

Book Review Section

Compiled by John Jenkin*

Peter Morton, *Fire Across The Desert: Woomera and the Anglo-Australian Joint Project 1946-1980*. Canberra: AGPS, 1989. 595 pp., illus., \$100.

In the three decades following the Second World War, the most secret scientific research in Australia was that associated with the Joint Project between Australia and Britain. With the trials centre at Woomera and the support centre at Salisbury, South Australia, the Joint Project sought to develop several new generations of weapons, from bombs to intercontinental ballistic missiles. Some of these did not progress far, but others did, and Australia developed a corps of scientists and engineers well trained in the advanced techniques of rocket propulsion, guidance, ballistics, tracking and mathematical modelling, not to mention test-range operation and safety standards. Since the end of the Joint Project in 1980, these skills have been in most cases preserved at the Defence Research Centre, Salisbury. This is the lasting legacy of the halcyon days when Britain and Australia were at the forefront of modern military technology.

Since those days have barely passed, it is extraordinary that a book such as *Fire Across the Desert* should have emerged so soon, and that it is so detailed and explicit in describing what happened. Given that the events had high security classifications and that most of the key personalities are still alive, the odds against any book emerging at all were very high indeed. So many organizations, including the British, had to vet the work that the slightest prejudice against the book could easily have left it locked indefinitely within the Defence Department, on the unchallengeable ground of national security. But it is clear that the Defence Department and other bodies have exercised their security rights sparingly and in sympathy with the objective of publishing something worthwhile on the Joint Project. In doing this, the Department has set a laudable precedent which other less security-conscious departments will find hard to emulate.

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The precedent has significance beyond this particular book. Departments of State need policy analyses of their activities by scholars before the end of the 30-year period of the public access rule. Anyone who has worked in such a department will know that departmental filing systems never provide an integrated view of what a department is doing and whether it is succeeding. The integration of policy with means and ends is achieved in the minds of a few senior officials only. When they move on, the department loses that knowledge and there are gaps in the corporate memory, with a host of unpleasant consequences — such as policies which lose their association with objectives, and superfluous administration and policy research. Scholars can help in reducing these problems if they are allowed early access to departmental records and personnel. However, we all know that there are legitimate reasons why departments and governments might not wish to grant such access. One answer to this significant dilemma is represented by *Fire Across the Desert*. Here the Department of Defence — or more particularly the Defence Science and Technology Organization — selected its own scholar, Dr Peter Morton, and then ensured that he received everything he needed to do his job properly. With common sense being exercised by the scholar and by the Defence Department in the judicious use of the English language to get round sensitive areas, a vast amount of classified data has been made available to the public, while the Department has also been given valuable insights which will aid future administration and policy development.

Peter Morton's book is informative at many levels. There is considerable detail on many technical activities, governed overall by the author's lucid and simple explanations of the important scientific and engineering principles associated with particular projects. Included is a description, over several chapters, of how trials were conducted and recorded; valuable in itself and a possible blue print for the proposed Cape York space port.

The author also places each project in its political setting at both government and project-team levels. What he says is interesting and sometimes intriguing, but there is obviously much more to be said concerning the human relationships, particularly at the project-team level. Science is rarely an objective exercise in systematic research, hypothesis and proof. More often it is a battle of ideas, propelled by powerful personalities fighting for scarce resources and political patronage. The scientific justification often comes later. What were

the disputes between the Australian and the British teams, and what were the disputes amongst the Australians? Morton alludes to many of these, but is not able to pursue them too far because of national sensitivities and the fact that key personalities are still living — in some cases, still occupying important positions. For example, I suspect that there is considerably more to be told about the decision-making process concerning the building of the Salisbury computer, WREDAC. Morton may have had to be coy about such issues, but the book acts as a signpost for the next wave of scholars coming after the 30-year public access interval.

A surprising and happy feature of the book is the examination of the social setting of the Joint Project, particularly at Woomera and its range. Many historians of science, particularly of Australian science, do not consider the social context in which scientific activities occur, an argument in favour of encouraging more non-scientists to write history of science (Morton holds a Ph.D. in English). Morton covers a wide range of subjects, including the workforce and conditions during the building of Woomera, the housing and family problems which followed, the social structure of the Woomera village, the transportation system, and the Aborigines on the rocket range. These chapters give a good indication of how the Joint Project impressed itself on many groups and individuals. They do not show so readily how the Joint Project was affected by the social setting it helped to create; for example, by the class system introduced by the mess structure at Woomera. Did this help to produce unified scientific and engineering teams, or did it lead to dissention between technicians, experimental officers and scientists, prejudicing the progress of some projects?

Histories of science rarely consider whether the scientific endeavour described can be shown to have been successful. All scientific activity is generally regarded as contributing to world knowledge in some way or another, and that is its justification. It is tempting to view the Joint Project in the same way, and hence to close this prominent period of Australian science with a warm, happy glow. However, the science administrator has a different perspective. Resources are limited, and there is a never-ending line of research projects waiting to be approved. It is highly relevant to determine what has been successful in the past and what might lead to success in the future. In the realm of modern defence science, most projects associated with developing new weapons do not succeed in achieving their objectives. Consequently, the present author is to be con-

gratulated for attempting an evaluation of the scientific worth of the Joint Project. In doing this he is laying himself open to criticism by partisan groups, but his attempt makes the book much more valuable to professional science administrators.

In summary, this book is a valuable addition to the increasing library of books on Australian science. It is considerably better than many of them, and while it is expensive at \$100, it is excellently presented and has numerous photographs.

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Glynn Barratt, *The Russians and Australia*. Volume 1 of 'Russia and the South Pacific, 1696–1840'. Vancouver: University of British Columbia Press, 1988. xiv + 338 pp., illus., £27.50 (UK).

Glynn Barratt, *Southern and Eastern Polynesia*. Volume 2 of 'Russia and the South Pacific, 1696–1840'. Vancouver: University of British Columbia Press, 1988. xx + 302 pp., 28 plates, £23.15 (UK).

Russia has a substantial coastline in the northern Pacific, so much so that Peter the Great asked Captain Vitus Bering, a Dane serving in the Russian Navy, to explore the eastern shores of the country. Bering's two expeditions established that Asia and America are separated by what we now know as the Bering Strait. Before long there were Russian settlements on the Alaskan coast (Novo-Arkhangel'sk, now Sitka) as well as on the coast of Siberia (Okhotsch) and Kamchatka (Petropavlosk). It was not surprising, therefore, that Russia should take an interest in the further exploration of the Pacific (which they called the Eastern Ocean), and particularly after the English and French navigators had begun serious exploration of this vast ocean.

The first Russian expedition to circumnavigate the world sailed from Kronshtadt in the Baltic in 1803. In the next 30 years there were 30 voyages from Kronshtadt to the Pacific, and 17 of these sailed around the world. The degree of Russian activity is illustrated by the fact that there were 17 Russian visits to Australia between 1807 and 1835, two of these to Hobart and the others to Sydney. In the tradition of Bougainville and Cook, these ships carried astronomers, naturalists, and sometimes other scientists. Botanical and geological specimens

were collected, and were later preserved in museums in Russia. Native 'curiosities' (ethnographica) were similarly collected and preserved.

Glynn Barratt has embarked on a detailed account of Russian voyages under the general title *Russia and the South Pacific, 1696-1840*. He is well-qualified for this task. He is a professor of Russian at Carleton University and is already the author of several books on Russia's naval and diplomatic history. He obviously has a detailed knowledge of the written and other sources in the Soviet Union, and he points out that 'It is ridiculous that primary material in Russia should be viewed by anthropologists, historians and others in the West as less accessible than French or German ones'. There is no doubt, however, that most of us are less well-informed about Russian voyages than we should be. Professor Barratt's books are therefore most welcome. Two volumes have appeared so far: volume 1 *The Russians and Australia*, volume 2 *Southern and Eastern Polynesia*. Two further volumes are promised, one on Russian visits to Melanesian islands and the other on Russian intercourse with the peoples of Central Polynesia.

