

Book Review Section

Compiled by John Jenkin*

E.M. Webster, *The Moon Man — A Biography of Nikolai Miklouho-Maclay* (Melbourne Univ. Press, 1984), 420 pp., illus. (\$33.00).

Nikolai Miklouho-Maclay died before he wrote the ethnography that might have assured him recognition as the first anthropological field worker in New Guinea. His few published articles reveal only the eclecticism of his research interests. His diaries, like those of most anthropologists, are unsystematic records of daily events and the customs, language and material culture of a primitive society. His reputation, insofar as it is established outside the USSR, has been that of the heroic adventurer who lived in a coastal village on Astrolabe Bay, sacrificing the comforts of European civilisation in his endeavour to extend its understanding of mankind. The legendary Miklouho-Maclay was a courageous scientist and a great humanitarian.

The Nikolai Miklouho-Maclay who emerges from E.M. Webster's *The Moon Man* is not the luminary of modern Soviet myth, but a more complex and enigmatic figure. Expelled from university after two months as a student in the physio-mathematical faculty, Miklouho-Maclay left St Petersburg and embarked on studies of philosophy, languages and law at Heidelberg. After only one year he left for Leipzig to study medicine; after one term there he departed for Jena. In 1865 he began studies in comparative anatomy and zoology under Carl Gegenbaur and Ernst Haeckel. With Haeckel he embarked on his first travels to exotic lands, journeying from the Canary Islands across northern Africa in search of sponges that would provide proof of Haeckel's theories of atavism and evolution. In the event, the search was unsuccessful and he turned his mind to the problem of the ancestry of modern fish, arguing that sharks possessed a vestigial swimbladder, suggesting that sharklike fishes constituted 'the point of departure for other fishes'. His life in Jena was dominated by his vision of himself as an heroic genius, his dedication to scientific research, and his poverty. Letters to his family during this period set a pattern that persisted throughout his life. He instructs his adoring sister on subjects moral and cultural, and badgers his mother for more financial support for his studies.

He never graduated and his commitment to

science was as an adventurous pioneer, a discoverer rather than a teacher and scholar. After much wrangling over patronage, finance and the scope of his research, Miklouho-Maclay embarked on the journey that took him to Papua New Guinea and the area that he named the Maclay Coast. His two sojourns among the people of this region were punctuated by trips to the islands of what is now eastern Indonesia and to Australia and other parts of Melanesia. Everywhere he went he studied the people and collected data on the natural environment of the area.

Although he has been fêted as a humanitarian who lived among primitive people and learned their way of life, the image that emerges most forcefully from this book is that of an egotistical misanthrope whose relations with all the indigenous people he encountered were characterised by mutual mistrust. The mythic Maclay walks unarmed into a hostile village and goes to sleep. But the same man took great pains to confuse his hosts about his mortality, built his house apart from the village and set land-mines around it as a precaution against their attack! His concern for Papua New Guineans was one rooted in an idealised intellectual perception of their meaning to Western science rather than in any sympathy derived from living with them. Indeed, once he departs from them he styles himself their 'king' and fosters the view that these people saw in him a superior, benign protector. The impatience with his native hosts that is expressed in diary entries fades as he moves away from them and is obscured by his romantic view of himself as the subject of their adulation.

Having read some of the translated diaries, I think that Webster has been a remarkably gentle biographer, merely hinting at the vanity and arrogance that permeates much of his writing. Her own intellectual subtlety and her attention to detail constantly invite speculation and allow for interpretations that she eschews as 'psychoanalysing the dead'. But what are we to make of a man who sees himself as compassionate, yet spends pages of his diary griping about the noise his servant makes as he dies of malaria, and then calmly sets about decapitating his corpse in the interests of biological science? The same man who rails against the institution of slavery accepts, without a qualm, the sultan's 'gift' of a Papuan slave boy. Maclay the anti-colonialist accompanies Dutch authorities on their inspections of prostitutes, selecting Papuan women as subjects for his anthropometric examinations, and proposes that the Dutch establish a military settlement on the Papua-Koviai coast as a way of maintaining law and order!

Such contradictions abound and lead me to wonder about the grounds for his enshrinement as

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a paragon of socialist virtue in the USSR. Webster is a generous judge of motive and prejudice, yet even she exposes his aristocratic pretensions and his propensity for identifying unerringly with the rulers rather than the ruled. In Batavia he stayed as a guest of the governor-general, living in an apartment of the palatial residence while he wrote up the data he had collected in New Guinea. His expedition to the Papua-Kovai region of south-western New Guinea was undertaken with armed escorts, and his suspicious contempt for all ranks of its populace is demonstrated in his ignominious capture of a man he believed responsible for killings at Aiva settlement.

Maclay's ethnological interests were in many respects typical of the period, ranging from the vaguely prurient collection of bizarre sexual practices and genital mutilation to the apparently obligatory absorption in collecting measurements of skulls and determining brachycephalic characteristics. He describes the art and material culture of the people he visited and gives accounts of some of their rituals and customs. But his work does not presage that of the ethnologists who followed close behind him in the study of Papua New Guinean societies and it is uninformed by contemporary debates about the evolution of human society.

His observations are those of the biologist and the traveller. Although he did his research in circumstances that might have enabled him to have presented his descriptions of customs and art as integral to the social and political structure of the society, his methods precluded such analyses. He gathered fragments, and his speculations were never those of a man interested in human society in general.

In his foreword, O.H.K. Spate suggests that Webster might have given Maclay 'the benefit of numerous doubts'. I think that she has done precisely that, and while my own assessment would have been harsher, her balance and restraint make for much more absorbing reading than any unambiguous debunking could have done. Webster writes beautifully. In this long account of a short and eventful life she has managed to combine scholarship and clarity with the literary skills of a fine novelist.

The book is enjoyable and fascinating, and for those who anguish over Anthropology's dubious colonial origins, it provides grounds for reassurance that the relationship has altered. If Anthropology

is the handmaiden of Colonialism, at least she no longer carries a gun.

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R.W. Home (Ed.), *Science Under Scrutiny: The Place of History and Philosophy of Science — Australasian Studies in History and Philosophy of Science*, vol. 3 (D. Reidel Publishing Co., Dordrecht, 1983), 182 pp. (\$36.00).

The papers in this well-edited and produced volume are from an excellent symposium held in Melbourne in 1979. The contributors represent a wide range of approaches to science studies. 'HPS', the history and philosophy of science, is the commonest rubric for such studies in Australia; the sociology of science is indeed under-represented in this collection. Rod Home's preface lucidly summarises and links the contributions; he finds rather more unity in the field than I do.

Various specialists in sundry disciplines or would-be subdisciplines push the importance of their own specialities. So Bryan Gandevia argues that the history of (applied) medicine is essential to explaining much in general history: and John Passmore provides a lucid and magisterial map of the different tasks that are tackled under the rubric 'philosophy of science', and a modest but persuasive account of why at least some of these are useful and indispensable.

