

# Book Review Section

Compiled by John Jenkin\*

**John Gascoigne**, *Joseph Banks and the English Enlightenment: Useful Knowledge and Polite Culture*. Cambridge: CUP, 1994. xi + 324 pp., illus., \$49.95.

Sir Joseph Banks (1743–1820) is one of the most extraordinary European figures of the eighteenth century. As a youth, he entertained a grand passion for botany and used some of his ample patrimony to have himself tutored in the subject according to the new Linnean precepts. As a young man, he sailed to Newfoundland and Iceland and circumnavigated the world with the great Captain Cook. Then, from 1778 until his death forty-two years later, he presided over the affairs of the Royal Society. In this capacity, he conducted a vast correspondence on a multitude of subjects with the learned of Europe and North America. For decades he advised his monarch and a succession of governments on such subjects as fen-drainage, sheep-breeding, agriculture, coinage, hemp cultivation and manufacture, exploration and colonization. As part of his general endeavour, Banks sent a succession of young men to the ends of the earth to collect exotic or useful plants, insects and animals, which he then distributed to other areas; for example, cochineal and bopal from Brazil to India, Chinese hemp to England and France, European culinary plants to Pacific islands, breadfruit from the Pacific to the West Indies. The famous Royal Botanic Garden at Kew, of which Banks was effectively director, became a central point in this exchange, while the botanical gardens at Jamaica and St Vincent, St Helena, Calcutta and Sydney were lesser sources. His role was similar to that of a modern scientific commission (e.g. the CSIRO in Australia), but he played it largely single-handed and without payment.

The range of Banks' interests and the sheer volume of his correspondence boggle

the modern mind. Until his death, his papers, comprehensively indexed and neatly filed, were kept at his London town-house at 32 Soho Square. After his death they passed through the hands of various executors and would-be biographers. Gradually some sections were hived off (to the British Museum, among other institutions) and some may have been burnt. Then in 1880, substantial portions came into the possession of Edward Knatchbull-Hugessen, first Baron Brabourne, who after some years asked the British Museum to purchase them. When the Museum's Trustees declined to do so, Brabourne sold them. A large lot was bought by the Agent-General of New South Wales in 1884, and the remainder were auctioned in 1886.

These deposits and sales resulted in the dispersal of Banks' papers to the very corners of the globe; for example, to Sydney, Wellington, San Francisco, New Haven, as well as to various private and public collections in England. In the last one hundred years, as related papers have slowly come to light with the break-up of other private collections, libraries and individuals have added to their holdings. The massive Calendar, published by the Natural History Museum in 1958 and its later supplements, lists approximately 7,800 letters to and from Banks, and related papers, held in Great Britain. Awesome as this total is, it does not include the many hundreds (thousands?) of papers held in the files of the government departments and private companies that sought the great man's advice. The files of the Home Office, the Board of Trade, and the East India Company from the early 1780s, all contain voluminous material. Sometimes other files unexpectedly do so too; for example, located under the heading 'Privy Council' there is, in the miscellaneous collections of the Navy Board for 1801, a set of papers relating to Banks' investigation of the possibility of manufacturing canvas and cordage from Indian varieties of hemp.

In view of Banks' travels and far-flung interests, the present geographical distribution of his papers has a certain appropriateness, not the least aspect of which is that the presence of relevant items in state institutions has contributed very significantly to the writing of histories of countries such as Australia and New Zealand. Nonetheless, the dispersal now makes life difficult for scholars seeking to develop a comprehensive understanding of individual aspects of Banks' multi-faceted activity. The story told by H.B. Carter of his enquiry into Banks' role

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in the breeding and maintenance of George III's flock of Spanish merino sheep, which involved research in Britain, Australia and the United States, has been all too commonly the scholar's lot.

Decades ago, partly with a biography in mind and using various forms of photocopying, Carter began to reassemble Banks' papers within the one location—the Natural History Museum in London. Other institutions have now joined the Museum to elevate this to the status of an official project. The intention is to publish all the surviving Banks papers according to topic and/or geographical area. The first volumes are now in hand. The appearance of this massively-extended documentary record will progressively render outdated or obsolete much that has previously been written about Joseph Banks and his role in the development of European science, and become the basis of new and sounder studies.

The first such study was Harold Carter's 1988 biography, *Sir Joseph Banks, 1743-1820*. Overflowing with detail, Carter offered a very good sense of the range of Banks' interests, of the rhythms of his days, weeks, months and years, as he held his famous working breakfasts at his London town-house and presided over the Royal Society, and moved, as season, circumstance and ceremony ordained, between the town-house, his country house and gardens, Spring Grove, on the outskirts of London, and his seat of Revesby Abbey in Lincolnshire.

John Gascoigne's *Joseph Banks and the English Enlightenment* is the second work to be based on scrutiny of the extensive Banksian archive. Though it contains a short biographical sketch (which uses Carter's work as background), this study is fundamentally not biographical in orientation. More than with the simple facts of Banks' life, Gascoigne is concerned rather to place Banks and his work in the context of the growth of the new scientific disciplines and the spread of Enlightenment values in England in the second half of the eighteenth century. Thus, he tells us of Banks' transformation from a young man with a rather amateurish passion for botany into a serious scientist, who systematically assembled one of the finest herbariums, who institutionalized the 'botanic' garden, and who furthered the spread of the Linnean system of binominal classification.

We learn something, too, of the growth of the British Museum, and of the role there of Banks' protegee, the Swedish botanist Daniel Solander; and we learn much more of the

operations of the Royal Society under Banks' presidency, which were often tense, partly because of the emergence of the modern disciplines of anthropology and ethnography from the earlier amorphous 'antiquities'. The last decades of the eighteenth century and the opening ones of the nineteenth century were also a period when Britain's agriculture and rural landscape were transformed, as the enclosure movement intensified and new methods of farming were pursued, as canals were cut and fens drained. (The first canal was opened in 1761, and between 1790 and 1793 there were fifty-three canal navigation bills; by 1815 there were 2,600 miles of canals. There was one Enclosure Act between 1700 and 1710, thirty-eight between 1740 and 1750, while between 1750 and 1800 there were 5,000.) As a large and 'improving' landowner, Banks took a considerable interest in these developments.