Volume 1 has two introductory chapters, the first entitled 'Beginnings, 1696-1796', and the second 'Translating Projects into Action, 1783-1803'. Both include important details which make it easier to understand the subsequent events. Barratt makes it clear that Ivan Fedorovich Kruzenshtern was a central figure, and his influence continued over many years. He was born in Estonia in 1770 and entered the Russian Navy when he was aged 15. In 1794 he was seconded to the Royal Navy and, during this stay in England, he was able to study the instruments and navigational procedures which had been used with such success in the Pacific and elsewhere. The wars with Napoleonic France had stimulated Anglo-Russian friendship, and it was not uncommon for Russian officers to be seconded to the Royal Navy. Moreover, a number of English officers, tired of life on half-pay, sought employment in Russia. James Trevenen, who had served as a Midshipman and then Lieutenant on Cook's third voyage, was one of these.

Kruzenshtern, when still a young officer, was chosen to command an expedition to the Pacific. Two ships, *Leander* and *Thames*, were purchased in England and renamed *Nadezhda* and *Neva*. Kruzenshtern was to command *Nadezhda*, and his friend Iurii Fedorovich Lisianskii, a Ukrainian born in 1773, was to be captain of the *Neva*. They sailed from Kronshadt in 1803, rounded Cape Horn, sailed to

the North Pacific then south-west to the Indian Ocean, and home via the Cape of Good Hope. It was a first-class voyage and both men, and many of their officers, established fine reputations. Kruzenshtern published an account of his voyage, and it was soon translated into English and into half-a-dozen other languages. His voyage encouraged other Russian expeditions. Otto Evstafievich Kotzebue had served as a cadet in *Nadezhda*, and he later commanded two voyages of circumnavigation. Like Kruzenshtern he had been born in Estonia. So too had Fabian Gottlieb von Bellingshausen, who had served as a Midshipman with Kruzenshtern, and he too completed a notable circumnavigation and added greatly to the existing knowledge of Antarctic waters.

The Kruzenshtern-Lisianskii expedition of 1803-1806 did not visit Australia, but one of the ships, the *Neva*, now under the command of Leontii Adrianovich Gagemeister, sailed on a second voyage to the Pacific towards the end of 1806. This time the *Neva* called at Sydney and spent two weeks at anchor there in June 1807. This was the first Russian ship to enter Australian waters; there were sixteen other Russian visits in the next three decades. Volume 1 of Glynn Barratt's scholarly work is concerned with their reception (invariably friendly), and with their observations on the country, the botany, the geology, and British officers, the convicts, the Aboriginal people and so on. They met Captain Bligh, the officers of the NSW Corps, Captain John Macarthur, Reverend Samuel Marsden and many others, and recorded their observations. Later Russian visitors met Lachlan Macquarie, and it was the *Suvorov*, commanded by Mikhail P. Lazarev, which brought the news of Napoleon's first overthrow and of the presence of Prussian and Russian troops in Paris. The authenticity of the news was undoubted as the Russians carried letters from the ambassador at Rio de Janeiro which were based on despatches direct from London.

Anglo-Russian friendship reached a new peak in Sydney when the *Suvorov* arrived on 25 August 1815. As one of the Russian officers wrote: 'Hardly had we managed to drop anchor before a roar of guns in all forts proclaimed the joyful news, which we ourselves had brought, of the capture of Paris'. Amity was helped by the fact that Lazarev had had experience with the Royal Navy; and the fact that Macquarie had had friendly dealings with Russians at home also undoubtedly helped. Altogether, volume 1 provides a detailed and interesting account of the Russian reactions to life in Sydney in the early part of the 19th

century. In addition, it provides much detail of interest to natural scientists; there is, for example, a list of the 77 Australian plant species collected during the Bellingshausen visit.

Volume 2 also contains an introductory chapter, followed by nearly 100 pages dealing with the observations of Russian officers on Easter Island. The Russians were familiar with the accounts published by Cook, Forster, and also La Perouse, and were able to call attention to some changes which had occurred. There are detailed comments on the people and on their diet, their body ornaments, the botany and so on. Again they collected specimens and artefacts which were transferred to Russia. There follows a similarly detailed account of Russian experiences and observations in New Zealand.

Finally there is an account of Russian visits to the Austral Islands, the group of four inhabited islands south of Tahiti. One of these islands, Tubuai, had been discovered by Cook in 1770; another, Oparo or Rapa, by Vancouver in 1791. The Austral Islands are people by Polynesians, and the Russian officers recorded many interesting details of their lifestyles, their canoes and so on.

These two volumes contain many details which are not easily found elsewhere. It is of particular interest that Barratt gives descriptions of many of the plant specimens and ethnographica which were collected, and where they are to be found today in Russia. Russian collection of Pacific ethnographica began in 1779, soon after Cook's death, when Captain Clerke (who succeeded to the command) presented a number of Tongan, Tahitian and Hawaiian artefacts to the Governor of Kamchatka, who dutifully sent them to Catherine the Great. These items are still preserved in Leningrad. Indeed, they were on display (on loan) during the Cook bicentennial exhibition held in the Bishop Museum in Honolulu in 1988. Many are described and illustrated in the Exposition Catalogue entitled 'Artificial Curiosities', prepared by Adrienne Kaepler and published by the Bishop Museum Press. Equally interesting 'curiosities' were collected during the Russian voyages in the first quarter of the 19th century. It is good to have details of where these are to be found.

There are relatively few details in the present two volumes about the navigational observations, and personally I should have been interested to know more about the methods used by the Russians. There are a few comments to the effect that 'the most modern instruments were bought for Russian ventures' mostly from famous London makers; and these

included chronometers, sextants and telescopes, but their exact nature is not described. There are also a few comments to the effect that longitude was often determined by 150, or even more, 'lunar distances' (the angular distance between the moon and the sun or a star) in order to obtain the greatest possible accuracy. Barratt mentions that the Russian officers (and astronomers) often determined the longitude (and estimated the error of the chronometers) by observation at Benelong Point, or at Russian Point (Kirribilli), in Sydney.

There are other questions too. The Russians clearly had access to some English instruments, but were there any Russian or French instruments? Many Russian captains understood English, but did they use the *Nautical Almanac*, first published in London in 1767, which contained the tables necessary to calculate the longitude by the method of lunar distances? Did they have a Russian translation of this enormously important work? If not, how did they accommodate for the fact that Russia used the Old Style Julian Calendar until 1917, while Britain had adopted the New Style Pope Gregory Calendar from 1752? The Gregorian Calendar was 12 days ahead of the Julian, and corrections would have had to be made to the *Almanac*. It seems from some of the longitudes quoted, that the Russians were using the meridian of Greenwich as the prime meridian in all their determinations. Cook's Endeavour voyage was the first voyage of exploration to use longitude based on Greenwich. Previously, the English had used the meridian of London (St Paul's Cathedral). The French used Paris, the Spanish used Madrid, and so on. The French did not adopt the Greenwich meridian until many years later, and all French voyages to the Pacific in the 19th century prepared charts based on the Paris meridian.

I do not doubt that these two volumes will be warmly welcomed by Australian historians (for the portrait of Sydney in the early days, for example), by historians of science, and by all those interested in the peoples of the Pacific.