Sometimes such pushing is unpersuasive. For instance, the suspicion outsiders tend to have of 'science policy studies' is that it simply produces flow charts of power and money, and suggestions that more control of these should accrue to their cartographers. Those not yet afflicted with this suspicion could easily acquire it through reading Jarlath Ronayne's article.

An interesting pair of articles deal with the fact-value distinction. A common suspicion about philosophers of science is that they tend to defend the indefensible (or at least claim to show the unshowable) by browbeating and by bamboozling with technicalities. Alan Musgrave's article will at least not counteract this suspicion. He sprays accusations of violating or falling foul of the fact-value distinction in all directions. The distinction he defines in a footnote as the doctrine that where 'p' is purely descriptive, 'It ought to be the case that

p ' is not entailed by ' p '. It is invalid to infer any ought-statement, or even a value-judgement, from a purely factual statement. But this is a logical truism that has nothing to do with facts or values. It is invalid to infer an A-statement from a pure B-statement whenever a B-statement's entailing an A-statement is the test for its not being pure. And, as the positivists did teach us, logical truisms are not load-bearing. If there is a common logical error in the area, it is not that of claiming that pure factual statements entail value-judgements, but that of thinking that the truism that they do not somehow discredit any appeal to facts in the course of arguing for value-laden conclusions; and it is Musgrave who constantly commits this. Musgrave is below form here, but as one would expect there are excellent bits; for example, on pages 64–5, a devastating rebuttal of a suggestion of Worrall's about what counts as evidence for a methodology, and on page 66 a sensible defence of Lakatos' 'cavalier' way with history.

The fact-value distinction that Hugh Stretton criticises is quite different; it is the idea that scientists should not, and *qua* scientists do not, make value judgements — that their task is to describe and explain the facts. Stretton brilliantly and I think accurately analyses the disastrous impact of this doctrine on the teaching and the practice of social science. He offers various (not obviously compatible) suggestions about how to improve our way of thinking about facts and values, and suggests that critical scrutiny of the relations between facts and values constitute about half the social science curriculum. This is a good paper.

Other contributors too are mainly concerned about science education. Randall Albury suggests that science teachers should present science neither as content nor as process; that it is the 'ontological commitment, this belief in the reality of the abstract objects of scientific theory, which accounts for the dogmatic element in science teaching'; that science and commonsense should be presented as in opposition, but 'the point of the confrontation must not be to show that one form of knowledge is "truer" than another, but rather to examine both kinds of knowledge to determine the ways in which they are produced and their legitimate domains of application'. If one's concern is to block dogmatism, 'ontological commitment' seems to me a complete red herring. Among the most dogmatic and least critical teaching one can find in schools and universities is that of mathematics based on set theory;

yet most mathematicians are (appropriately, I think) instrumentalist rather than 'committed' about sets. Albury's approach seems to me based on dogmas much less critically examined, and that so far have shown much less fertility, than those of either science or commonsense; in particular, the dogma that both commonsense and scientific ideas 'derive from specific existing social relations'. He is rhapsodic about how integrated, critical and generally admirable the results of his preferred approach would be; I can find no reason to believe it.

Rom Harré argues that science teachers need to be taught HPS as a resource to enable them to critically appraise science, if I understand him right. Rom's move into social psychology may have done wonders for social psychology — this is what he is suggesting when he describes, with modest impersonality, 'how HPS considerations were crucial in the emergence of ethogenic psychology' — but it has not helped his prose style. Some of Harré's recommendations are exactly opposite to Albury's; for example, to abandon positivist instrumentalism and adopt realism. Indeed, he claims that 'the adoption of a realist philosophy of science is almost sufficient in itself . . . to right the moral order'. This is a great overestimate. One can be a realist without 'emphasising human autonomy by defending the conception of men as agents'; many scientific realists are hard materialists. But I like his general suggestions. His paper, too, contains gems easily missed; for example, on page 143, where he has an argument that should give pause to enthusiasts for restricting the study of science to 'discourse analysis' or 'ethnomethodological' methods.

Everett Mendelsohn's brilliant piece on knowledge and power in the sciences is unfortunately the only contribution that looks more at science than at metascientific studies or at the teaching of science. Even it deals more with ideas about science and with modes of institutionalisation of science than with its contents or methods; but it is as enlightening a little survey as one could wish. The study of the history, philosophy, sociology and even the power-structures of science are clearly desirable if some such things result.

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C.M. Finney, *To Sail Beyond the Sunset: Natural History in Australia 1699–1829* (Rigby, Adelaide, 1984), 206 pp., 147 plates (\$24.95).

As the title suggests this is a popular account of the development of natural history in (and relating to) Australia, from the earliest European contacts to the establishment of the first scientific institutions of Australia, such as the Australian Museum in Sydney in 1827 and the Van Diemen's Land Society in 1829. The author, a marine biologist, has brought together for the first time a firmly chronological account of scientific activity during the early years of settlement and has related it closely to contemporary scientific publication in Europe, largely in Britain and France.

The book is attractively produced in an ample format large enough to do justice to the many excellent illustrations in black and white and colour, many of which (mostly from Australian public collections) are here published for the first time. A scientific index provides the currently valid nomenclature, and there is also a general index which is somewhat inadequate. In any case both indexes could with advantage have been brought together. It is disconcerting to notice *phascolarctos cinereus* in the one, but the koala omitted from the other.

The first chapter contains a good brief account of Dampier's collecting on the northern coast and a more cursory account of the work of Cook's scientists on the Eastern coast, based entirely on the published records of the voyages. The latter can now be richly supplemented by Professor D.J. Carr's important book on *Sydney Parkinson* (Canberra, 1983). The remainder of the book is devoted to the activities of scientists attached to marine and land exploration of the Australian continent and the activities of professional and semi-professional collectors of specimens, such as George Caley and John Lewin. Predictably therefore a great deal of the book is concerned with the activities of collecting and classifying and its resultant publication in Europe in the relevant scientific literature. The book ranges across the biological sciences but also includes developments in geology and mineralogy, but early developments in some sciences such as astronomy and meteorology are barely mentioned.

The author acknowledges his indebtedness of Gilbert Whitley's work on the history of Australian zoology, but the book has been written almost entirely from a study of contemporary published accounts, little if any attention being paid to the considerable amount of secondary literature avail-

able. As a result judgements of character and assessments of the value of the work of individuals tend to wear an old-fashioned air. Thus, the recent revaluation by Dr Michael Hoare of the work of the Forsters on Cook's second voyage (*The Resolution Journal of Johann Reinhold Forster*, 4 vols, London, 1982) goes unrecorded, and the somewhat patronising, but not unamusing, account of the work of George Caley comes from accepting the viewpoint of Banks, his employer, and the local colonial governors' opinions of the man at face value. One gains quite a different view of Caley, a man of strong will and independent judgement rather than an amusing eccentric, from the work of R. Else Mitchell and Alan Andrews. Here too the present book can be usefully supplemented by recourse to *The Devil's Wilderness: George Caley's Journey to Mount Banks*, ed. A.E.J. Andrews (Hobart, 1984).