Gascoigne does not try to gloss over Banks' very privileged position as the scion of a rich, land-owning family, nor his social and scientific conservatism. But he also shows Banks' determination to place science above nationalistic conflicts and his generosity in meeting the requests of scientists of other nations.

This study is impressive in the range of sources studied and in its grasp of the intellectual contexts of Banks' activities. Gascoigne's account of Banks' various roles is informative and full. Also part of his achievement is the offering of a sense that there was an *English Enlightenment*. Those interested in Banks' life or in the history of European science will find this a rich and rewarding book.

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**Dymphna Clark (transl. & ed.),** *Baron Charles von Hügel, New Holland Journal, November 1833—October 1834*. Melbourne: Melbourne University Press at the Miegunyah Press in association with the State Library of New South Wales, 1994. xxi + 539 pp., illus., \$49.95.

Baron Charles von Hügel was not the first man to come to Australia because his betrothed was about to marry another, nor will he have been the last, but he may well become the best-remembered because of the journal he kept. Its detailed descriptions of places and people, and its record of his reflections on Australia's environment and vege-

tation, make it an important document in Australia's natural and social history.

Son of a father ennobled for service to an Elector of the Holy Roman Empire, Hügel studied law at Heidelberg, fought against Napoleon in the Austrian army, and as a soldier and diplomat visited Scandinavia, Russia, France and Italy. In 1824, and barely aged thirty, he resigned from the army to devote himself to a study of the natural sciences and to the development of an estate, Hietzing, near Vienna, where, like so many others in a age when botany was a fashionable study, he grew 'New Holland Plants'. When his betrothal was suddenly broken off, he left Vienna for France and England, and then for the Middle East and India. In Madras he joined Captain George Lambert's *Alligator*, in which he travelled to Singapore, the East Indies, Western Australia, Van Diemen's Land, New South Wales, New Zealand, and back to Sydney. He returned home via the Philippines, China, India, Kashmir, the Cape of Good Hope and London. During his six-years travelling, he wrote voluminous journals and collected botanical specimens and a vast number of curiosities, many of which are now in the Vienna Naturhistorisches Museum. His collection of plants was described for the *Enumeratio plantarum* . . . of 1837 and the *Stirpium australasicarum herbarii Huegeliani* . . . of 1838 by a team of botanists led by Endlicher, while Hügel himself was engaged in writing a scholarly work on Kashmir and in the further development of the Hietzing garden.

In the *New Holland Journal*, Dymphna Clark presents only the sections relating to Australia and has omitted passages relating to New Zealand and those in which Hügel described his recurrent desolation and pain-of-rejection. There are many descriptions of parts of Australia written by visitors during the 1830s, and this one is like many others in some respects. It contains the kind of comments on flatness, aridity, flies, inns, roads and convicts to which we are accustomed, and some of the set-pieces about the 'tourist destinations' of the day: the difficulty of the descent as well as ascent of Mt Wellington near Hobart, the 'revolution/convolution' that was thought to have created the canyons of the Blue Mountains and the shortcomings of the Weatherboard Inn on the road across those mountains, and wonder at the richness of the sub-tropical rainforests of Illawarra and at the size of the even-then-famous fig tree at Fig Tree.

It is vastly different to the others,

however, in having been written by an observant, well-educated and erudite Austrian naturalist, whose comments on 'the English', their society and colonialism are both entertaining and illuminating, even when one makes allowance for the fact that Hügel spent most of his time with 'gentlemen' and their ladies:

The only thing standing between the English and their rapid progress towards world domination is the fascination alcoholic beverages hold for them. This is where the high wages of their lower classes go . . .

The settlers at Swan River are absolutely opposed to the transportation of convicts to their colony, but surely they are mistaken. Certainly the thought of living under the same roof with a convicted felon is at first shocking. But . . . it appears that transportation supplies a better type of person than those who can be hired in the Swan River Colony, particularly in the light of the harsh and severe laws obtaining in England.

He goes on to point out that convicted forgers and swindlers, deprived of the opportunity to err again, may, as result of their better education, make better servants than the drunkards of Perth.

Wherever the ship took him, Hügel made long walking, and sometimes camping, excursions to see the plants, to collect seeds and to gather specimens that were carefully prepared for drying each evening. After leaving the ship in Sydney, he made even longer journeys. If his journal contains fewer descriptions of plants than might be expected (they were presumably recorded on the thousands of 'memorandum slips' that belonged with his collections), he frequently comments on the plant-associations that he saw and on the relationships between vegetation, soil and geology, and seeks explanations for differences:

[At Swan River] . . . the vegetation of the sandy coastal country and that of the deep soil of the inland are utterly different from each other. The sand is completely covered in a wide variety of luxuriant plants, through which it is often difficult to make one's way, while, except for widely scattered large trees, the deep soil country carries hardly any vegetation or, at most, only small, insignificant plants.

I can find only one explanation for this peculiarity: the seeds of plants growing in the sand fall into the sand. They can be neither blown away by the wind, nor

found by birds or animals, nor can they be destroyed by fire, which in the course of time passes over every part of this continent. On the other hand, in deep, hard soil, all these three factors contribute to the failure of the seed.

In the first of the addenda to his Journal, he summarises his views on the vegetation of New South Wales, ascribes differences to various soil types, and comments on the changes that manuring and introduced species were having on the bush:

Unlike that of other countries, it [the vegetation] is definitely not determined by heat or cold, or by the altitude of the mountains. Here each type of soil produces its own entirely distinct range of plants, and it is possible to predict the type of soil unerringly from the evidence of the vegetation and *vice versa*. With the exception of a few plants that require sea air (presumably salt) in order to thrive ... over all those parts of the colony which I traversed the same plant families always occur in the same type of soil ... and he lists the plants that he regards as characteristic of five major soil types. Four of these are soils 'with a substratum of sandstone', the fifth soils derive from granite 'and related rocks', with soils along the rivers not included.