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Peter Stanbury and Julian Holland (Eds.), *Mr Macleay's Celebrated Cabinet: The history of the Macleays and their museum.* Sydney: The Macleay Museum, University of Sydney, 1988. 171pp., illus., \$26.95

Elizabeth Windschuttle, *Taste and Science: The Women of the Macleay Family 1790-1850.* Sydney: Historic Houses Trust of New South Wales, 1988. 96 pp. illus., \$24.95

When Alexander Macleay carried his entomological collection into what he called 'exile' in 1825, it was recognised as the largest then in private ownership. Begun some thirty years before, it had been constantly increased, not only by Macleay's own efforts but by purchases from well-known collections offered on the London market. Though exiled to New South Wales largely by financial problems, Macleay had contrived, that very year, to augment his cabinet at important auctions. He owned insects collected during the voyages of Captain Cook, others obtained by such early visitors to Australia as Surgeon-General White, contributions from Sir Stamford Raffles, and type specimens of species described by J.C. Fabricius. Material from this 'cabinet of celebrity' had been used in preparing publications, including the immensely popular *Introduction to Entomology* of Kirby and Spence; and Macleay's prominent association with the Linnean Society also ensured that his collection was widely known among naturalists. In New South Wales it would continue to be admired by the scientists of visiting expeditions. Yet it seems to have been written off as permanently lost to European science. As its present curator records, it was 'subsequently forgotten', and European entomologists 'have remained largely unaware of its development in the ensuing 160 years'.

That development might have surprised even Alexander Macleay. At the death of his eldest son, William Sharp Macleay, the entomological collection, augmented by material from Cuba and the United States, totalled well over 100,000 specimens. In the hands of his nephew, William John Macleay, the total reached about half a million, including the results of collecting expeditions in Australia, New Guinea and the Pacific Islands, as well as purchases from other regions. Siberia, Tibet and the upper Amazon had all contributed to 'the oldest and historically most important insect collection in Australia'.

The outstanding character of the insect collection — its wealth in exotic species and the number of type specimens it contains —

ensures its central importance among the Macleay collections. Other departments of zoology are nevertheless richly represented there, and the editors of the Macleay Museum's centenary volume justly complain that the natural history collections as a whole 'have not received the recognition they deserve'.

That could never be said of the building erected at the University of Sydney to house them. Its size and solidity, at least, were fully appreciated from the start by a University permanently in need of temporary accommodation. Before any specimens of natural history arrived there, the newly-completed building had served as an examination hall. The first scientific material it housed came from a Geology Department pressed for space. While the transfer of its intended contents was in full swing, it sheltered classes in practical pathology and its Curator was preparing 'specimens in Normal and Morbid Anatomy'. The University had already begun to forget its own contention that the Museum was a gift to the people of New South Wales rather than an addition to University property.

After the death of Sir William Macleay in 1891, the temporary uses of the Museum building multiplied and worse threats emerged. By 1919, the building contained two new floors, where its lofty internal court had been, and consisted mostly of teaching space, laboratories and offices. As Susan Clark puts it in her contribution to the centenary history: 'Geology invaded from the west, Botany from the east, and the Macleay Collection had to retreat to the attic'. Additions to the front of the Museum then changed its whole character. After 1924, the Macleay Collection could be reached only by stairs from the back door of what had become the Botany Building.

Diversion of the building from its original purpose was accompanied by recurring proposals to free more space by ridding it of natural history specimens. When the Macleay Collection was stored rather than displayed on a small floor immediately beneath an iron roof, it was argued that the specimens should be removed for their own protection. Where the Museum building had initially seemed too good for its contents, the finest collections were eventually found to be too good for the cramped, poorly-lighted, badly-ventilated vestige of the Museum.

Inevitably, this record of the institution's first century is largely a recital of wrongs, enlivened by accounts of progress made in the last thirty years. It is, to some extent, a contribution to the history of science in Australia, but equally an attractive exercise in public

relations for an institution still seeking recognition and support. Despite its subtitle, the book does not attempt to present *the* history of the Macleays and their museum. Nor could it do so in a mere 95 pages of text, the remainder of the volume being occupied by illustrations and appendices. Only four short chapters are devoted to collections — Woody Horning on entomology, Graeme Phipps on ornithology, Lydia Bushell on the anthropological material, and Leigh McCawley on the recently established repository of historic photographs. An appendix lists, among other publications by the Museum staff, the papers which give details of Macleay Museum type specimens in several animal groups. But no contributor has ventured to estimate the losses caused by the many years of neglect, or given an overview of zoological collections other than insects and birds. For a summary of the collections originally given the University by Sir William Macleay, one must still refer to the Macleay Memorial Volume, published by the Linnean Society of New South Wales in 1893.

The chapters range in manner and intent from Hornings businesslike and somewhat technical discussion to Elizabeth Hahn's very personal 'Macleay Memories', and in length from Phipp's two pages on ornithological rarities to Peter Stanbury's twenty-six page account of 'Curators and Committees'. As well as containing the organizational history of the Museum, the last-mentioned essay presents a kind of natural history of its curators, the two aspects combining to explain the state in which the collections were found when a new era opened in 1958. On recent Museum activities, the text is supplemented by an appendix listing exhibitions mounted since 1971.

In the opening chapter, Julian Holland sketches the lives of Alexander and William Sharp Macleay and sets the origin of the collection in its historical context. The biographical details given are by no means exhaustive; the editors themselves refer the reader to the (uncompleted) work of J.J. Feltcher, published by the Linnean Society of New South Wales in the 1920s, and an appendix, a valuable 'Chronology of the Macleays', forms an essential adjunct to the text. Holland's essay nevertheless provides a fresh and sympathetic account of the first Macleay naturalists, and one looks forward to fuller results from his current research on W.S. Macleay.

The sympathy extends to W.S. Macleay's 'Quinary' system of animal classification, described by other writers as 'mystical' or 'bizarre', and variously compared to Ptolemaic cosmology, German *Naturphilosophie* and the

speculations of Coleridge. A more critical tone is evident in the chapter by Holland and Stanbury on William John (Sir William) Macleay, long a rather unpopular figure among historians of Australian science. He is described as an 'enthusiastic collection builder' as well as 'a benefactor of science', and is credited with a 'passion for natural history'. But the discussion culminates in the question, 'Was he a scientist?', which the biographers seem inclined to answer in the negative.

In part their implied judgement is based on Macleay's rejection of Darwinian theory, that possibly over-used standard for distinguishing 'goodies' from 'baddies' among nineteenth-century naturalists. It may also reflect the historian's natural preference for a striking speculation over a plodding succession of descriptive publications. Julian Holland strongly contrasts William Sharp Macleay, who 'never lost sight of the higher goal of natural history' with the cousin who developed no 'philosophical basis' for his work. But these two men shared the same fundamental philosophy: the belief that the natural world is the creation of an 'all-wise, all-powerful deity.' What they did not share was W.S. Macleay's confidence that 'the divine plan', the true 'natural system' of classification, could be revealed by human effort. William Sharp Macleay believed, moreover, that he was the man to reveal it. His cousin's was a more modest view, but by no means as mindless as the biographers manage to suggest. It may be that in a longer discussion, using a greater range of evidence, Holland and Stanbury would reach more favourable conclusions about the value of the last Macleay naturalist in his time and place.

Besides his celebrated cabinet and a load of debt, Alexander Macleay brought to New South Wales his six daughters, the oldest of whom, Frances Leonora (Fanny), was his 'companion in his pursuits'. Fanny never lived in Elizabeth Bay House, the tribute to science, taste and patrician aspirations that bankrupted her father; she died in 1836, before the building was completed. But she often visited the site while the famous garden was being formed, and, as the most prolific letter-writer of the family, she has become the representative of her mother and sisters in Elizabeth Windschuttle's study of the Macleay women.