It is not only in the assessment of character and achievement that this weakness in interpretation reveals itself. Because of the rigid chronological structure imposed upon the material, reducing it often to the historical *genre* known as annals, the author provides himself with little space in which to consider the role that the ceaseless amassing of the 'non-descript productions' of Australia and the South Pacific played in the development and transformation of theoretical science. When he does embark upon a potentially interesting discussion, such as the debate between the neptunists and vulcanologists among geologists (pp. 55–6), it is suddenly cut short because the structure demands that we proceed now to the year 1790; and the promise to show later in the book how local geologists related to the dispute is not redeemed. This reluctance to relate the material in any close way to the current paradigms in theory means that Finney does not address himself to what is probably the most interesting question of all: the degree to which the attempt to fully understand and interpret the natural phenomena of Australia and the South Pacific was responsible for the emergence of natural selection as a credible scientific theory. If it was not this admittedly large but nevertheless intricately inter-related and integrated body of natural material that was responsible for the basic theoretic shift, then we must ask, by default, what particular body of empirical material it was. Or must we assume, as Thomas Kuhn at times appears to do (*The Structure of Scientific Revolutions*, Chicago, 1962), that such paradigmatic shifts proceed *entirely* from the criticism of preceding theory.

Admittedly such comments may not be entirely relevant to a book which does not set out to be more than a popular account. One of its great virtues is

that it does relate collecting in Australia to the classification and publication of the material in Europe. Nor is the relation of science to technology ignored, as in the use of eucalyptus oil and tanning bark, and the discovery and use of coal. Those who seek dates for the first sightings (and the subsequent process of classification) of, for example, the black swan, the dingo, the lyre bird or thylacine, will find this book a handy source of reference.

Sir Joseph Banks' overarching influence upon science and technology in the infant colony of New South Wales is dealt with more fully here than perhaps anywhere else, and the autocratic fashion in which he 'ruled much of science in England as his personal fiefdom' is ably attested. Robert Brown and Alan Cunningham are revealed as the most able and devoted scientists working in the Australian colonies, men who stuck to their last. But many who came to advance science, such as Adolarius Humphrey (who came out as a mineralogist in the time of Governor King) found it much more accommodating to turn to farming. Indeed, the distrust of science is a significant minor theme of the book, particularly between seamen and scientists on both the British and the French voyages of exploration.

I noted only two minor inaccuracies. George Stubbs' painting of a kangaroo, which was engraved for Hawkesworth's *Voyages*, was almost certainly painted from an inflated skin brought back by Banks and not from Sydney Parkinson's sketches (p. 17); and it is not strictly true to say that the term Australia first occurs in Shaw's *Zoology of New Holland* (London, 1794). It was used by Sydney Parkinson as an inscription on several of his drawings of 1769, but in a general sense for the South Pacific, as the French use Oceania (see R. Joppien and B. Smith, *The Art of Captain Cook's Voyages* (Melbourne, 1985) vol. 1, items 1.89, 1.136-7).

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B. O'Neill, *In Search of Mineral Wealth: The South Australian Geological Survey and Department of Mines to 1944* (South Australian Department of Mines and Energy, Adelaide, 1982), 359 pp., illus. (\$17.50).

Bernard O'Neill's book is the first detailed account of an Australian geological survey and mines department. Published to commemorate the centenary of Henry Yorke Lyell Brown's appointment as Government Geologist in South Australia, the associ-

ated research also earned the author a Master of Arts degree (History) at the University of Adelaide.

O'Neill's book is most valuable for its extensive research into the little-touched mining and geology sections of the South Australian Government archives. Contemporary newspaper reports form another major information resource. The book is also notable for its unexpected insights into personalities and issues. Thus we learn about the young university lecturer, Douglas Mawson, when he reported in 1906 on the Elder Rock nitrate deposit in the Murray Malee and assisted the company involved to float shares. The publication of Mawson's optimistic report on the area did not satisfy the Mines Department, and as a consequence the government withdrew the privilege of a free rail pass from Australia's future Antarctic hero.

This volume is both well organised and highly readable, and includes introductory and concluding sections which provide a compact interpretation of the events described in detail in the remainder of the book. The first six chapters are essentially a chronological discussion of the circumstances leading to the establishment of the Mines Department and its subsequent operation until 1912. These chapters are well researched and provide the most interesting part of the book.

The last four chapters cover the period 1912-44 and deal in turn with departmental personnel, technical services (for example, mines inspection and drilling), and development of the State's various mineral commodities. The period immediately after 1944, when the Mines Department was transformed from a very small operation into the largest and most dynamic State Geological Survey, is not covered here.

The story begins with the establishment of the colony in 1836, and rapidly introduces Johann Menge, the eccentric German-born intellectual who became geologist for the South Australian Company (1836-38) and an independent spokesman on geological matters for some years thereafter. O'Neill's extensive consideration of Menge makes fascinating reading, even though Menge was never employed by the government. The important fact that Menge was actively seeking the position of Colonial Geologist as early as 1841 and made a formal application for such a position in 1844 could have been emphasised more.

O'Neill has made an important discovery when he shows that Thomas Burr became government Mineral Surveyor in 1846. Upon Burr's resignation, James Trewartha was appointed in 1847, and he was followed in turn by Benjamin Babbage,

when a Geological and Mineralogical Department was established in 1851. These successive appointments, O'Neil rightly recognises, were created as a consequence of the colony's significant mineral discoveries in the 1840s, notably copper. They were maintained until the general exodus of the population to the eastern goldfields generated a state of confusion in the colony. O'Neil's consideration of these appointments is of major interest because they represent an embryonic geological survey. The Geological Survey of Victoria was initially 'established' in 1852 with the single appointment of Alfred Selwyn as Mineral Surveyor. Among the Australian colonies only South Australia had such a post during the 1840s, so Burr's appointment may be interpreted as the beginning of the earliest Geological Survey in this country.

H.Y.L. Brown's term as Government Geologist (1882-1912) forms the centrepiece of O'Neil's book. Four chapters are devoted to this period, which is appropriately portrayed as the pioneering stage of the present Geological Survey. O'Neil vividly describes the difficulties Brown faced in maintaining his department and even his own position in his early years. During 1886, for example, Brown lost the services of his Assistant Geologist, his Surveyor and his only clerical assistance, due to economic stringencies. And when Brown was injured in a rail accident in 1887, no one replaced him despite almost a year's leave from duty. The main problems of these formative years are attributed to the general economic depression of the period, although Brown's position was not strengthened by his unco-ordinated deployment across the vast area of South Australia. O'Neil rightly gives Brown due credit for completing the first geological map of the colony as early as 1883, and the first edition of the *Records of the Mines of South Australia* in 1887.