The remarkable and peculiar feature of this vegetation is that the trees and plants do not form their own soil, and that neither the leaves nor the stems decompose into soil. In other words, the characteristic feature of these plants is that, in order to flourish and grow luxuriantly, they do not in any way require the renovation of the soil by the decomposition process that takes place in all other parts of the world—or, at least, to such a minute degree that it escapes our observation. It is to this peculiarity, perhaps, that we may attribute the pure air of Australia ... Where cultivation is expanding, this vegetation dies out. Due not only to the destruction of the trees but also as a result of manuring the fields, not a single New Holland plant is to be found in their vicinity. European weeds have driven out the indigenous vegetation there, just as the whites have driven out the blacks.

Such musings about the environment will interest not only historians of science but also those interested in both the pre-settlement environment of many areas and the early impact of white settlement upon it. There is also much for anthropologists on the

Aborigines, their use of the environment, and their relations with the newly-arrived settlers who also wished to exploit it, although in a very different way. For the social historian, there are many fine descriptions of life in colonial Australia and of 'Society' in the 1830s (with just a breath of scandal). The text has been so skilfully translated from the German original that few traces of its linguistic origin remain, and they are mostly where a difficult-to-translate word is given so that readers can supply their own synonym should they wish to do so. The book is lavishly illustrated and printed on a paper that allows the pencil sketches and water colours to be reproduced well on the text pages. The coloured plates are on art paper. If the book has a fault it is that it is nearly too heavy to read in bed, which is a pity for it is a 'good read'!

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**Philip F. Rehbock (ed.)**, *At Sea with the Scientifics: The Challenger Letters of Joseph Matkin*. Honolulu: University of Hawaii Press, 1993. 415 pp., illus., US\$38.00.

The great exploratory voyages of the eighteenth and nineteenth centuries have long been recognised as important factors in the increasing prominence of science as a public and professional activity. Cook's voyages made it possible for Joseph Banks to acquire his astonishing domination over so much 'official science'; the *Beagle*, *Terror* and *Rattlesnake* voyages similarly played no small part in elevating Charles Darwin, Joseph Hooker and Thomas Huxley to the peerage of British science. On the continent, Humboldt's voyages spurred both official and unofficial expeditions.

What should not be forgotten, however, is that the main function of such voyages was not the pursuit of science but usually more pragmatic concerns related to maritime, military and economic power. While it may be true, at least in part, that the *Beagle* acted as a laboratory in which 'thought experiments' revolutionised our understanding of the natural world, few voyages were undertaken with the main object of accumulating and classifying knowledge. There are exceptions, of course: the Baudin/Peron expedition of the early nineteenth century set sail bearing a breathtaking list of 'things to do', scientifically speaking, while the *Novara* voyage of the late 1850s represented Austria's excursion into scientific exploration

(having called on Humboldt to provide the questions that needed to be answered).

One voyage has always stood out, because of its global scope, systematic scientific research and the large amount of official financial and political support it received. H.M.S. *Challenger* set sail from Portsmouth in 1872, equipped with the most up-to-date scientific apparatus and fitted out with a chemical laboratory. For the next four years the *Challenger* circumnavigated the globe. As a public relations coup for British science it was a triumph, and its contribution to oceanography and the life of the sea (50 volumes of findings published between 1880 and 1900, written by leading experts in the field) unparalleled. Popular accounts of the voyage, such as those of the ship's engineer, William Spry, and the naturalist Henry Moseley, became best sellers, going through umpteen editions. In many ways, the *Challenger* voyage stood as the crowning achievement of late Victorian British science, trumpeting the imperial power of Britannia in both material and intellectual spheres.

And yet there has always been a dimension of the *Challenger* voyage missing, a dimension that might have given us more than a sneaking glance at how science and its advocates were perceived by the common citizen. Fritz Rehbock's edited edition of the letters of the assistant ship's steward, Joseph Matkin, goes some way to redressing that gap in our knowledge.

Joseph Matkin was only nineteen years old when the *Challenger* sailed in 1872, yet he was already an experienced sailor, having visited Australia twice previously in the service of the merchant marine. He was an accomplished and stylish letter writer; his correspondence with family and friends gives a lively account of life, not just below deck but as part of a moving scientific laboratory and sideshow. *Challenger* was feted whenever she touched land, and Matkin's accounts of these occasions are striking for their perceptiveness and for the unprepossessing manner in which they are presented. The various members of his family, who were the chief recipients of his communications, must have learned a great deal about the newly-emerging global village that improvements in transport and the spread of the imperial ideal were revealing. He took a real interest in the history of ports of call, taking his information from 'various books', which presumably he borrowed from the large library carried on-board ship.

Arriving in Sydney harbour on Easter Monday 1874, he notes 'We are within a

stones throw of the public park in a fine bay reserved for the anchorage of Men of War only . . . the park was crowded with people holiday making, picnicking etc. The ladies saluted us bravely with their handkerchiefs, and we were soon surrounded by pleasure boats'. But while Sydney was reminiscent of England, it was 'not such a fine built town as Melbourne', which some of the ship's crew thought 'the finest place in the world'. And in Sydney the officers were 'feted a great deal . . . but the men have not been so well treated as they were at Melbourne'.