This is a 'redressing-the-balance' book, designed to obtain recognition for Fanny Macleay as one of the unsung heroines, 'whose work went to make up the remarkable revolution in our understanding of the natural world that was produced by her era'. When

Fanny helps her father by drawing some fossil bones about which she knows nothing, this is regarded as 'work in paleontology'. When she includes in a flower painting five Australian species which had not been illustrated in *Curtis's Botanical Magazine* or the *Botanical Register*, this is said to exemplify her 'naturalist's eye for the exotic and the new', though these species had actually been described long before. Fanny is credited with 'competent and adventurous' work in natural history, but the only evidence offered seems to be that of a platypus-watching project in which the sole observation mentioned was made by her young brother George. Where first we are told only that Fanny encouraged her older brother, William Sharp Macleay, in developing his Quinary System and defending it, we finally hear that she helped him 'to formulate his own contributions to the debates of the period', which seems to mean that the adoring Fanny, in cringing fear of William's displeasure, passed on to him some warnings about pamphleteering in 'so violent a spirit'.

The book leaves the sad impression that Elizabeth Windschuttle did not like Fanny Macleay, but has strained every nerve to produce an ideologically-sound account of a gifted and learned woman thwarted by a male-dominated world. Unfortunately, the biographer presents no evidence that Fanny obtained much command over the many scientific subjects she is said to have studied. Too little of her work has been preserved to permit any extensive assessment of her achievement as a natural history artist. Fanny undoubtedly gave her father essential help in maintaining his collection, to which she frequently contributed. She was constantly active in obtaining and drawing specimens for her brother, William, though apparently few of the drawings reached his hands. Apart from some early complaints about her inability to travel, she seems in fact to have been reasonably content with her role as a handmaiden of science, as personified by her father and brother. Nothing in Elizabeth Windschuttle's work suggests that Fanny contributed or could have contributed to any kind of revolution, in science or any other human endeavour.

The book provides a good deal of social background — missing from the brief essays in *Mr Macleay's Celebrated Cabinet* — written to a recognizable formula and neatly presented in chapters separate from that devoted to 'Science and Art'. It is beautifully illustrated, thoroughly referenced and equipped with a good bibliography.

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M.J. Lewis (Ed.), *Health and Disease in Australia: A History* by J.H.L. Cumpston. Canberra: AGPS, 1989. vii + 450 pp., illus., \$69.95.

Dr J.H.L. Cumpston has achieved the distinction, surely rare amongst historians, of publication of two of his historical monographs more than half a century after they were written and about three decades after his death.¹ Less surprising, in view of his dominant role in public health administration in Australia in the first half of this century, is the appearance of papers and theses examining the role of his Commonwealth Department, and of a biography, which, although written by a daughter, rises well above the 'family biography' standard.² *The Health of the People* is a curious work, being an extraordinarily impersonal and tediously factual account 'of the expanding concept of the national health responsibilities inseparable from the duty of the Commonwealth Government . . .' (author's words). It is emasculated history, although no-one was better qualified to elaborate upon the basic data. His own contribution and views can perhaps be deduced, but they are nowhere specifically outlined. It was written immediately after retirement, at a time of considerable controversy over matters of health and medical care, and, I suspect, because he wanted to make sure that the record was kept straight and that the historical evolution of concepts of health administration was kept in view in planning for the future.

The new work, written in the late 1920s, presents problems to the reviewer, in part because the aims of reproducing an aged text, and hence the intended audience, are not clear. The absence of any general account of the history of medicine and disease in Australia is one good reason for its publication; within its limitations, some of which are noted below, Cumpston's work will be found most useful.

Milton Lewis first provides a valuable introduction, extensively referenced, which reviews the evolution of concepts of public health in Australia and the post-war moves towards some kind of national health service. Wisely, I think, Lewis carries this story only as far as the years immediately following Cumpston's retirement in 1945.

Second, there follows Cumpston's history, as originally written. Cumpston's attitude to medical history was quite pragmatic; he saw it as providing data from which inferences concerning the control of disease and improvement in the public health could be derived. As

Lewis puts it, the book is mostly 'historically oriented epidemiology'. In many chapters, such as those on the school child and venereal infections, Cumpston's pragmatism leads him specifically to examine the contemporary role of administrative measures for the common good. It is inevitable that in some areas medical and epidemiological understanding will have increased, but the careful and generally critical collation of data remains of permanent value. The chapters on the common infections and gastrointestinal diseases (including typhoid), plague, influenza and smallpox are brief summaries of his other books (some in collaboration with F. McCallum), which remain the better sources as well as the better history. Uncharacteristically, Cumpston's references in the present work are often incomplete (remedied in some instances by the editor), and some relevant studies, including important ones from his own Department, are omitted altogether (e.g. N.H. Fairley and C.A. Stewart on cerebrospinal fever, and several investigations related to occupational health and shipboard hygiene). He is critical of Nelson's work in silicosis, which was epidemiologically far in advance of the times and much superior to Cumpston's own earlier survey. One wonders if the selectivity had a basis in interpersonal relationships. Socially minded historians may well find Cumpston's approach disappointing, although, as his own life history and work indicate, few of his era were more aware of social influences on health and disease. Nonetheless, his training and medico-historical approach demanded statistical rather than anecdotal evidence (which is not wholly to decry the latter). All in all, I believe Cumpston is not seen at his best as a historian in the present work.

Third, there are Milton Lewis' annotations to most chapters, in which he seems to have two aims. The first is to place the subject matter in a world context, both in time and place. Overall, he probably succeeds, although doctors and historians may find grounds for argument in some of his selections. Certainly he ranges beyond the strict limits which Cumpston set himself, and I suspect that one or two of his references might not have met with Cumpston's approval. Lewis further brings the Australian medical historiography up to date, although here there are some important omissions amongst his references (generally identifiable from The Royal Australasian College of Physicians' publication, *An Annotated Bibliography of the History of Medicine in Australia*, Sydney, 1984). Lewis has sensibly refrained from an attempt to bring the book

historically and medically up-to-date, a lengthy and hazardous task, better served by another book.

This book is expensively but beautifully produced, with one exception: many of the graphs, which are critical to Cumpston's historiographic approach, have been reduced from the octavo page size for which they were prepared to a size which makes the axes unreadable without a magnifying glass. Even then, some with multiple lines are hard to interpret. At the price, they should have been redrawn, perhaps with altered scales, but they should certainly not have been reduced. This is another reason why the original monographs will remain the essential source for the scholarly historian.

A necessary conclusion to this admittedly ambivalent review is that Cumpston's history will remain for ever a window on the history of Australian medicine as seen by an involved and informed observer of the late 1920s. Its value today has been enhanced by the editorial supplements and introduction, but the history of health, disease and public health in Australia has yet to be written. We are privileged to have Cumpston's summary view, but I wish more students could afford it, for it provokes many questions which they might try to answer, and which have relevance (that educational shibboleth!) today.

References

1. J.H.L. Cumpston, *The Health of the People: a study in federalism* (Canberra: Roebuck Society Publication No. 19, 1978). The second is the book under review.
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Bryan Gandevia,
Randwick, N.S.W.

F.W. and J.M. Nicholas, *Charles Darwin in Australia*. Cambridge: Cambridge University Press, 1989. xiv + 175 pp., illus., \$45.

The impact of the travelling scientist on the development of nineteenth-century science is well recognised if not fully understood by historians. Many of the greatest names cut their scientific teeth while on voyages of one sort or another. The early examples of Banks and Humboldt were to be followed by Darwin, Huxley, Wallace, Hooker, Bates and a host of lesser lights. Of this group Banks, Darwin,

Huxley and Hooker visited Australia, as did the geologist J.B. Jukes and the botanist W.H. Harvey. Each in some way made an important contribution to the development of a scientific picture of the continent; it is perhaps ironic that Darwin, the best known, probably made the least direct contribution.