Most previous writers have given major prominence to Brown's efforts as an explorer/geologist. After his death in 1928 an obituary recorded that he 'knew every mineral belt from Darwin to Mt Gambier'. Somewhat surprisingly, O'Neil does not eulogise on Brown's extensive travels, although many outback expeditions, especially the longer trips through the Northern Territory, are carefully recorded. Brown's heroic exploration image thus suffers slightly and the reader will search for greater insight into Brown's total contribution. O'Neil's investigations reveal that Brown was efficient but cautious, honest yet never outspoken, and capable, although often lacking decisiveness. We also discover that he rarely attended conferences and usually neglected to compile an annual report.

O'Neil's researches have revealed another side of H.Y.L. Brown, which future historians are left to interpret in concert with his major contributions to exploration.

One of the most interesting and little-known incidents from Brown's period in office was the determination of an Aboriginal sacred site at the Bookartoo ochre deposit near Parachilna in the Flinders Ranges. In 1904 mineral exploration was undertaken in this area, which not surprisingly offended the local Aborigines. Following discussions with the tribe, the mineral claim was cancelled and the area 'withdrawn from the operations of the Mining Act and reserved for the Aborigines'. Thus it seems that the Aborigines were not entirely swept aside by mining interests in the 'bad old days'!

The unexpected early retirement of Brown in 1912 and the appointment of two outsiders to replace him created a public storm, involving the government, the University of Adelaide and former Assistant Geologist Herbert Basedow. An entire chapter is devoted to this tumultuous period. O'Neil reasons that the University was a major influence in preventing the highly-qualified and South Australian-born Basedow from securing Brown's position. Using the extensive press comments of the time, O'Neil relates how the government consulted the University and subsequently rejected Basedow before he applied. While consideration of Brown's replacement was in progress, a major geological debate over the origin of supposed Cambrian glacial sediments involving Basedow and University geologist Walter Howchin also conveniently flared. O'Neil suggests that this was used to publicly discredit Basedow. O'Neil's overall account of this brief period makes an intriguing story and the reader is left with some sympathy for the talented yet controversial Basedow.

The appointment of Leonard Keith Ward as Director of Mines as well as Government Geologist heralded a new era for the Geological Survey and Mines Department, which were formally amalgamated for the first time. Ward also had a newly-appointed assistant in Robert Lockhart Jack. Ward's term as Director (1912-44) is fruitfully contrasted with the pioneering era of Brown. The transition of the department from one subject to the whim of government to one whose bureaucracy determines the direction of government policy is laid clearly before the reader. Ward encouraged State industrialisation throughout his term of office, and also promoted the concept of a Federal Geological Survey. He expressed such views at numerous conferences and public meetings. Changing times, different circumstances and a more confident

posture provided Ward, in contrast to Brown, with a vastly different perspective.

The discussion of Ward's term of office could have been improved if the wider implication of events had been considered. For example, the reasons behind the expansion of iron ore mining in the Middleback Ranges and the later export embargo are hardly explored, even though iron ore became the State's major mineral product at this time. The major geological contribution of Jack might also have been highlighted, rather than documenting minor information about staff. The reader will be intrigued by this period, during which the Mines Department received international acclaim for the patented design of a double-tube core barrel for diamond drills. Similarly, it is surprising to learn that quarrying along Adelaide's Hills Face Zone disturbed environmentally-conscious citizens as early as 1925.

Ralph Segnit, Assistant Government Geologist (1931-42), is probably the most maligned geologist ever to work in South Australia. Previous historians have simply avoided reference to him. O'Neil's consideration of Segnit clearly documents the facts on this man and is uncoloured by an analysis of his scientific writings. A good start has thus been made toward a realistic assessment of Segnit's contribution.

In Search of Mineral Wealth is an important reference for anyone interested in the history of Australian geology and mining, particularly as the South Australian contribution to this history has often been understated. It is also a valuable historical examination of a state government department. The book is lavishly produced in hard cover and illustrated with over 160 historical photos, including eight geological maps, in colour. It is well edited and available at a bargain price. O'Neil's efforts are accompanied by an excellent index and a comprehensive year-by-year chronology. One hopes that this work will encourage other similar investigations, for mineral resources have long contributed vitally to Australia's development.

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**Harold Attwood, Frank Forster,
Bryan Gandevia (Eds.),**
Occasional Papers on Medical History Australia
(Medical History Society, A.M.A. Victorian
Branch and Medical History Unit, University
of Melbourne, 1984), 200 pp. (\$10.50).

Both Neville Hicks¹ and Brian Dickey² have made a distinction between medical history and history of medicine. They have castigated the medical (physician) historians for uncritically chronicling the profession's heroes and their inventions and reprimanded them for uncritically accepting the ideology of the medical schools which affirms the dominance and control by the medical profession of all matters pertaining to health; for completely ignoring all those interesting questions about the nature of the society in which medical activity occurs; for not providing accounts of how the social status, organisation, power and stratification of both the medical profession and the patients are established and changed. The asking of these social and political questions is seen as the realm of the professional (social) historians of medicine.

I do not want to defend shoddy work, but I do believe that the limited but well-researched narrative does have a useful and therefore proper place in the scheme of history. The historians of medicine have used work done by the medical historians. Without the medical historians some historians of medicine might find their tasks much more difficult. As the editors of these *Occasional Papers* point out in their preface, much of the 'material on medical history in Australia remains unpublished and important data is thereby lost or painfully reconstructed'. The disparaged eulogistic biographical accounts can be indicators of value systems and power structures within medicine at any given time, and they may also provide information about the networks of friendship, loyalty and precedence which must be taken into account in looking for political organisation within and outside the medical profession.

Given that the medical profession (let alone some of the medical historians) now recognise the existence of social factors and that social historians are becoming aware of medicine, it is unfortunate that there are so very few history of medicine courses available in this country to help bridge the gap between the externalist and internalist approaches to the subject. Both approaches have their own validity and both can be either well or badly done.

Historiographically the only factor common to the six papers in this collection is that they relate to Australia. The most important paper in the collection is Ann Mitchell's 'The Sydney Hospital Archive'. Whilst it analyses the problems confronted by Australia's oldest hospital (founded in 1826), the problems discussed are of general significance and common to all hospitals as well as to many other institutions in this country. Because the Hospital's clinical and administrative records have never been centralised but have been maintained by the various departments for their own purposes, with only a small amount duplicated for the central administration, no co-ordinated policies have been developed. This 'lack of co-ordinated policy about how to treat non-current or inactive files encouraged an idiosyncratic attitude to records management . . . and successfully concealed the true dimensions of the problem . . . an enormous amount of non-current material accumulated in departments without anyone being fully aware either of the magnitude of the responsibility in strictly administrative terms or the research possibilities inherent in the . . . collection viewed as a whole'. Today the archive is physically distributed over four separate buildings, one at Woolloomooloo. Several sections have suffered culling and depredation; for example, in 1923 'records stored in a basement beneath the postmortem room were gradually being destroyed by mildew'.

Inquiries into the storage of these records were undertaken in 1961 and 1974. Wholesale destruction or full microfilming of all old records prior to 1959 were both ruled out. The Health Department, the N.S.W. Government and the relevant archival repositories were all unable to help with either funds or space. The mildewed state of some of the items did not help negotiations.