Matkin's accounts of the interaction between the 'Scientifics' and the *Challenger's* crew are most revealing, and he shows an extraordinary capacity for recounting the substance and detail of scientific lectures given by Wyville Thomson to the ship's company. 'As regards animal life in the ocean, we find at from 200 to 400 fathoms a class of creatures of the same form and character, and the animals down to that depth are tolerable well known to Naturalists; at 400 fathoms they are very scarce, and at 500 cease altogether . . .' Yet there was little chance of the shipboard relationship between the 'Scientific gentlemen' and the professional seamen being anything other than a reflection of the position of each in the wider Victorian society. The ever present spectre of death, part of the risk run by all who made the sea their home and workplace, separated the two groups as clearly as social class. When the young German naturalist Rudolph von Willemoes Suhm died suddenly of an infection, he was buried with ' . . . the officers and ship's company being in full uniform . . . Professor Thomson helped carry him to the gangway and was very much cut up about it, as were all the Scientific Staff'. Coming toward the end of the voyage, when relations between the two groups had deteriorated somewhat, it is noteworthy that Matkin felt it necessary to highlight the feelings of the scientists in this way. The poignancy of this is further highlighted by the fact that Matkin received news of his own father's death while at sea, but not until four months after the event, such was the erratic nature of communication.

Fritz Rehbock has edited and annotated these letters with a great deal of care and sympathy; the result is an account of one of the great scientific enterprises from the standpoint of an outsider privileged to observe close up and for an extraordinarily extended period. The style of these letters is understandably 'Victorian' and usually impersonal, even when addressed to close

family members. Nevertheless, they are less formal than the written accounts of the voyage produced by Spry, Wyville Thomson and even the colourful naturalist Henry Moseley. They are written as an unselfconscious account, never intended for publication. They are all the more interesting for that fact, and their publication over a century since they were written ironically may point the way forward to another approach to the history of science, where the bystanders and 'witnesses' are seen as participants in the process rather than irrelevant to it.

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**Juan Pimentel**, *En el panóptico del Mar del Sur: Orígenes y desarrollo de la visita australiana de la Expedición Malaspina (1793)*. Madrid: Consejo Superior de Investigaciones Científicas, 1992. xvii + 187 pp., illus., Pt 2,650.

One may well wonder what lay behind the author's choice of the title *In the Panopticon of the Pacific*, for with the exception of students of legal and prison reform and those acquainted with the writings of Jeremy Bentham, very few Spanish or English speakers are likely to realise what is meant by it. Bentham (1791) applied the term Panopticon to his planned gaol, in which prisoners would be accommodated in cells in a circular building. The governor and warders were to occupy a central section, which would permit 'panoramic' surveillance of the prisoners. The subtitle, however, *Origins and Development of the Australian Visit of the Malaspina Expedition (1793)*, does make clear what the book is about.

The Malaspina expedition, concerning which remarkably little was known in Australia until about 1980, produced what were almost the first, detailed, non-British accounts of the colony of New South Wales. Setting out from Spain in 1789, the year of the outbreak of the French Revolution, it visited the infant penal colony in 1793 (from 12th March to 11th April), and arrived back in Spain the following year. The appropriateness of the somewhat obscure main title, once its meaning is known, lies in its contrast between the reforms advocated by Bentham and the actual treatment of prisoners transported to NSW, though the true nature of the latter is certainly not particularly apparent in Pimentel's text.

The work has a good bibliography, but no index. It is illustrated with a map, regrettably only three illustrations of the work of the expedition's artists, Francisco Brambila and Juan Ravenet, in New South Wales, none by the cartographer Felipe Bauzá, and a facsimile reproduction of the first page of Bauzá's manuscript copy of Malaspina's *Political Examination of the English Colonies in the Pacific Ocean*.

The voyage of the *Descubierta* and the *Atrevida* was one of numerous 18th-century scientific expeditions around the Pacific, designed to explore, chart and study that vast area. Pimentel's work concentrates on outlining the historical background, the planning and the implementation of the brief, 30-day Australian section of that long voyage.

The author's sources include published material from the late 18th-century to the most recent, but also the wealth of manuscript material relating to the expedition, especially that in the archives of the Museo Naval in Madrid, so meticulously catalogued by Maria Dolores Higuera. After an introduction, the work is divided into four parts: 'Australia, paradise turned prison', 'The Spanish Monarchy and the foundation of New South Wales', 'The stay at Port Jackson', and 'Conclusion'; and there are also two appendices: a transcription of Malaspina's own report, with modernised spelling and punctuation, and Fernando Quintano's concise, detailed notes on the colony, both apparently from different manuscripts from those used by R. J. King in his *The Secret History of the Convict Colony* (Sydney, 1990).

Pimentel clearly believes that recent Australian studies, including King's, give undue weight to the evidence of those British documents which suggest that the strategic importance of Port Jackson as a naval base was the major reason for the foundation of the colony there. There is no doubt whatsoever that the Spanish government regarded it as a potential threat to its power in the 'Spanish Lake', and one of the objects of the Australian visit was certainly to evaluate that threat. However, it cannot have seemed particularly urgent, since the visit did not occur until the fourth year of the voyage, despite the Nootka incident on Vancouver Island in 1788-9, which all but led to the outbreak of hostilities between Britain and Spain. Pimentel emphasises the fact that Malaspina had no difficulty in securing information about the colony from English sources before his departure, and actually

corresponded with Sir Joseph Banks. The British government informed the colony of the proposed visit and gave instructions that the Spaniards should be provided with all the assistance they might need. On their arrival at Port Jackson, they were indeed made very welcome; all sorts of facilities were put at their disposal by Francis Grose, then Lieutenant-Governor in charge in the absence of Captain Arthur Phillip, and the Spaniards reciprocated. There was no attempt to hide anything from them. They were taken to Paramatta to see where the bulk of the colony's food supply was grown, and seem to have been provided with any information they asked for. As outside observers, they were even asked their opinions regarding the viability of the colony.