Darwin was in Australia for about two months, skirting the coast and spending short periods in Sydney, Hobart and ashore at King Georges Sound in Western Australia. Enthusiastic authors have succeeded in wringing out a series of books and articles celebrating this short visit at the fag end of the *Beagle's* five year voyage. Now comes what must surely be the definitive descriptive account; definitive because it is hard to imagine that the authors of this volume have left any stone unturned in their search for material, and descriptive because future scholars will no doubt go on reinterpreting that material in the light of new historical insights.

There are a number of reasons why the lay reader should be grateful to the Nicholases for this volume. It brings together primary and secondary source material that is scattered over a range of somewhat inaccessible publications. More importantly, it finally lays to rest any lingering thoughts that Darwin's Australian visit played a major role in the formulation of his ideas on evolution. Besides this, we are given a thorough and entertaining account of the cultural life of the continent as Darwin would have seen it, and there is a deal of biographical information provided which brings life to many of the minor figures in the story who have previously been largely ignored. It is indeed quite a story, of course. Those fond of the 'what if' approach to history have a gold mine here. What if Darwin's nose had not appealed to Fitzroy's phrenological inclinations? What if Fitzroy's uncle had failed to persuade the Admiralty of the worth of undertaking a second *Beagle* voyage? And so one could go on.

The authors give a full account of the Admiralty's intentions for the voyage, and spell out where Australia fitted into the overall plan. The *Beagle* was to determine the points of longitude at Sydney, Hobart and King Georges Sound, which were seen as crucial reference points in the global chain of longitudinal determination. This 'official' side of the voyage has often been forgotten or downplayed by Whiggish historians, for whom only Darwin was important. The Admiralty scheme for 'bringing the world back home' had far-reaching consequences for Britain's colonial ambitions; Darwin's presence as amateur scientist had

less immediate effect, but in the long run probably did as much for the extension of scientific authority from the 'centre' to the 'periphery'.

As far as Darwin's scientific work in Australia is concerned, it was, as Patrick Armstrong and M.R. Banks have shown and as the Nicholases reiterate, mainly geological. Many of his observations made their way into *Volcanic Islands*, one of a trilogy of geological volumes Darwin published in the 1840s. Chapter 7 of this work is in fact entitled 'Geology of New South Wales, Van Diemens Land and King Georges Sound'. With regard to natural history, Darwin did discover a species of bush rat and four new species of fish, among other things. But only the most Whiggish of scholars could see evidence in the Australian leg of the *Beagle* voyage of the promise to come in Darwin's career. To their credit, these authors, unlike some of their predecessors, recognise this.

The book is well documented, splendidly illustrated (the Conrad Martens pictures are particularly good) and generally well written. The professional Darwin scholar conversant with the primary sources will find little new in it, but then the work is clearly intended for a less specialised audience.

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Milton Lewis, *Managing Madness: Psychiatry and Society in Australia 1788-1980*. Canberra: AGPS Press, 1988. xii + 272 pp., \$49.95 (cloth), \$24.95 (paper).

This is a difficult book to review. It is readable, interesting and the result of a considerable amount of scholarly research. Regretably, this is where the praise must cease. In many ways it is unsatisfactory and inaccurate, with a very poor index and an inadequate bibliography.

It is an Australian Government Publishing Service publication and is, one supposes, a project under the History of Public Health in Australia. Accordingly, it might be judged on its historical content. But is it, at least in its description of the more modern services, material which will rightly find a place in historical study for future scholars?

It is not clear which group of readers the book has as its target. It could hardly be psychiatrists with so many errors and omis-

sions in its sections on treatment. Nevertheless, so long as they are not unduly irritated by the inaccuracies and approach the work with psychological understanding of the numerous critical quotations and opinions, both actual and implied, they will learn much from its reading. Many health professionals are likely to feel the same. I doubt, however, if they will find in the book a logical sequence of events giving the promise of a better future. The material will be of interest to many, although it will be of greater value if it is read critically rather than for information alone. It is a pity, for example, that Chapter 5 on Health Services Professions, which should create understanding within the mental health service professionals, is not much help in this way. It starts with a page and a half which appears to express a bias against psychiatrists and five-sixths of which does not come from Australian sources.

Whatever may have been Dr Lewis' objects in writing the book, one must feel it is slanted against health professionals as a whole and psychiatrists in particular, and that minority groups and discontented individuals are given undue space in the text. Most chapters end with a few lines of criticism or derogatory judgements, as on pages 73, 98, 114, 122, 141 and 195. In this sense the book will probably add little to the progressive unity of the psychiatry services.

In reading the chapter on Community Attitudes and Involvements it is important to note that most of the voluntary organisations arose as an extension of the mental health movement not in opposition, as page 141 of the book would imply. By way of contrast, I suggest Dr Lewis should read *Asylum to Community*, pages 87 to 94, to obtain a true and wide view of the public activities. This section on The Public contains: 'Not only have these voluntary organisations given their magnificent services voluntarily, but they have been public relations officers and helped break down the prejudices and fears which previously existed, thereby encouraging early treatment and the quicker recovery of the persons concerned.'

In the section on the early years, the first medical officer, William Bland, the convict duelling doctor, might have been mentioned, as well as Suttor at the Castle Hill Asylum. Although John Conolly (the father-in-law of Henry Maudsley of the Maudsley Hospital) is mentioned twice, his widely renowned publications on the abolition of restraint and on hospital planning are omitted. The Rev. Samuel Marsden would have been worth a note for his several activities in this field, whilst Bishop

Willson, the first Catholic Bishop in Tasmania, should surely have been included for his mental health activities in New South Wales, Victoria and Tasmania, as well as for his visit to Norfolk Island. In fact, the clergy are neglected despite their work on alcoholism and their major representation in the New South Wales Intemperance Report of 1854.

The various classifications of mental illness in the mid-1800s are listed no less than seven times between pages 6 and 12. Benn's work on Watson and Embling (p. 7) is not quoted. In the Victorian services after the Gold Rush, it could have been noted that both Ararat and Beechworth Asylums were opened in 1867 to relieve the overcrowding at Yarra Bend and because the insufficient railway system made transport of patients from these areas difficult. A note is included on Sunbury, including a description of the unsatisfactory conditions there in the early 1880s. However, it was only taken over in 1879; it had previously been an Approved School.

In general, the least satisfactory part of the text is that on Treatment. This was a bold undertaking for anyone without considerable practical experience and reading in the field. Malaria therapy is described five times between pages 44 and 55; the treatment of general paralysis of the insane by penicillin instead of by antibiotics would have been more accurate. Cade's work on lithium is mentioned as gaining international recognition in the 1940s, although he did not publish his discovery until 1949, and it was not confirmed and popularised by Morgan Schou in Denmark until 1952. The English and Danish prophylactic work was reported in the late 1950s.

In this section on treatment, notes might have been included upon 'prolonged narcosis', with its long history even before it was described by Klasi in 1922. It was used in the 1939-45 War, as was 'sub-coma or modified insulin therapy' and 'narco-analysis'. Again, 'group therapy' was not in common use until the end of the wartime years, and could hardly have been used as an alternative to the physical (or biological) treatments originating ten years earlier.

On page 43 it is said that 'another controversial therapy, psychosurgery, intended to relieve severe depression and later to reduce aggressive behaviour, was introduced in the 1940s'. In fact, psychosurgery was first practised in 1935, and the order of its use was the reverse of that stated. The operation did not destroy tissue but divided it, and its use in anorexia nervosa was very rare and founded upon a single published case.

Again in this context, the fear of some homosexuals is referred to on several occasions. If homosexuals are treated in one way or another, it is not because of their homosexuality but because they have worries associated with it. The problem with which they were faced and for which they requested treatment were commoner prior to the modern legislation. Again, in the 1930s depression was not treated by insulin (p. 43); insulin comma therapy was used for schizophrenia. The note on phenylketonuria belongs to the chapter on the intellectually handicapped.