As Mitchell points out, the magnitude of and the precedent that would be set by any organisation taking responsibility for the Sydney Hospital material could have overwhelming consequences. The solution to the problem lies in the hospital being able to provide equipment (storage) and services (including staff) on a permanent basis in addition to tough but informed decisions regarding the culling of the material.

Mitchell describes the Archive under 42 different heads and indicates for each the size of the holding. Throughout she stresses that inaccessible material is unusable material. She claims that the completeness of the clinical records provides 'a large and hitherto under-utilised clinical resource of dimensions probably unparalleled in Australia'. Particularly if used in conjunction with computer

techniques, this material could be relevant to contemporary epidemiological and clinical research.

Although the Hospital does not have an open archive, its historical, social, political and clinical importance attracts scores of research inquiries annually. These requests must increase with the approach of Australia's bicentenary. Mitchell ends her paper with a clear statement of what needs to be done: centralise archival storage and work space; provide funds for basic equipment and for more expensive items such as air-conditioning (essential) and computer facilities (debatable); create specialist staff appointments and provide special funds for a continuous conservation program.

For Mitchell's article alone, which should be compulsory reading for all hospital Boards of Management, purchase of these *Occasional Papers* can be recommended.

The first paper in the collection, 'Patrick Moloney M.B. (Melbourne) 1843-1904' by Leonard Murphy, sympathetically chronicles the life and career of one of the first two medical graduates 'to be completely trained in an Australian university'. There is an ADB entry for Moloney, but no other biographical studies (obituaries excluded). William Carey Rees, Moloney's co-graduate, seems to have attracted even less attention. As Murphy states, 'the story of Moloney is not remarkable for any great medical achievements, though he did suggest some original treatments and designed several new instruments . . . but it does provide some ideas of medical and hospital practice a century ago'.

Given Moloney's career as a resident and honorary physician at the Melbourne Hospital, a lecturer at the University of Melbourne and President of the Medical Society of Victoria, one might ask what part being the first local graduate played in his career, or whether his success was due to medical acumen, to personal charm, family or social connections. Unfortunately these questions are not canvassed.

'Literature was the other great interest of Moloney's life'. Murphy devotes a considerable portion of the paper to Moloney's literary pursuits and close friendship with Adam Lindsay Gordon, Marcus Clarke and Henry Kendall. Moloney's house was a meeting place for writers, scientists and other professional people. The paper draws on oral history as well as on all the obvious archives. It is well documented throughout.

The second and third papers originated as commemorative lectures to public but medically-oriented audiences, and they bear the stamp of their origins. The first, by J. Glyn White, is exactly what

its title indicates, 'Reminiscences: Changi 1942-45', and was presented as the 1982 Prestige Lecture at the Royal Women's Hospital in Melbourne. It was offered as a tribute to the officers and men who experienced the disastrous results of the fall of Singapore.

In 1940 White was appointed deputy to Colonel Alfred Derham, the commander of the Medical Services of the 8th Australian Division; after the capitulation he had to move 4500 Australian sick and wounded as well as the 13th Australian General Hospital to Selerang Barracks in the Changi area. He outlines how, contrary to Japanese orders, transport, medical supplies and equipment were rescued; how the camp was made functional; what the major medical problems were, and how some were handled.

Bryan Gandevia's 'Reflections on Stirling's Presidential Addresses, and on Medical Historiography in South Australia' was the lecture to commemorate Sir Edward Stirling, 'the first medically qualified, if not the first Australian F.R.S.' to be thus honoured.³ He was also Adelaide's first Lecturer in and later first Professor of Physiology, the founder of the Adelaide Medical School, and also a surgeon, zoologist, anthropologist, eugenicist, geologist and museum director — a genuine polymath.

In the middle section of his paper, Gandevia is concerned with 'matters of medico-social significance' and he delivers 'a short historiographic homily on the inter-relationship between medical history and social history'. The last section of the paper comprises 'anecdotal evidence from contemporary documents concerning socio-medical problems' of the 1830s and 1840s. However, Gandevia does not analyse either the social or medical contexts of this material. He does not ask the questions that Hicks and Dickey feel are important. Thus he seems to represent a position halfway between the medical historians and the historians of medicine. However, I think his claim 'that epidemiology and demography, perhaps one day psychology, are the basic sciences of social history' should receive more attention than it does from the social historians.

The one paper in the collection to take up Hicks' questions of social status and power is 'Doctors, Midwives and Puerperal Infection and the problem of maternal mortality in late nineteenth and early twentieth-century Sydney' by Milton Lewis. This is a competent piece of history of medicine which shows that the experience in Sydney differed little

from the experience of the other colonial cities, except for the numbers involved and the time scale. The medical profession, as in other countries, at first blamed untrained and incompetent midwives; but with increasing training and regulation of the nurses, this explanation became untenable. As in the other colonies, a public midwifery service on English lines was firmly rejected, although we are not told why. Lewis could have made more, I think, of the similarities and distinctions between Sydney, the other colonies and the UK, particularly in relation to the time lag between one community and another in the acceptance of particular practices. Nor does he analyse the bases of the medical attitudes, nor challenge the assumptions which underlay the fee-for-service dogma which so limited the access of the poor to medical services.

The final paper in the book is '30 Years On: Medical History Society, 1953-83' by Frank M.C. Forster. This, as its title might suggest, is a narrative of the founding and the activities of the Medical History Society over the past 30 years. The ebb and flow of the Society is carefully documented and supported by detailed appendices, giving the office bearers from 1953 to the present, lists of meetings, seminars and the names of contributors with the titles of their papers. The paper contains some useful bibliographical data on Australian medical history; for example, some items are available in the MSV archives which are not listed elsewhere.

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References

1. Neville Hicks, 'Medical History and History of Medicine', in *New History: Studying Australia Today*, eds. G. Osborne and W.F. Mandle (Sydney, 1982).
2. Brian Dickey, book review in *Historical Records of Australian Science*, 6(1) (1984), 93-5.
3. The ADB entry has omitted reference to Stirling's F.R.S.

Winston T. Muscio, *Australian Radio: The Technical Story 1923-1983* (Kangaroo Press, Kenthurst, 1984), 243 pp., illus. (\$19.95).

This book could have been given the subtitle 'Rise, decline and fall'. In it is recounted the technical changes that have taken place in Australian radio communications, in our radio manufacturing and in equipment in use, usually now imported, in this country. The author was in the manufacturing in-

dustry (Standard Telephones and Cables, or STC) for nearly 50 years until his retirement in 1980, and his account is essentially a first-hand one, particularly when he writes about the activities in his own organisation.

If the reader had hoped for a history of discovery and invention by Australian scientists and engineers he would have been disappointed. Such a history, which would require not only a search of patents but also a survey of company documents, has not yet appeared and may never do so. Publication in scientific and technical journals of advances in *technology* has always been inadequate, so that the task of the technological historian is very difficult. The *scientific* side of radio is better documented. In fields such as ionospheric research the pioneer work of the Radio Research Board in Australia is well known, as is the development in CSIRO of the world's most advanced (in their time) radio telescopes consisting of multiple elements distributed over large distances. On the technological side, the only publication of a commercial company which reported new Australian technological advances over a long period, the *AWA Technical Review*, is unhappily now defunct. The story told in Muscio's book is not this, but it is very important as a source book on Australian manufacturing industry.