Pimentel's penultimate chapter provides a commentary on Malaspina's own report, written at sea only a few days after leaving Sydney, pointing out its salient features. Malaspina observed that, even though the colony could provide a naval base which could be a potential threat to Spain's hold over the Pacific in wartime, in peacetime it would be better that the colony should prosper for two reasons. First, its failure would result in the escape of numbers of convicts, who were likely to resort to widespread piracy throughout the Pacific; and second, although Spain's trans-Pacific trade might possibly suffer by the incursions of British traders and Spain's American colonies might be unable to supply the colony with cloth etc. of a quality and price that could rival that from India, they could develop a very profitable trade in those items which were difficult to obtain from Europe, India or South Africa. Foremost among these was livestock, especially cattle and horses, which at the time were observed to be in very short supply and not reproducing sufficiently rapidly to keep pace with the increase in the human population.

Pimentel's book provides a somewhat different interpretation of the state and significance of the colony in 1793 from that of R. J. King's book; but it does not provide as much of the basic documentation from Spanish sources as King does, nor as much illustrative material.

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**Colin Finney**, *Paradise Revealed: Natural History in Nineteenth-Century Australia*.

Melbourne: Museum of Victoria, 1993. xv + 186 pp., illus., \$34.95 pb.

*Paradise Revealed* is free-lance historian of science Colin Finney's second book on the development of Australian natural history. The first, *To Sail Beyond the Sunset: Natural History in Australia, 1699-1829*, appeared in 1984 and went virtually unnoticed by reviewers in the scholarly literature, probably because of its coffee-table format. This is unfortunate, because in addition to its splendid illustrations from early natural history works, *To Sail* contains a very competent, footnoted text and both scientific (taxonomic) and general indexes. The text takes the story of natural history exploration from Dampier's arrival in the *Roebuck* to the beginnings of a natural history 'infrastructure' in the 1820s.

In *Paradise Revealed*, Finney's aspirations are less pictorial and more analytic, concerned less with the discoveries of naturalists and more with their social relations. An introductory chapter describes succinctly and quite usefully the conceptual bases and principal issues in the study of natural history in early nineteenth-century Australia, emphasizing natural theology, materialism, positivism, Baconianism and the contribution of the Mechanics' Institutes. The author then picks up the storyline where he left it in the earlier volume: the emergence of the first natural history societies in New South Wales and Van Diemen's Land. Finney sees the 1820s as a watershed: the end of the era of the isolated collector in search of specimens, the beginning of the era of the interactive naturalist in search of validation. From this point, Australia joins the great Victorian natural history enterprise: the mounting of interior expeditions and urban exhibitions, the launching of museums and botanic gardens, the securing of private patronage and government largess, and, occasionally, the publication of a natural history journal.

But the sailing is anything but smooth. The new era begins haltingly with the founding of the Philosophical Society of Australia in Sydney in 1821. This, like the subsequent, more extensive efforts in Van Diemen's Land, is a tale of brief enthusiasms and crippling politics, illustrating clearly the difficulties of building a scientific infrastructure where scientific ability and interest are spread across the social spectrum but power and prestige are not. Alongside the antagonisms of gentry versus middle class and science versus clubism, Australian society

had to cope with the freeman-emancipist tension. As a result, many of the early natural history societies were barely underway before factionalism erupted. Organizing efforts in Victoria (the Port Phillip District) in the 1840s and 50s were only a little more successful. The discovery of gold in the early 1850s gives an unusual twist to the story, however, and Finney narrates engagingly the impact of the sudden spurt in Australia's growth upon the life of its scientific societies.

Perhaps the most interesting chapters are the final three, which take up, respectively, Australia's reaction to Darwinism ('progressive development'), the growth of natural history in Australian schools in the latter half of the century, and the replacement of natural history by biology. In the chapter on Darwinism, Finney finds that the *Origin* was not much discussed in the media, even though the book itself was widely possessed or available, and that its ideas were much more popular among non-scientific Australians than among professional naturalists, until the late 1870s when academic naturalists raised on evolutionary theory began to arrive.

In the last chapter, and throughout the book, Finney treats carefully and penetratingly the Australian manifestations of the amateur-professional tension which characterized the practice of natural history everywhere in the nineteenth century. Much less significant (but not absent) in his scheme is the metropolitan-colonial (or centre-periphery) tension in Australian science, about which a good deal has been written in the past decade. Finney's focus, and his strength, is on events internal to Australia. One should add *eastern* Australia, as there is little mention of developments in Adelaide or Perth. He is also strong on primary sources, having exploited local newspapers especially well in addition to correspondence and published society proceedings. There are places where he might have been more thorough in citing the secondary literature, however, as for example on acclimatization.

Although *Paradise Revealed* was produced in a much smaller format than Finney's first volume, and in paperback rather than hardcover, it is nevertheless a high quality production with excellent black-and-white illustrations. Editorially, the book substantiates what we have come to appreciate, and regret, from the word-processor revolution: perfect spelling and orthography but occasional lapses of text sections. I noted not a single spelling error, but a misplaced phrase

appears on page 108, an entire paragraph on page 93 is repeated on page 94, and a footnote on page 165 stands bare of any text.

On the bookshelf, *Paradise Revealed* may be dwarfed by Finney's earlier volume, but the history it tells will surely make it a standard reference on the subject for the foreseeable future.

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**J.M. Bennett, R. Broomham, P.M. Murton, T. Percy & R.W. Rutledge (eds)**, *Computing in Australia: The Development of a Profession*. Sydney: Hale & Ironmonger, 1994. xxii + 322 pp., illus., \$49.95.

It is hard to commit oneself to writing history when one is also part of making it, and so often the recording is delayed until those who can speak most authoritatively are no longer with us. It is very pleasing that the Australian Computer Society (ACS) has taken the initiative to record the experiences of people involved in computing in Australia from the earliest days. It is an extra bonus that those in charge of this task have themselves played leading roles in the development of computing during this period. It is perhaps inevitable, therefore, that the resulting publication has the form of an oral history, with the corresponding advantages (such as authority and immediacy) and disadvantages (such as repetition and parochialism).