Before Dr Lewis revises his text, I would suggest he document the dates of introduction of the treatments, their order, their purposes, their expansion, their overlap with psychopharmacology and the consequent gradual diminution or change in their use. These changes did not come about by the protests of the liberationists or anti-psychiatrists, but by logical progression.

There are a number of other inaccuracies. For example, the national enquiry mentioned on page 77 originated from Sir Robert Menzies, not from Sir Earl Page. Alexander Kennedy did not come to Victoria (p. 80), but stopped on his way back from New Zealand to make his report. D.W. Arnott is omitted in the discussion of the origins of the Association of Psychiatrists. The World Federation of Mental Health, in which Dr Dibden and Dr Stoller played a prominent part in Australia, brought over the Director, Dr J.R. Rees, for the Mental Health Year in 1960.

On pages 88 and 89 community psychiatry is discussed, although a third of the space is given to the Kennedy reforms in the USA. This section could have been enlarged, perhaps in part at the expense of the following four pages on The Rights of Patients, which is a subject rather strangely introduced at this stage. It would have been a useful addition to the understanding of the present interests in community psychiatry if its historical development from the late nineteenth century could have been traced.

There are a number of major omissions concerning psychiatry and society; as examples, two may be mentioned. The relationship between Australia and its neighbouring countries has been of growing importance. Much assistance has been given to them, their students have visited here, and transcultural psychiatry has been advanced. Reference could especially be made to the Beattie Smith lecture of Dr Eng-Seong Tan.

The book would also benefit from a survey of some of the psychiatric research in Australia

and the major contributions which have been made in this field, including the growing interest in psychogeriatrics. Much of the space devoted to eugenics could have been more properly devoted to epidemiological studies.

There are a number of mistakes in names. Frederic Norton Manning's first name is given as Frederick. Henry Maudsley is used as the name of the founder of the Maudsley Hospital, the Victorian who started the Association of Psychiatrists and in the index, while H.F. Maudsley is used elsewhere. C.R.D. Brothers is contracted to C.R. Brothers and A.S. Henderson to S. Henderson. In the bibliography, L.G. Kiloh has become L.K. Kiloh, and D.A.S. Fraser appears as J.D. Fraser in the index.

The historical statistics in Appendix II are very interesting and might have been even more valuable if the populations of the various States could have been included to compare with the mental health figures.

The list of departmental reports in Appendix III reflects the enormous amount of conscientious research undertaken, as also do the Parliamentary Debates at the end of the Bibliography. Some time I hope Dr Lewis will collect more of the vast number of official enquiries which have been held (if he has not done so already), and will give us another book on this subject.

The Bibliography contains about 300 references; it seems almost uncharitable to say that it is still deficient and could, with advantage, have been expanded to twice as many again, most of them Australian.

By far the most unsatisfactory feature of the book is its index. It includes a remarkable collection of rather useless one-line, thumbnail sketches barely related to the text or even to the major achievements of the people quoted. There are, for example, at least six mentions of the Zox Commission in the text but none except the name in the Index, whilst Legislation is duplicated in the index and bibliography.

Despite these numerous criticisms, the book is widely researched and potentially valuable. I hope it will go into a further edition, but only if it adheres to historical material, if corrections are made in the text, the bibliography is amplified and the index rewritten.

Lastly, one must suppose the Australian Government Publishing Service must accept some responsibility for the insufficient checking of the material prior to its publication.

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Sharon Beder, *Toxic fish and sewer surfing: How deceit and collusion are destroying our great beaches*. Sydney: Allen & Unwin, 1989. xvii + 176 pp., illus., \$12.95.

Readers all over Australia, and even beyond, will have heard something of the problems associated with the disposal of sewerage and industrial liquid waste in Sydney, and of its particular impact on the famous Sydney beaches. There was an especially vigorous and damaging public airing of the problem in the early months of 1989, related to the program of the Sydney Water Board to extend and increase the discharge of waste into the ocean off Sydney.

The elements of the controversy are varied and complex and have a long history, much of which is not widely appreciated or understood. This book is a significant attempt to provide the more important missing or hidden data, and then to provide a more detailed analysis than has been available to date. It is a reworking by its author, Sharon Beder, of her 1989 University of New South Wales Ph.D. thesis (entitled "From Pipe Dreams to Tunnel Vision: Engineering Decision-Making and Sydney's Sewerage System") — rewritten in order to appeal to a wider, public audience. (It is a paperback volume, printed on 100% recycled paper.)

In this she has been largely successful. It is a sad and sorry tale, unrelieved by any happy outcomes along the way and with few indications, at present, that the situation will be significantly improved. I would judge the book to be mandatory reading for Sydneysiders, but also of interest to anyone concerned with decision-making processes in public, technical areas, with the role of expert scientific or engineering advice to government, or with the social responsibility of scientists, engineers and public servants.

Our earliest colonists settled around the Tank Stream leading into Sydney Harbour at Circular Quay; by 1826 it had become so polluted that it had to be abandoned as a water supply. Reform was delayed or prevented by influential ratepayers who lived further out, and by governments who felt unable or unwilling to spend the necessary money. Raw sewerage was first carried to the nearest waterway — Sydney Harbour at Fort Macquarie (now the site of the Opera House) — and then, when the Harbour became 'foul and stinking', to Ben Buckler Point at Bondi. An early sewerage farm near Botany Bay was abandoned when it became overloaded. The pattern of dealing with

sewerage and waste by 'ocean outfall' thus became permanently established. Recent events illustrate vividly how great a change in attitude is required by our authorities, and how expensive it will be to rectify the neglect of our predecessors.

In the early decades of the 20th century, further ocean outfalls were added despite repeated public protests. Water Board engineers and public medical officers insisted that 'dilution by sea water . . . renders sewerage innocuous to health', and that any beach pollution was caused by 'night soil dumping and passing ships'. Such assertions were supported by local councils, businessmen and property owners, concerned that adverse publicity would affect tourism, business activity and development.

Little has changed in the last 50 years, except that the public protests have become more vociferous and the defense of the authorities more sophisticated. In the 1960s, the New South Wales government brought in the Clean Waters Act and set up the State Pollution Control Commission and the Metropolitan Waste Disposal Authority, but these were largely 'toothless'. In the 1970s, liquid industrial waste was taken out of the rivers and diverted into the sewers — and thence into the ocean!

The major problem in Sydney is not the ocean dumping, however, but the lack of treatment of the sewerage and industrial waste before it arrives there. "Primary" treatment involves the removal of solids by sedimentation and flotation; "secondary" treatment is a biological process using micro-organisms to break down organic matter. The great majority of Australia's larger cities treat their sewerage to the secondary level before discharge, but Sydney has only very poor primary treatment: at the Bondi plant only 11% of suspended solids and 25% of grease are removed, at the Malabar outfall only 15% of solids and 30% of grease.

Beder paints a disheartening picture of scientific and engineering research associated with the history of this project. Research has been inadequate, and the little that has been done has either been designed to give the Water Board the results and advice it wanted, or deliberately withheld and hidden from the public. Only a few courageous scientists or engineers (usually at retirement) have been willing to blow the whistle.

The author presents as much data as she has been able to discover by diligent research, some of it for the first time in the public arena. Heavy metals (mercury, cadmium, copper, lead and zinc), pesticides (DDT, dieldrin etc.) and

other toxic wastes have been found repeatedly in fish and other sea foods at levels up to 250 times NH & MRC recommended maximum levels. Dumping conventions have been ignored; standards have been breached. One or two named engineering consulting companies come out of this analysis very poorly indeed. The impact of ocean dumping on disease and community health has been little studied.

For Sydney, great reliance has been placed on the southerly flow of the ocean current off the coast, but this is known to be erratic and to contain large eddies, which can flow onto the coast; and such reliance ignores the effect of winds on surface contaminants. One hesitates to list the items that have been found on Sydney beaches, and it is impossible, in any event, to be sure of their source.