It is shown how our radio manufacturing industry passed through three stages during its first 60 years. In the late 1920s and in the following decade a number of Australian companies commenced manufacturing radio receivers, components and some other electronic equipment. The largest of these companies were either subsidiaries of overseas industries or else had close connections with them. The Australian products at this stage were usually modified copies of overseas models. Prices were high; a mantel receiver cost the equivalent of 3 or 4 week's salary of a young graduate engineer, the equivalent nowadays of about \$1500. Profits were relatively high compared with those in other industries in those depression years, and the radio industry was one of the few expanding ones. At that time jobs for physicists and engineers were very scarce and many of the best graduates and some outstanding research scientists went into the radio industry. The result was that the technical level of radio manufacture in Australia rose rapidly, and soon local products reached, and sometimes surpassed, the standard of those made overseas. The Australian industry was able to compete successfully for contracts in the Pacific region in competition with its large rivals in Europe and the United States.

When the war came, Australia had to become self-sufficient in many things and the radio industry flourished and expanded during the 1940s. It was in the immediate post-war years that the first downward trend in the radio industry commenced. Frightened by the ending of profitable wartime contracts, most manufacturers proceeded to shed many of the best of their technical staff on the grounds that only the manufacture of mass-produced articles were likely to be profitable, and for those it was cheaper to buy the technology overseas or simply to copy overseas designs. It was ironical that this action was taken at the worst possible time, as a complete change in the techniques of mass-produced radio equipment was not far off: a change from thermionic-valve equipment to that based on solid-state devices and printed circuits. When these changes arrived, the Australian radio industry, with its depleted technological base, received a blow from which it has not recovered. In essence it changed itself from a manufacturing industry to an importing one, importing goods mainly from Japan, a country which before the war had been backward in radio technology compared with Australia. The change occurred not only in equipment using the new technology, but also in equipment of the more traditional type, such as large radio transmitters, formerly made in Australia but now imported.

This melancholy story is not spelt out explicitly in the book, but the information is there in occasional statements that 'this is no longer manufactured in Australia'. The author gives a remarkably detailed account of equipment manufactured in Australia or imported during the years 1923-83. To a reader such as the reviewer, who spent more than a decade during this period in the radio manufacturing industry, the story is fascinating, but a non-technical reader will doubtless find the great detail rather boring. Nevertheless, the book will be a valuable source of information for future historians of Australian technology.

The book is arranged in a number of sections, commencing with 'broadcast' receivers and followed by the more advanced receivers used by professionals in radio communication. The author in these chapters shows an intimate knowledge of the Australian industry during its years of development. Radio receivers are followed by radio transmitters used in broadcasting of which his own company was once a major manufacturer. He states 'For over four decades almost all the local requirements for medium-frequency broadcasting equipment have been met satisfactorily from Australian sources of design and manufacture . . . with few excep-

tions all requirements for such equipment are now being imported from overseas'.

Medium-wave broadcasting requires large vertical antennas, and in the 1930s engineers of the PMG's department reduced the necessary height of such antennas by the development of top-loading of masts with an inductance and a capacitive top. This original work is noted. The author also mentions Australia's only use of two transmissions from a single mast at Pennant Hills near Sydney. As the reviewer was responsible for this installation he was surprised to read the claim that 2CH and 2UW are the two transmissions involved. When he installed the dual transmissions it was 2CH and 2SM; a forerunner of the ecumenical movement, Protestant and Catholic messages issuing from the same point in space!

During earlier years the two companies STC and AWA were responsible for a number of high-power, short-wave transmitting installations both in Australia and overseas. The transmitters of these two companies are described in considerable detail. The author is not quite so familiar with short-wave directional antennas of which Australia developed and patented some that have never been surpassed. These are not mentioned. He is also unaware that frequency-shift keying was introduced by Australia in overseas short-wave transmissions earlier than in any other country.

Apart from receivers and transmitters, the author deals with such matters as mobile systems, combinations of radio and line communication, and audio equipment. The last is not complex electronically but involves a broad range of physical phenomena. Australian engineers have played an important part in solving design problems involved in high-fidelity audio systems and this is briefly mentioned. Unfortunately Australian manufacture of audio equipment has declined catastrophically. We cannot excuse ourselves by quoting our small population. Little Denmark exports high-quality audio equipment all over the world!

W.N. Christiansen,
Mt Stromlo.

D.H. Borchardt (Ed.), *Some Sources for the History of Australian Science — Historical Bibliography Monograph No. 12* (History Project Incorporated, Kensington, n.d.), 81 pp. (\$7.00).

It was no commonplace vision that led the founders of the Australian Academy of Science some 25 years

ago to acknowledge this nation's scientific past and to set about gathering its memorabilia in the Basser Library, the first Australian effort of its kind. The Academy's example has served not merely to educate scientists but to quicken a concern for science beyond its community, among librarians, archivists, historians and the like. The work continues. In the present volume are gathered six essays from the offerings to a workshop on the history of science sponsored by the Academy in August 1982. All six relate to the theme of the title, each presenting a particular perception of the diverse whole.

The reader is left to guess the expertise of the authors — not perhaps a difficult task, but interesting in view of the approaches taken. Four opt to consider verbal sources. The other two, the only practising scientists represented, both emphasise the non-verbal. Thus the zoologist Woody Horning takes that most venerable of Australian natural history collections, the insects of the Macleay Museum, to illustrate a source essential to the historian of nature. Biological systematists, indeed, have always been among the most historically-minded of scientists. Geologists also need their reference collections, but more characteristic of their activity are the schemes developed for recording cartographically various sorts of information about the Earth. David Branagan here outlines the origins of geological mapping in Europe before following the rise in Australia since the 1830s of what is both science and art. The works he discusses — and what a pity it is this volume has no illustrations — are of the first importance to the historian of geology.

Yet the sources prized by our scientist-authors are of the sort shared with their colleagues everywhere. The matters raised by Wallace Kirsop were far more characteristic of the early Australian experience. Without public libraries or even booksellers, the first of our naturalists had to import their own reference works. Self-help, of necessity, was the rule. Kirsop offers a stimulating view of our earliest book collections and the eventual rise of a local bookselling trade. One hopes his lead will inspire others to seek out details of what books our scientific settlers possessed. The reward could match that awaiting the searcher of newspaper files, an important source of records about science in the days before societies arose and began publishing their own journals.

Professional management of archives in recent years has helped ease the way of the historian of science, and doubtless served to preserve much valuable material. Preservation is clearly in Colin Smith's sights as he reviews in broad terms archival

sources of scientific and industrial research throughout Australia. A more focused approach has been taken by Elizabeth Nathan in a study of works relating to survey, mineral exploration and research on substitute fuels in the Australian Archives. One hopes her colleagues will find her valuable paper a model to be emulated. The volume concludes with thoughts of sources potential rather than actual, with John Fuerst's proposal to preserve a significant oral record of our 20th-century science and technology.

