on the first edition, which left out the last. Joseph Schumpeter has an entry, and his emphasis on innovation as a source of economic growth is acknowledged. However, other economists working in the area of economics of innovation (such as Edwin Mansfield, Zvi Griliches, Chris Freeman, Fred Scherer, Edward Denison, Richard Nelson and Nathan Rosenberg) are not mentioned. The entry under regulation provides no hint that science and technology policy is becoming a central concern of governments. The economics of the patent system is not mentioned.

The biological paradigm or evolutionary perspective has been a part of economics since Adam Smith, continuing through to Thomas Malthus, Karl Marx, Alfred Marshall, Joseph Schumpeter (who made it central to his analysis of the economic system), Edith Penrose, Armen Alchian, Kenneth Boulding, Richard Nelson and Sidney Winter. The evolutionary approach, with its emphasis on competitive selection and mutation, appears particularly appropriate for the analysis of innovation, growth and change. Recently, Nelson and Winter have attempted to formalise this approach.[1] Yet evolutionary theory is not mentioned in this dictionary, although hints of its existence may be found under the entries for economic dynamics, disequilibrium, and Joseph Schumpeter.

The most glaring omission from this dictionary is all mention of the economics of information and knowledge. Readers seeking background on this field, or on terms from it (such as the information sector, information occupations, knowledge industries, the economic characteristics of information, primary information activities, transborder data flows, information technology, economics of search, economics of internal organisation, or markets versus hierarchies) will be disappointed.

Although the economics of information was officially recognised only in 1976 by the American Economic Association (by award of a category in their index for articles and abstracts), Donald Lamberton refers to the pioneering contributions made in this area by Knight, Hayek, Marschak, Bell, Machlup, Shackle, Boulding, Kornai, Simon and Arrow.[2] Unfortunately, the entries in this dictionary under Knight, Hayek, Simon and Arrow give little hint of this aspect of their work. (Strangely, neither Machlup nor Boulding have an entry.) Lamberton also refers to the recent surveys, symposia and conferences on information economics, as well as its burgeoning literature that reaches into every category of the American Economic Association's classification. Indeed, by 1984, the same year this third edition of the Penguin dictionary was

published, the pervasiveness of information economics was such that Christian von Weizsäcker could say in *Econometrica* that "the economics of information, as we understand it today, is the general framework of the present generation for formulating any problems about the efficient allocation of resources."[3] The authors of the Penguin dictionary would appear to be not only out of the present generation, but unaware of its existence.

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1. R. Nelson and S. Winter, *An Evolutionary Theory of Economic Change,* Harvard University Press, Cambridge, Mass., 1982.
2. D. M. Lamberton, 'Information economics and technological change' in S. Macdonald, D. M. Lamberton and T. D. Mandeville (eds), *The Trouble with Technology,* Pinter, London, 1983, pp. 75-92.
3. Christian von Weizsäcker, 'The costs of substitution', *Econometrica,* 52, 5, 1984, p. 1085.

**Using Microcomputers In Schools** *edited by Colin Terry*
(Croom Helm, London, 1984) pp. 181, $25.95, ISBN 0 7099 2443 7.

This book contains twelve articles written by some of the leading authorities on the use of microcomputers in education in the USA and the UK, together with a brief introduction to microcomputers and their use in schools written by the editor.

The physical presentation of the book leaves much to be desired. Pages are packed with rather small print, and the constant use of excessively large paragraphs is not conducive to easy reading. There is also a marked shortage of graphs, pictures or diagrams. In addition, the presentation of the content would have been enhanced if the articles had been grouped together according to common themes.

First impressions, then, are not good. This is a pity because the topic is a new, innovative, and exciting area of education. In fact, many of the contributing authors also engender this sense of excitement. The book covers a number of important areas (or themes) relating to the use of microcomputers in schools — types of computer-based learning, computer languages and learning, and a variety of microcomputer applications in the classroom.

The articles by Alfred Bork, Nicholas Rushby and Peter Weston provide an excellent theoretical framework for the different types of computer-based learning. Colin Baker then considers the implications of using the computer in the curriculum. These matters are relevant to all teachers involved, or about to become involved, in computer-based education. Two articles — Finzer and Resek's 'Computer languages and learning', and Abelson's 'A beginner's guide to Logo' — discuss the use of specific computer programming