Each day more than a thousand million litres of minimally-treated sewerage and industrial waste (equivalent to about 25,000 average backyard swimming pools) go through the three major outfalls into the Pacific Ocean off Sydney. The Sydney Water Board's solution to this major problem of waste disposal and beach pollution has been to extend the outfalls to between 1.5 and 3.9 km out to sea. But, as the present author rightly points out, tinkering with the problem — in the form of higher fines, tighter limits, increased levies, more surveillance, greater public awareness etc. — will never solve it. Far more extensive treatment, however expensive and however long delayed, will eventually have to be instituted. Some wide-ranging, detailed and disinterested research would undoubtedly hasten the day.

There can be no doubt which side of the debate Sharon Beder is on, and one wonders how balanced her account is, particularly in view of the title of this book. Her attempts to get the other side of the argument, however, were usually met with silence or even hostility, and I find it difficult to quarrel with her major conclusions.

The book is enlivened with numerous illustrations, including many cartoons that have appeared in Sydney newspapers over the years.

More than anything else, perhaps, this story illustrates the need for honest and expert scientific investigation and research, careful analysis of the results, appropriate reporting of it to the public, and courageous honesty and forthrightness in the face of shortsightedness and even deceit and collusion by public authorities. So far, in the case of Sydney's ocean

outfalls, Australian science and engineering (with one or two notable exceptions) would appear to have failed the test.

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Geoffrey Badger, *The Explorers of the Pacific*. Sydney: Kangaroo Press, 1988. 248 pp., illus., \$35.

There is no shortage of recent books dealing with the golden age of European exploration of the Pacific between the voyages of Bougainville (1766–9) and Wilkes (1838–42), of which Oskar Spate's *Paradise Found and Lost* (Sydney, 1988) is perhaps the best. So why another book apparently covering much the same ground? While the title and even the introduction do not answer this question, it is clear from the text and the eight appendices that this book is concerned more with the scientific than the geographical results achieved during these voyages. From Cook onwards the author discusses the botanical and natural history results of the voyages in some detail.

The author has a very wide field to cover and has therefore concerned himself almost exclusively with the French and British voyages of exploration during this period, starting with John Byron's departure from England in 1764 and ending with Dumont D'Urville's triumphant return to Toulon in 1840. Thus various Russian voyages and the voyage of the American explorer Wilkes are dismissed in a few paragraphs, while the major Spanish scientific voyage of Alejandro Malaspina (1789–94) does not merit a mention.

The first six chapters set the scene, dealing amongst other subjects with Polynesian voyages, the medical and navigational problems faced by the early European explorers, and giving brief summaries of their voyages and the navigation methods they used. With no adequate method of finding longitude, many early discoveries were sometimes placed several thousands of miles in error. The Solomon Islands, discovered by the Spanish explorer Mendaña in 1568, were not identified again until the latter part of the eighteenth century.

In chapter 3 the author deals with the problems faced by the European navigators. Scurvy, that scourge of early explorers, is discussed in detail, and deservedly so since it remained a major hazard for Pacific explorers

until well into the nineteenth century, 29 cases being recorded in HMS *Herald* in 1859 during Captain H.M. Denham's survey of the reefs in the Coral Sea. A comparison between the Portuguese and Spanish carracks and the ships of the golden age then follows, which leads on naturally to the navigational instruments of the period. Here the author, in discussing loglines at the time of Cook's voyages (p.25), states that the knots 'were usually placed 47 feet 3 inches apart, thus having the same relation to a nautical mile (6,080 feet) as 28 seconds to an hour', adding that the time was measured by a sand-glass in which the grains took 14-seconds to run from the top to the bottom bulb. He then describes the method of streaming the log, stating correctly that the ship's speed was calculated by counting the number of knots and any portion of the line that had run out, but adding erroneously that the number of knots should be divided by two, when for a 14-second glass they should be multiplied by two. Cook's logline and sand-glass were, in fact, slightly different. The latter states, in a foreword to his *Endeavour* journal, that the 'proportional length of the Log-line to the half minute glass, by which the ship's run was measured is as thirty seconds is to fifty feet'; thus, in the *Endeavour* the number of knots that ran out gave the speed of the ship without further calculation.

Later in chapter 3 the author turns to the methods of obtaining latitude and longitude. Here he makes a misleading statement (p.26) when he states that, in obtaining the ship's latitude by a noon time observation of the sun's altitude, a correction has to be applied because the sun appears to travel faster along its orbit, or ecliptic, at some times than at others. While the latter statement is true, the so called 'equation of time' need only be taken into account in determining when to take the noon sight, but it is not a correction which needs to be applied to the sun's altitude in calculating latitude by this method. I suspect, too, that the author's description of obtaining the sun's altitude with an astrolabe would result in blindness, and his statement that metal octants were usually too heavy to be used on a moving deck is hardly borne out by the remarkable feat of navigation achieved by Bligh during his open-boat voyage using a heavy metal sextant.

In the next chapter the author deals with the arrival of the Europeans, covering the period from Magellan to Anson. In a major error, the author states (p.39) that Tasman took three ships through Torres Strait in 1644 in order to confirm that Australia and New Guinea are separate land masses. Although

Tasman surveyed the Gulf of Carpentaria and parts of the south coast of New Guinea on this voyage, he failed to find Torres Strait and returned to Batavia through Sunda Strait.² The often reproduced Bonaparte map, now one of the treasures of the Mitchell Library, shows Tasman's 1644 track skirting the entrance to Torres Strait, which the map depicts as a bay, thus joining New Guinea to Australia.

Having briefly discussed the voyages of Byron, Wallis and Carteret, the author next turns to the voyage of Louis-Antoine de Bougainville, who sailed from Nantes on 15 November 1766, having on board the professional botanist Philibert Commerson. Bougainville first called at the Falkland Islands to hand them back to Spain, then sailed through Magellan Strait, arriving on 6 April 1768 at Tahiti, which had been 'discovered' by Wallis ten months earlier. Bougainville remained in Tahiti for only ten days before continuing westward across the Pacific. He next sighted Samoa, and a few days later reached Vanuatu, where he identified the Spanish explorer Quirós's *Australia del Espiritu Santo*. Continuing westward into the Coral Sea, Bougainville next sighted a sandy cay, which he named *Bâture de Diane*, and shortly afterwards Bougainville Reef, an outlier of the Great Barrier Reef. Because of a large error in his longitude, the existence of these two dangers remained in doubt until their rediscovery in 1886. Bougainville next sailed through the strait that bears his name, between Choiseul and Bougainville Islands, but failed to identify them as belonging to Mendaña's Solomon Islands. During this voyage Commerson amassed a natural history collection of no fewer than 30,000 items, making this the first of the truly scientific voyages to the South Pacific.

The achievements of Captain Cook and the scientists that accompanied him on his three Pacific voyages occupy the next six chapters and are too well known to need summarising here. However, in discussing Cook's passage along the east coast of Australia (p.76) the author states that Cook 'looked into' the magnificent harbour of Port Jackson, adding that this name was later changes to Sydney Harbour. Since Cook wrote in his journal that he was about 2 or 3 miles from the land when abreast Port Jackson³, 'looked into' hardly seems appropriate. In addition, the name Port Jackson is still in current use in the title of at least four Australian charts. Regarding the appointments of the scientific staff for Cook's second voyage, the author states (p.88) that William Bayly, who joined the *Adventure* as her astronomer, had previously observed the

transit of Venus in 1769 at North Cape, Nova Scotia, instead of North Cape, Norway. He then confuses Dr James Lind, an Edinburgh physician, who nearly accompanied Cook on his second voyage, with the former naval surgeon of the same name, who had written *A Treatise of the Scurvy*. When discussing Cook's final sweep in high latitudes in the South Atlantic, he writes (p.102) 'There was not a sign of land anywhere in these high southern latitudes', thus denying Cook the honour of the rediscovery of South Georgia and the discovery of the South Sandwich Islands.