This unpretentious volume is a source of treasure. As the Preface claims, it fixes signposts. Its signposts are both representative and important guides to the student of Australia's scientific past. One must, however, warn the reader of the alarming number of typing errors in the camera-ready copy. And it is perverse that a contribution to bibliography bears no date of issue. Copies are available from the Project Office, School of History, University of New South Wales.

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Harold Fletcher, *Antarctic Days with Mawson* (Angus and Robertson, Sydney, 1984) 313 pp. 19 photos, 5 maps (\$24.95).

Although an outline of Douglas Mawson's earlier explorations is given in the Introduction, the body of this book gives Fletcher's personal account of the two voyages of the British, Australian and New Zealand Antarctic Research Expedition (BANZARE), 1929–31.

In the account of the first voyage, 1929–30, Fletcher gives considerable detail of the planning of the expedition and the voyage to Cape Town, Possession Island, Kerguelen Island, Heard Island and Proclamation Island, with the return to Kerguelen and the end of the voyage at Melbourne in April 1930.

The second part of the book deals with the second voyage. The party left from Hobart, to which port the *Discovery* has been moved after refitting at Williamstown Dockyards. After the send off from Hobart in November 1930, the *Discovery* sailed to Macquarie Island, but the attempt to revisit Mawson's 1911 base at Commonwealth Bay had to be abandoned. The voyage continued westwards, and land was claimed both from aircraft flight and landing party: the voyage terminated at Hobart in March 1931.

If the reader was not told initially that the book is based largely on detailed entries in a personal diary, this fact would rapidly become obvious. The repetitive detail of coaling ship, moving coal to trim ship, and other similar repetitive operations, could well have been condensed after the first telling. Nevertheless the book makes good and easy reading.

Fletcher was a 26-year-old assistant zoologist and describes well his work on the two voyages. Unfortunately he sheds little new light on the relations between Sir Douglas and Captain Davis, but he does quote the brilliant photographer, Frank Hurley, who refused to sail on the second expedition if Davis remained Captain. In the event, Davis retired and First Officer K.N. McKenzie was promoted to the command.

For the scientist, the book provides a general background for the reports of the BANZARE, 1929–31, available through the Mawson Institute for Antarctic Research, University of Adelaide. Published in two series, Series A (four volumes) has a major Geographical Report and reports on geology, hydrology and terrestrial magnetism; Series B (nine volumes) deals with the biological sciences and has major works on birds, copepods, foraminifera, lichens and lichen parasites. In Series A, volume 2, part 6 one finds 'Marine Tertiary Fossils from Kerguelen Island' by H.O. Fletcher, the author of the present volume.

For the historian of science, the use of a two-seater de Havilland motor seaplane for reconnaissance and for tracing the coastline of the Antarctic continent is worthy of note. Perhaps, in tracing the genealogy of Australian participation in scientific research in Antarctica, the senior pilot, Flying Officer Stuart Campbell, is of equal importance. On 12 May 1947 Group Captain Campbell was appointed Chief Executive Officer of the then proposed post-war scientific research expedition. Further emphasis of this personal link with the present was the appointment of Sir Douglas Mawson to the Executive Planning Committee as adviser on planning. In August 1947 the expedition was officially named the Australian National Antarctic Research Expedition (ANARE), with Sir Douglas Mawson as chairman of a scientific advisory committee, and lecturer in physics at the University of Melbourne, Phillip Law, senior scientific officer. Law sailed with Stuart Campbell on the 1948 Wyatt Earp Expedition, while Fred Jacka sailed with Stuart Campbell on the earlier 1948 Heard Island Expedition as a member of the wintering party. On 4 May 1948 a permanent Antarctic Division was set up, with Stuart Camp-

bell as senior officer-in-charge. In January 1949 Phillip Law was appointed Director of the Antarctic Division and subsequently Dr Jacka became Assistant Director (Scientific) until his appointment as Director, Mawson Institute, University of Adelaide. Perhaps the author could have broadened the interest of his book by including such information in his Introduction.

Although both voyages took place in the southern summer and 1929, 1930 and 1931 were years of decreasing sunspot number, closely following a sunspot maximum, it is disappointing that Fletcher makes no mention of the Aurora Australis. This is particularly the case as Mawson, from his 1911-14 observations, reported in 1925 on the rotation of auroral arcs in the trans-auroral region in the zenith above Commonwealth Bay. Australian scientists later made important additional contributions to research in this field.

Although land discovered by Mawson was named Banzare Land, Sabrina Land, Princess Elizabeth Land, Lars Christensen Land and MacRobertson Land, almost the whole of Fletcher's description refers to time at sea, with the main emphasis on biological work. Nevertheless, the book can be recommended as background reading to the published reports of the 1929-31 BANZARE Expedition.

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Bryan Gandevia, Alison Holster and Sheila Simpson, *An Annotated Bibliography of the History of Medicine and Health in Australia* (The Royal Australasian College of Physicians, Sydney, 1984), 187 pp. (\$38.50).

This revised and updated second edition of Gandevia's *Annotated Bibliography of the History of Medicine in Australia*, first published in 1956, has been enlarged to cover not just the medical and scientific journals but a wide range of journals relating to history and the social sciences. The number of journals scrutinised has risen from 42 to approximately 300. The categories within the bibliography have also been increased to include 'Social and Environmental Aspects of Disease', 'Research, Medical and Related Sciences', 'Medical Bibliography', 'Medical History, Historiography, Museology and Archives', and 'Medical Philately'. The total number of entries has risen from 740

(actual) in the 1956 edition to 2760 in the 1984 edition. As before, there are both author and subject indices, and the annotations of items provide helpful insight as to content.

This bibliography is a must for anyone working in any field related to medical history or the history of medicine in Australia.

Although I have done no more than spot checks, I have found only one error; namely, the omission of item 1045 from the author index. Users who detect further errors or omissions are asked to communicate them to the Librarian at the Royal Australasian College of Physicians, 145 Macquarie Street, Sydney, who is preparing a supplement to be published in 1986.

Unfortunately the Helvetica typeface is not satisfactory; lack of serif and the low density of the ink compounds the problem. The effort by the publishers to economise with an unstitched binding is, in at least the case of my review copy, disastrous. After relatively little handling it was in several pieces, and I would advise purchasers, particularly libraries, to have their copies stitched and rebound before use.

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***Earth Tremors: Proceedings of a Seminar commemorating the Centenary of Instrumental Seismology in Australia* (Royal Society of Tasmania, Northern Branch, with the assistance of the Tasmanian College of Advanced Education, Launceston, 1983), 46 pp. illus.**

Alfred Barrett Biggs was the first person to use in Australia instruments built specifically to measure Earth tremors. This he did in Launceston in 1883. Biggs was also an able and enthusiastic astronomer, being noted especially for his observations of comets, and the inventor of a number of other ingenious instruments in addition to his seismograph.