The book is reminiscent of a small town history that describes in detail the activities of the town's developers and mentions as many of their names as possible, and is of interest principally to current inhabitants of the town who wish to see in print their own or their ancestors' names. As one who was involved for 15 years with some of the computing activities and actors described, I too was interested in reliving some of the developments and learning about other pieces in the mosaic. Nonetheless, the book would be much improved by the omission of detailed lists of speakers, committee members, topics of presentation etc., the proliferation of which adds to the data presented but does little for the reader's understanding.

Although there has been 'considerable editing ... to achieve some uniform standards and reduce the ... material to an acceptable level' (as stated in the introduction), much repetition remains. For example, I lost count of the number of times the

CSIRAC & SILLIAC computers were explained. This repetition arises from the manner of compiling the book. The introduction states that 'In an ideal world, a task of this sort might have been carried out by writing down likely chapter headings and then nominating suitable "volunteers" to write chapters. However, an alternative approach has been adopted—that of casting the net for material as widely as possible while ensuring coverage of certain basic facts.' In fact, the impression gained by the reader is that the former approach *was* adopted, since each chapter is attributed to a specific author(s). Whatever brief they were given, there is much overlap of the topics they cover, and the inevitable repetition becomes tedious to the reader.

Such repetition is exacerbated by many chapters containing, in addition to the basic text, one or more sections of related reminiscences written by a significant player in the field. This is an interesting approach that (apart from the repetition) works quite well. However, full advantage was not taken of the idea. It would have been useful had the basic text concentrated on an overview and the significance of the topic of the chapter, while the 'vignette' of reminiscences supplied the anecdotal and human interest. This approach is taken, for example, in Chapter 6, where Karl Reed's basic text on 'Development of an Australian Software Industry' gives exactly the sort of overview one would expect from the title. In many cases, however, the text and reminiscences run in parallel and cover similar ground in a similar way.

This lack of focus in some of the chapters is repeated in the book as a whole. The introduction tells us that it is a silver jubilee history of the Australian Computer Society, and in the conclusion, Alan Underwood says it 'presents an in-depth view of a professional organisation'. In the foreword, however, John Button describes the book as a 'comprehensive history of computing in Australia'. This confusion is quite understandable, because the book has some characteristics of each of these, with the earlier chapters fitting the latter specification and the later chapters the former. Chapter 1 covers, rather unnecessarily, 'The Origins of Modern Computers', and Chapters 2 to 10 and 12 are very generally about computing in Australia, not really about the ACS. A history of the ACS would start with Chapter 13, and the material from earlier chapters would have been fitted into Chapters 13 to 18. Conversely, a history of computing in

Australia would have affected the integration in the opposite direction.

The range of the book is well indicated by its chapter titles, which are as follows:

1. The Origins of Modern Computers
2. Australia Enters the Computer Age
3. Australian Computing, the Second Generation
4. Government Participation in the Australian Computer Industry
5. The Economics of the Australian Computer Industry
6. Development of an Australian Software Industry
7. The Australian Public Service—Four Decades of Computer Use
8. Electronic Digital Computers in Australian Defence
9. Standards and Statistics
10. Computers in Education
11. Unionism and the Computer Professional
12. The Impact of Computers on Society
13. ANCCAC and the Formation of the Australian Computer Society
14. The Australian Computer Society, a Sketch
15. ACS in Computer Education
16. Branch Histories
17. International Associations
18. Other Societies and Special Interest Groups
19. ACS. The Future.

As observed above, I found the book interesting, and I believe others involved in computing in Australia will be similarly interested. There are few typographical errors, and my memory generally agrees with the text in matters where I was personally involved. There are a few contradictory statements, but this is only to be expected in a book based so heavily on personal anecdotes. B. de Ferranti and E.G. Wormald might feel put out at being the only named contributors not described in the author sketches!

Overall, my main criticism is that the book is largely descriptive, with insufficient attention to overviews and the context and significance of the events described. However, it provides much of the necessary basic data and contacts for such an interpretive study. Such an analysis would be useful for the ACS in planning its future, and, more generally, in the development of computing in Australia.

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**Kerrie Dougherty and Matthew James,** *Space Australia: The Story of Australia's Involvement in Space.* Sydney: Powerhouse Museum, 1993. 144 pp., illus., \$29.95.

In this well illustrated book, Dougherty and James set out to tell the story of Australian space activities over the last four decades. *Space Australia* provides a popular account of the nation's involvement in space, starting with a description of the early Woomera years and concluding with an all-too-short discussion of present challenges and future opportunities. This is a very readable book, which is rich in information that should be of interest to students and teachers as well as to the general reader.

Although rockets in one form or another have been in use for a very long time, it was not until the 1920s that the technology began to be developed in ways that made access to space a reality. The American physicist Robert Goddard and, independently, the German engineer Wernher von Braun pioneered practical advances in rocket propulsion that eventually created the technology needed for space flight. Two of their early rocket tests were recently described as follows (Herbert Friedman, 'Adrift in Space', paper presented at the 30th COSPAR Scientific Assembly, Hamburg, July 1994):

On 16 March 1926 Goddard launched the world's first liquid-fuel rocket from the seclusion of his Aunt Effie's farm in Auburn, Massachusetts. It was 10 feet long and weighed 11 pounds. His assistant ignited the rocket by reaching into the fuel stream with a blow-torch tied to a pole. The slender rocket soared to a height of 41 feet and landed 184 feet away. While Goddard kept his secrets, many engineers in Europe worked to develop liquid-fuel rockets without being aware of his progress.

Von Braun tested an advanced design of a rocket that burned lox and alcohol at Kummersdorf on 21 December 1932. To ignite the rocket, he stuck a can of burning gasoline on the end of a long stick under the exhaust nozzle in the path of the out-rushing propellants. There followed a great explosion that destroyed the rocket and test stand. Miraculously, von Braun was not hurt.