The next chapter covers the voyage of La Perouse in some detail, after which the author turns to Bligh's two breadfruit voyages. Here again a number of mistakes creep into his account. First, he mentions (p.143) that when the *Bounty* sailed from Tahiti, there was the prospect of a passage around the Horn. While this possibility has featured in at least one of the *Bounty* films, it was certainly never an option considered seriously by Bligh, since such a passage with its accompanying low temperatures would surely have proved fatal to the young breadfruit plants. The author next states (p.146) that, during Bligh's epic boat voyage, a Fijian war canoe came close enough to throw spears at them. In his published account, Bligh states specifically that the pursuing canoes gave up the chase when one of them 'was not more than 2 miles off'.⁴

After discussing Vancouver and D'Entrecasteaux's voyages, the author turns to Flinders's circumnavigation, stating (p.184) that Britain had at that time laid claim to the whole of Australia. This is clearly incorrect. When Arthur Phillip was appointed Governor of New South Wales, the Royal Commission set its western limit at 135° East⁵, thus leaving the whole of the western part of the continent unclaimed. The author repeats this error later on the same page, stating that when the French explorer Baudin was in Port Jackson he questioned Governor King closely about Britain's claims in the Pacific, saying that King had told him firmly that New Holland belonged to Britain. I can find no support for this statement in the *Historical Records of New South Wales*, where the correspondence between Baudin and King is given in great detail, and the only reference I can find in Baudin's published journal makes it clear that the Frenchman was fully aware of the extent of the British claim, stating that it 'rests merely on Captain Phillip's proclamation, the limits of which are recorded in what we know, from its beginning, of the present settlement'.⁶

In discussing Dumont D'Urville voyages,

the author starts his chapter with the statement that the Flinders expedition was the last British venture to the Pacific for some years, thus overlooking the voyages of Phillip Parker King, who in 1819, 1820 and 1821 surveyed parts of the north-east coast of Australia in the *Mermaid* and the *Bathurst*. The scientific results of these voyages are given in an extensive appendix to King's published account, to which the botanist Allan Cunningham made a notable contribution.

The penultimate chapter of this book has the misleading heading 'Aftermath', since it briefly covers various Russian voyages and the voyages of the *Beagle* and *Blonde* during the golden age. The main purpose of the *Beagle's* voyage was to continue the British surveys in Tierra del Fuego and to measure a chain of meridian distances round the globe, and not to test the quality of a number of chronometers; nor did FitzRoy check his chronometers 'by thousands of observations of lunar distances' (p.207). FitzRoy states specifically that 'in no one instance do any of the longitudes given in the accompanying tables depend on absolute or independent astronomical observations'.⁷ Where FitzRoy has mentioned numerous lunar distances in his account, he was referring to the previous voyage of the *Beagle*. By the time FitzRoy returned from his second voyage, Lieutenant Henry Raper, the noted authority on geographical positions, had pointed out that the results of lunar distances taken at different times differed widely from one another and that they serve 'only to correct gross error in the chronometer'.⁸ In this chapter the author also discusses the effects on the indigenous populations of the arrival of the Europeans.

The final chapter is a summing up of the book as a whole. Eight appendixes follow, covering dead reckoning, latitude by observation, a detailed analysis of the transit of Venus which has not previously been available except in obscure scientific publications, the names of French explorers, ship time, the Flinders contribution to navigation, the Polynesian languages and equivalent terms. There are extensive notes and a comprehensive bibliography.

It is to be regretted that a book which contains a very useful summary of the scientific results of many of the voyages to the Pacific during the golden age of exploration contains many errors which depreciate its value. The book itself is produced to a high standard, the illustrations are well chosen, and the colour reproductions are particularly pleasing.

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John A. Young, Ann J. Sefton and Nina Webb (Eds), *Centenary Book of the University of Sydney Faculty of Medicine*. Sydney: Sydney University Press, 1984. xix + 548 pp., illus., \$40.

This volume starts with a disarming preface by its senior editor, John Atherton Young, professor of physiology at Sydney University. This book, he warns the reader, is not a history but a 'factual compilation' to celebrate the centenary of the University of Sydney Medical School in 1983. He informs us that the planning of the book took little more than a year, the writing and editing only six months, and that the book makes only a 'limited attempt at evaluation and criticism'. With so many caveats admitted by the editors, the intending reviewer can have little left to say.

The contents of the book fall into two distinct parts. Young and Webb have written six chapters on the history of the Faculty of Medicine from its establishment in 1856 until the 1920s. These are followed by three huge chapters on the medical sciences, clinical disciplines and institutions associated with the Medical School (such as the teaching hospitals, library and Medical Society). These latter chapters comprise 42 short essays by authors associated

with the particular department, hospital or institution. An architectural and building history of the Anderson Stuart Building and appendices listing professors and deans complete the book.

Curiously, for a book that concentrates on people and events to the virtual exclusion of processes and perceptions, the title of the book is inaccurate. The year 1983 marks the centenary of the Medical School rather than the Faculty of Medicine, which was established in 1856. Although it did not teach medical students, the faculty acted as an examining committee and awarded a small number of medical degrees. The Medical School was opened in 1883, after the Challis Bequest provided the university with sufficient funds. The Prince Alfred Hospital, established on the university grounds and intended as the primary teaching hospital, had opened the year before.

From its inception, the Medical School was dominated by Thomas Anderson Stuart, the professor of anatomy and physiology and foundation dean of the School until his death in 1920. Anderson Stuart had been placed first in his final year of medicine at Edinburgh in 1880, and he studied in Strassburg for a year before being appointed professor in Sydney at the age of 26. His influence would ensure that Scottish graduates would dominate the School in its early years; of the 26 teaching appointments made prior to 1900, 15 had been trained at one of the Scottish universities. By 1919, the School had 857 students enrolled across the five years, but apart from the professors of physiology, anatomy, pathology and pharmacology, all other teaching staff were either demonstrators or part-time lecturers. In the 1920s, the School would expand its teaching staff considerably with the appointment of professors of medicine, surgery, psychiatry and obstetrics and gynaecology. Unfortunately, the survey of the development of the Medical School in this book halts with the chapter on the 1920s; thereafter the reader is confronted with disconnected short essays on particular departments and institutions.

The protestations of the editors notwithstanding, this book is a history of the Sydney Medical School, but a history of a certain sort. The principle authors tend to be preoccupied with whether Melbourne or Sydney medical schools did something first. Much of the 'blurb' on the dust jacket is devoted to explaining that, although Melbourne opened its Medical School in 1863, twenty years before Sydney, Melbourne's Faculty of Medicine was established five years after that in Sydney. The chapter on women medical students worries over which

medical school first admitted women, and in which the first women actually graduated — as if the difference of a few years mattered one way or the other. Indeed, much of the book exudes a striking insularity. Accepting that the book was written primarily with medical school staff and graduates in mind, there is almost no attempt to examine the place of the Medical School in the university or medical profession, and effectively nothing on the contribution of the School to the wider community. If, for example, one wants to learn what the Sydney Medical School has done for Aboriginal health, the index directs the reader to only two references in the text: that a doctor who received a Sydney degree by examination in 1874 adopted an Aboriginal boy, and that many of the bodies received by the Medical School for dissection in its early years were those of Aborigines.

This, then, is a celebratory book of names, dates and achievements for those associated with the Medical School, and a reference book for those with specific historical queries. The editors and main authors have done an excellent job collecting and organising the material so quickly, and then presenting it in a handsome, well-designed book, adorned with a huge number of beautifully-reproduced illustrations.

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