he sees as facilitating, and in turn dominating, the growth of the international economy during the nineteenth century.

The central argument, that a cosmopolitan bourgeoise quickly grew in the late eighteenth and early nineteenth centuries to replace mercantilism, which had facilitated the growth of the old colonial system, is not in itself novel. But the deterministic significance which the author attaches to it, particularly in the light of the impact upon the trading firm of both technological and administrative innovations, certainly lends a welcome insight into a much neglected aspect of the history of international commerce. The underlying thesis is amplified in terms of its 'cosmopolitan' character, which sees national and ethnic origins of status and influence as subordinate to the growing international economy, though of course one minimises the influence of London's commercial dominance at one's peril!

Charles Jones presents a far ranging study of the variety of firms which made up this cosmopolitan commercial hegemony, but his admittedly intentional emphasis is biased towards the social and cultural rather than towards the economic causes and effects of this process, and as a consequence the study might be seen as falling somewhat short of presenting the reader with a completely satisfactory account. Questions such as how significant, or how large, or how representative, are not asked and neither is there a conscious attempt made at explicit comparisons between individual firms, the forces which determined their behaviour and their commercial success. The economic historian might be forgiven for viewing the volume with a rather critical eye. Despite these shortcomings, the study is an interesting and well written addition to the growing historiography of the expansion of the commercial world of the nineteenth century.

Colin Baber
University of Wales College of Cardiff

The Commonwealth of Science: ANZAAS and the Scientific Enterprise in Australasia 1888-1988 *edited by Roy MacLeod*
(Oxford University Press, Sydney, 1988) pp. xvi + 417, cloth $35.00, ISBN 0-19-554683-0

This book is a collection of essays which were specially written to celebrate the centenary of the foundation of the Australian and New Zealand Association for the Advancement of Science (ANZAAS), born amidst the venerable surroundings of the Great Hall of the University of Sydney in 1888. It was an exciting day, full of expectations of great things to be done and to be written about by historians of science in future years. H.C. Russell, the third Government Astronomer at Sydney Observatory and the first President of the Association, told the gathering of over 800 disciples and gurus of colonial science that this Association "stands as a protest against the shortsighted and utilitarian policy of those who would cultivate only what they characteristically call bread and butter sciences" (p. 41). The history of science in Australia and that of the Association has been a struggle between the pragmatists and the dreamers. The debate is far from over and will continue as long as there are scientists, politicians and taxpayers.

The editor has divided the book into three parts. The first section has three chapters of which the first two are devoted to giving a broad sweep of the rise of the Association and its chequered history up to the Association's jubilee in 1939. The third chapter is devoted to the development of Australian science after World War II and describes some of the events that led to the Association becoming just another voice in the wilderness of Australian politics.

While a lot of the material is interesting, it would have been more informative and valuable to the readers of this section if the authors had given us a critical and analytical evaluation of the achievements and failures of ANZAAS over the last 100 years and possibly also had made some suggestions for future policy directions for the Association. It is a pity that, although one of the authors mentions in passing the ABC's programme *Last Chance for the Lucky Country,* he did not take the opportunity of placing the role of ANZAAS in the broader context of what is happening to science and technology in Australia today.

The Association's Congress in the 1890s attracted only three papers on Literature and Fine Arts. Its poor showing was strongly condemned by the Professor of Chemistry at Melbourne University, David Masson, and along with the prominent physicist, William Sutherland, he suggested that the section be struck off the Association's list. This was probably the Association's greatest mistake for it served to widen the gap between the humanities and the sciences to the detriment of the intellectual and cultural life of Australian society. The Association never completely recovered from this alienation of the humanities. At its last congress appearance of the Literature and Fine Arts Section in 1892, Professor Morris thanked the "men of science who rule this Association" (p. 47) and warned them in parting that a "world in which science reigns supreme, where she exercises complete control over education, complete mastery over platform, chair and pulpit, would run the risk of being a dull world" (p. 47).

The second section of the book has six chapters which provide historical sketches of some of the scientific disciplines; (the life sciences, physical sciences, chemical sciences, anthropology, earth sciences and social sciences). These chapters are probably the most interesting ones in the book. There appears to be an underlying theme that binds these chapters together, although it is more explicitly stated in some chapters than in others. What seems to emerge from these chapters is the dependent nature of Australian science in the nineteenth and early twentieth centuries. It is rather surprising to note that even as late as the 1920s, major biological programmes in Australia arose from imperial headquarters in London. Projects chosen for their specific benefit to the Mother Country were granted generous finance by the Empire Marketing Board. The British Government had set up the Empire Marketing Board to encourage efficient primary production in the Empire and marketing in Britain, thereby ensuring Britain's food and fibre supplies. Australian biologists were still seen in terms of cheap intellectual labour for the metropolis.

The appointment of David Ribett as the first chief executive officer of the CSIR saw a change in attitudes and an orientation towards Australia's own problems. Australian institutions, according to him, had to research Australian problems. The influence of some strong personalities on the development of science in Australia is also referred to by the authors of the chapters in this section. The chapter on the physical sciences shows the dominance of the state observatories in the proceedings of Section A of the Association (astronomy, mathematics, physics and mechanics) for much of its formative years. It also highlights the formation of independent societies by physicists and astronomers

after World War II. The Association thus became less and less relevant to their research activities, and for physicists and astronomers it lost its reason for being. This was in contrast to the biologists who still see ANZAAS as providing a valuable forum for discussion of broad biological issues. For the geologists, ANZAAS began to lose its relevance in the 1950s with the formation of their specialist societies both in New Zealand and Australia.

The last section of the book, which contains six chapters, deals with the role of science in the service of society. The various chapters deal with aspects of the social responsibility of scientists, the encouragement of research and development, Australian attitudes to conservation and health, and the prospects of using science and technology for the benefit of society.

In general the book is an interesting and valuable addition to the small but growing number of publications on the history of Australian science. However, the style and format of the book leaves much to be desired when it is compared with the up-market publications on the history of Australia which have recently been produced for the bicentenary. The book is not likely to appeal to the general public. This is a pity as the Association has missed a wonderful opportinty of publicising its achievements to a wider audience made up of the taxpayers and the politicians who make decisions on what is spent on science in this country.

Ragbir Bhathal
Museum of Applied Arts and Sciences
Sydney

Technical Change and Industrial Policy *edited by Keith Chapman and Graham Humphrys*
(Basil Blackwell, Oxford, 1987) pp. 264, US$49.95 hardback, ISBN 0-631-15215-6

Keith Chapman and Graham Humphrys's edited book aims to examine the economic, social, and policy implications of technical change in industry, at a time whem ". . . neo-classical location theory . . . is far too narrow a foundation for contemporary research" (p. 1). They have brough together 11 chapters by 14 well-known industrial geographers and applied economists, and have provided their own introduction and conclusion. These works were all originally presented as papers at a joint meeting between the Institute of British Geographers' Industrial Activity and Area Development Study Group, and its counterpart in the Canadian Association of Geographers, at Swansea in 1985. As such, the book has an Anglo-North American focus, but it still contains much that is of general interest to researchers of contemporary industrial change in all advanced economies.

The book is divided into three sections. The first part is concerned with technical change as a phenomenon. Chris Freeman (University of Sussex) reviews different perspectives within 'long wave' writings, and discusses the 'information technology paradigm' and regional policy. Richard McArthur (Cheltenham College, UK) then considers the "heroic" views of innovation in the literature, and presents an analysis of the diffusion of the colour scanner. Pete Wood (University College, London) discusses the growth of producer services in the Canadian context. Richard Harrison (Queen's University, Belfast) explores the