These early rocket tests were the direct precursors of the technologies which started the Space Age in 1957 with the launch of Sputnik 1 and which, in 1969, safely transported the crew of Apollo 11 to and from the Moon. The transition from Aunt Effie's farm

to Cape Canaveral was remarkably fast.

The V2 rockets developed by von Braun and used against England in WW2 demonstrated the strategic importance of ballistic missiles. Operating under a Joint Agreement between Australia and the United Kingdom, Woomera had its origin in the UK's need for a suitable test range for long range missiles. Dougherty and James' account of 'the good old days', when Woomera was one of the world's major rocket ranges, will make interesting and, for some, nostalgic reading. While by the 1950s and 60s the art of rocketry was well advanced, each rocket launch, however large or small the vehicle, still had its moments of excitement.

The excitement and expectations accompanying the launch of WRESAT are very well described in *Space Australia*. WRESAT, Australia's first satellite, was launched from Woomera by a US Redstone rocket on 29 November 1967. The satellite was constructed by the Weapons Research Establishment at Salisbury in South Australia and carried experiments designed by the Department of Physics of the University of Adelaide. The launch made Australia the fourth (or was it the third?) nation to launch its own satellite from its own territory. Sadly WRESAT was not the beginning of a great Australian space industry.

Dougherty and James describe Australia's long term involvement in space tracking in support of NASA and other US programs, and discuss some of the benefits which have been gained from space communications and remote sensing. A valuable feature of this attractively-produced book is the commentary that accompanies each of the main chapters. These personal 'commentaries' from participants make fascinating reading. They reveal the enthusiasm, optimism, enterprise and persistence of some of those who, over the years, have been most actively involved in promoting Australia's space efforts.

Australia is one of the countries with most to gain from the application of space technology to national needs. The continent is surrounded by vast expanses of ocean which are very difficult to monitor except from space, and the population is concentrated in a few large, but widely separated, cities located near the coast of an otherwise sparsely inhabited and mainly arid land. These conditions provide almost ideal opportunities for the beneficial use of space technology. Space communications, the first space technology to become truly commercial, has already done much to free Australia

lians from what Geoffrey Blainey so evocatively called 'the tyranny of distance', while space meteorology, global positioning, disaster relief, surveillance, earth resources and other applications of remote-sensing are of increasing national benefit.

In its recently published Five Year Plan for a National Space Program, the Australian Space Council estimates that Australia at present spends \$700m annually on space goods and services. Australian geography and demography are such that the nation will continue to be a substantial, and probably an increasing, user of space technology in the future. Unfortunately, most of the current expenditure on space goods and services is against our external balance of payments. The Australian contribution is, as yet, quite small, and it is crucial that opportunities be provided for the development and economic growth of the Australian space industry.

In its final chapters, *Space Australia* begins to discuss space policy issues and to outline some of the opportunities for future development of space activities in Australia, including prospects for new launch sites, reopening Woomera, and Australian research on Scramjets.

*Space Australia* is a slender volume which might lose some of its attractiveness were it to grow much thicker. It may be unfair, therefore, to criticise the authors for omissions, but a more forward-looking selection of material might have given greater emphasis to policy issues and development opportunities, to the increasing need for international cooperation, the opportunities (limited though they may be) for participation in major space science programs, and the benefits to Australia of further applications of space technology and the strengthening of the local space industry. These are essential matters that must be addressed in the formulation of an imaginative national space program, but it is unreasonable to expect this volume to contain all the solutions.

Kerrie Dougherty, Matthew James and their publisher, the Powerhouse Museum, have provided an excellent account of Australia's involvement in space, which should appeal to a wide range of readers. *Space Australia* is highly recommended and should be in every school and college library.

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**Philip Candy and John Laurent (eds),** *Pioneering Culture, Mechanics' Institutes and Schools of Arts in Australia.* Adelaide: Auslib Press, 1994. ii + 413 pp., illus., \$48.00 pb.

Without doubt, studies of Mechanics' Institutes have had their ups and downs. Long relegated to the often narrow confines of diploma and masters studies in 'education', the analysis of the institutes and related associations broadened out during the 1970s in examinations of popular culture, the dissemination of science and technology, and the culture of social class itself. When E.P. Thompson described the history of mutual improvement schools and the institutes in terms of a struggle for the establishment of control over a sturdy and independent artisan culture, he put the Mechanics' Institutes on a platform from which a variety of interpretive enactments could be assayed.

The 1970s saw the history of the Mechanics' Institutes move towards the mainstream social history of Britain, with some attempts at comparisons with educational or training traditions elsewhere, including Australia. More recently, interest in the movement has waned, and major surveys of the history of popular science and of class culture barely mention the institutes. We might hazard that the natural local embeddedness of the institutes will continue to make them popular subjects of study for local historians and students treading the 'history of education' as a part of their qualifying studies.

How does this collection on Australian experience edited by Candy and Laurent stand up in this recent tradition? No less than seventeen essays offer a variety of individual or group studies, to which are added two contemporary accounts, an index and a listing of institutes by Helen Stafford. This is a dip-in book; I cannot imagine anyone reading the volume from beginning to end. The veritable host of illustrations and photographs make the volume of especial interest to non-historians concerned with their own areas, and the book would probably have sold very well in the old-fashioned manner of subscription. But the very varied approaches of the different authors to their case studies throws doubt on the value of the collection as a contribution to any recurring debate on the function of the institutes, either as associations of class culture or as vehicles of knowledge diffusion or technical training. The term 'culture' is used frequently throughout the volume, yet no consistent or explicit approach to the concept is

offered, and the term is not indexed. Isolated efforts by the editors and one or two contributors to address the bigger issues remain isolated and unconvincing, and the dates selected for the separate studies appear to follow simple archival convenience rather than any vision of the historical process.