The work under review comprises three papers presented at a seminar held in Launceston in November 1983 to commemorate the centenary of Biggs' seismograph, together with a re-publication of Biggs' original report from the *Papers and Proceedings of the Royal Society of Tasmania* for 1885. Wayne Orchiston describes Biggs' multifarious astronomical activities, Dudley Parkinson provides a very readable but unfortunately undocumented

survey of subsequent developments in seismology, and David Denham reviews recorded earthquake activity in Australia, 1788–1980.

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***Metascience* (AAHPSSS, University of NSW, 1984), 72 pp., vols 1 & 2 combined (\$15.00).**

This modest volume is the first Annual Review of the Australasian Association for the History, Philosophy and Social Studies of Science (AAHPSSS), a double-volume special issue arising from an Association conference which took as its theme the question of the value of the sociology of knowledge for the study of science.

The AAHPS (the title was extended in the late 1970s) was founded in August 1967, during a meeting of the small number of people then working in the field in Australia. Since that time the Association has grown steadily, a reflection of the increasing number of people taking a serious interest in these areas of inquiry.

It seems useful to record the publications of the Association, of which *Metascience* is the most recent: a *Newsletter* was published annually (approx.) from 1968–79 (10 issues); *Conference Papers* (annually) 1971–78; *Proceedings* (annually) 1980–82; *News and Information* (quarterly) January 1980–; and *Metascience* (annually) 1984–. It is expected that the last two items will now become the principal publications of the Association (gratis to members): the first a newsletter of immediate interest, the second a vehicle for more substantial contributions.

The present volume contains two articles and three discussion papers devoted to various aspects of the sociological approach to the historical analysis of scientific discovery and knowledge; or, in the words of one contributor, to the proposition that scientific knowledge is 'an open ended, re-interpretable product of a complex and shifting culture, rather than Nature's once-and-for-all gift which accrues to those somehow blessed with 'objectivity', 'rationality' and the 'scientific method' (p.15). This particular area of the history and philosophy of science (HPS) is, at present, controversial and struggling to establish firm foundations upon which to build its dialogue. The papers in the present volume provide a varied view of this interesting tussle.

The whole book is dedicated to the memory of Ian Langham, from 1974 to his death in 1984 the sole staff member in the University of Sydney appointed to teach in the field of HPS. The *éloge* by Peter Cochrane which concludes the volume provides insight into why Ian's one-year course and his own research were so successful. Practising scientists as well as those with a more direct interest in HPS will find it illuminating reading.

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M.E. Hoare and L.G. Bell (eds.) *In Search of New Zealand's Scientific Heritage* (Royal Society of New Zealand, Bulletin No. 21) (Royal Society of New Zealand/Alexander Turnbull Library, Wellington, 1984), 123 pp.

Few visitors to the recent International Congress of the History of Science at Berkeley could fail to be impressed by an enduring paradox in our professional arrangements: that while we profess the 'internationale' of science, we generally prefer (if only for practical reasons) to study the history of science within a national framework. Indeed, while no one would contest the 'internationalism' of scientific discourse, there is a peculiarly resistant theme in the literature: that culture, to an as yet unmeasured but frequently recognised degree, shapes and forms the way science is expressed, conducted and valued. This sensibility is all the more evident, of course, among those who specifically cultivate the social and cultural history of science. But even in general history, the supposition that tradition influences ideas is so customary as hardly to require canonical justification.

That such traditions may be 'national' in focus — for convenience, if not quite for comfort — gives us no great qualms; and in the search for traditions and their influence, Europeans, Americans, Canadians, and (especially in the last decade) Australians, have launched mighty expeditions. In their wake has now come New Zealand — arguably, a land, in the words of Professor Gordon Parsonson, "more than any other made by science." Certainly, to an extent rarely understood or appreciated in the northern hemisphere, Australasia owes much of its tradition and most of its prosperity to the necessities and exigencies of scientific exploration and research.

This volume arises from the first conference devoted to the History of Science in New Zealand, held in Wellington 12–14 February, 1983. As such, it immediately invites comparison with the Melbourne conference (as yet unpublished) on Scientific Colonialism in 1981 and to the two Kingston conferences on the History of Canadian Science in 1978 and 1981. Of twenty-five papers presented, ten appear in this collection. As a group, they reveal many of the characteristics of their Commonwealth precursors and colleagues. For example, they are without exception focused on empirical issues, which they treat empirically. In a land of mountains, they perhaps unavoidably take up individuals who elevate the eye. Five essays (by David Branagan on Samuel Stutchbury, by Garry Tee on Babbage, by Phil Parkinson on William Swainson, by Tom Vallance on Gideon Mantell and by Peter Whitehead on the Rev. Richard Laisley) are splendid biographical accounts, frequently offering provocative glimpses of figures in the heroic age of New Zealand science. Two papers (by J.F. de Lisle, on the Meteorological Service, and by Michael Hoare, on the Board of Science and Art) are institutional studies, illuminating the subtle nexus between science and government that proved the envy of science reform lobbies in late-Victorian Australia. A further two papers (by Stuart Strachan on government science, and Roger Young, on seismographs) examine archives and artefacts — sources for future scholars. Finally, Margaret Simpson offers a valuable offset to the anglo-centrism of the story, by revealing that the French, too, had (and have) interests in what we frequently misunderstand as a British 'lake'.

As a statement of British science overseas, this collection helps foreshadow the day when the Commonwealth of Science will be comprehended in its entirety. To achieve this promise, however, will require much hard work. As it stands, the collection, for all its merits, is but a beginning; and in its emphasis, reveals the theoretical poverty in which much of the field of 'colonial science' resides. This impoverishment, of course, is only relative in date and degree to that of our European and American colleagues, and will be resolved in time. And, in coming late, Australasian science has many advantages. As Michael Hoare argues in his exemplary article on the Board of Science and Art, there is much to be gained by looking closely at the way in which New Zealanders approached the scientific solution of the problems they faced. Manifestly or by implication, most of these papers suggest the difficulties which 'transplanted Britons' had in coming to terms with life 'at the farthest verge

of the earth'. Moreover, the close imbrication of science with the culture and politics of New Zealand gives us an important access to the lineaments of cultural history.

For Australians, the news is particularly good. We are spared in this story an implicit jingoism, in the invocation of science as an instrument in the 'march to nationhood'. Instead, we have an organic sense of Britishness running through the families of Babbage and Mantell, binding the ties of empire. Such imperial figures as Hector and von Haast, 'czars' of colonial science, both stimulated and encouraged Britons in Australia for nearly two generations, and their influence is becoming recognised at last. Indeed, as historians come more closely to examine the personal, professional and institutional links which have bound members of the scientific communities of the eastern colonies and New Zealand, so, too, we will have a better understanding of the relationship which binds our two countries. The Turnbull Library, and the organisers of this inaugural conference, have left us in their debt.

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