However, the basic, local research is very good, and it might have been handy to have been given a list of contributors for the use of historians who wished to follow-up individual references with the authors, of whom there are no less than nineteen. There will undoubtedly be readers of Candy and Laurent who appreciate and benefit from the spectrum of local colours which the collection projects, but I fear that few readers of the present journal will secure here a clear picture of either the advancement of popular science or the progress of technical training in Australia prior to 1945.

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**Helen Hamilton (ed.)**, *Australian Nursing . . . The Story: Papers of the First National Nursing History Conference, Melbourne, May 1993*. Melbourne: Royal College of Nursing, Australia, 1993. 142 pp., \$25 pb.

There is a burgeoning of interest in nursing history (or the history of nursing) among those within the nursing field and among certain historians. Nursing history (in common with much of women's labour history) has often been neglected, with the few available studies mostly tending to be narrative histories of particular institutions, sometimes demonstrating limited evidence of recent theoretical and historiographic trends. The College of Nursing is to be congratulated on venturing into this emergent area of historical inquiry.

The contributors come from a variety of backgrounds within nursing, and present an array of perspectives and approaches, varying from the personal and anecdotal to the more rigorous and carefully crafted historical studies.

Angela Cushing's paper explores the issues surrounding the definition of the nurse and especially the 'female nurse' in Victoria from 1850 to 1890. She provides an overview of the work of the Zox Royal Commission (appointed in 1890 to inquire into the conditions and management of the char-

itable institutions of the colony of Victoria) and its significance for nursing.

The paper on the historical developments in nursing ethics in this country is of considerable interest, demonstrating as it does the changes in this complex area and its crucial significance for nurses. Megan-Jane Johnstone is well-known in nursing and bioethics circles, and she draws on articles from Australian and overseas nursing publications to demonstrate the evolution of nursing ethics. The early requirements were for the nurse to exemplify absolute loyalty, obedience and similar womanly virtues. Present-day requirements include the need for nurses to demand '... the social and legal reforms that are necessary to free the nurse to be moral.'

Graeme Curry's paper on psychiatric nursing, and particularly its attention to government inquiries into psychiatric services, highlights a sphere of health care that has often been overlooked. He very rightly observes that '... the reports of various Commissions and Inquiries do not give adequate attention to the role of nurses', and he attempts to redress this imbalance or at least to point out its inadequacy. Curry's work provides a welcome introduction to the area, and he gives recommendations for locating further useful resources which will be of real value to others wishing to document developments in psychiatric nursing.

The 125th anniversary of the arrival of the Nightingale nurses in Australia provided ample justification for a short paper on Lucy Osburn and her small nursing group, whose objective was the reform of the appalling conditions of the Sydney Infirmary. Russell provides a brief coverage of the introduction of trained nursing into the colonies and of the adversities experienced by these women. Some understanding of this background is essential for anyone seeking to evaluate present-day issues in nursing.

Other papers worthy of note include Harloe's work on feminism and nursing history, and White's on the early stages of nursing registration in South Australia, both of which provide useful introductions into their respective areas.

Two unashamedly anecdotal and personal offerings come from the winners of the two Memories Awards. Jennifer White writes of her nurses' reunion, and Susan West writes of the life and death of Sister Dorrington, who was killed hurrying to attend a snake-bite victim. These awards should serve to encourage an expansion of interest in nursing history among nurses 'in the field'.

In general, the conference proceedings

provide intriguing and sometimes fascinating glimpses into a wide range of nursing situations and experiences. Those interested in exploring historical trends within nursing, both professional historians and nurses themselves, can gain some valuable, albeit often tantalisingly brief insights from these disparate contributions.

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**John Arnold and Deirdre Morris (eds)**, *Monash Biographical Dictionary of 20th Century Australia*. Melbourne: Reed Reference Publishing, 1994 xx + 568 pp., \$85.00.

The Foreword to this book states that the *Monash Biographical Dictionary of 20th Century Australia* records the lives of over 2200 Australians who have achieved prominence and/or made a contribution to their country this century. It includes the living and the dead, the famous and the infamous, the high achievers along with unsung heroes ... The people written about in this book come from a variety of ethnic backgrounds.

The book has received mixed reviews, but I suspect that its critics were looking for too much or for something different; its stated scope and selection criteria are outlined in the book's Introduction and need to be noted carefully. This is not a competitor for the *Australian Dictionary of Biography* ('the ADB'), that excellent multi-volume, scholarly work, covering the lives of notable Australians who did their most important work in the periods 1788 to 1850 (vols 1,2), 1851 to 1890 (vols 3–6), 1891 to 1939 (vols 7–12), and only now beginning the period 1939 to 1980 (vols 13–). Nor is it another *Who's Who*. Instead, the Monash dictionary is a one-volume, ready-reference of 20th century Australians, suitable for the study and the office. I hope the projected paper-back edition will follow and that it will be affordable for the student and for the home.

I found the short entries generally well written, informative and interesting. Medical doctors, lawyers, politicians, public servants, businessmen, journalists, artists, actors, writers and sports men and women predominate—a reasonable cross-section—and if some rather vacuous celebrities appear, are they not part of the Australian scene too?

But what of the scientists? Including the medical scientists, I found about 150 of

them, or seven percent of the total—not bad; and one quarter of these are women—even better. Somewhat to my surprise, the largest category is that of the physicists, followed by the botanists and then the geologists. Other categories include chemists, mathematicians, zoologists, geneticists, and the various medical research fields; engineers seem to be under-represented.

For the scientific biographer, there is here a splendid collection of suggestions for further work. Thus, for example, amongst the females, the biological sciences stand out, while the physical sciences and the medical sciences are identifiable second and third groupings. The female botanists are a notable subset, including, for example, Margaret Blackwood, Adrienne Clarke, Mary Clemens, Isabel Cookson, Winifred Curtis, Sophie Ducker, Thistle Harris, Ethel McLennan and Joyce Vickery.

Noting carefully its selection criteria, it is surprising how many thoughts a browse through a biographical dictionary can prompt, and this one is no exception.

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