

An Introduction to the Astronomical Archives of Australia and New Zealand

Wayne Orchiston

*Anglo-Australian Observatory, and Australia Telescope National
Facility, PO Box 296, Epping, NSW 1710, Australia*

ABSTRACT

After summarising key elements in the astronomical histories of Australia and New Zealand, we provide master lists of the principal astronomical records found in the archives, libraries, museums, observatories and government research institutes of these two Oceanic nations. In preparing these two national inventories, we address one of the primary objectives of the IAU's Working Group on Astronomical Archives.

1. Introduction

International Astronomical Union Commission 41 (History of Astronomy) was formed in 1948, but it was only in 1991 that the Commission's first Working Group – on Astronomical Archives – was formed. This was largely in response to the on-going dispersal and destruction of personal papers of astronomical importance, a matter of considerable concern that was raised at the 1967, 1979 and 1988 General Assemblies.

Chaired by the upcoming President of C41, Suzanne Débarbat, the Astronomical Archives Working Group was a joint initiative of Commissions 5 (Documentation and Astronomical Data) and 41, and its initial objectives were reflected in Resolution C4 which was passed at the 1991 General Assembly “to establish a register of the whereabouts of all extant astronomical archives of historical interest; to impress on observatories and other institutions their responsibility for the preservation, conservation, and where possible, cataloguing of such archives; and to search for an institution that will allocate space and funds for maintaining such a register and publishing it” (see Débarbat 2002).

Perhaps most challenging in that it would involve a long-term co-ordinated international effort was the first of these objectives, and the Working Group's strategy was to begin by encouraging colleagues "... to build up national inventories of astronomical archives in different countries, and to document, research and disseminate information on individual archives, and on individual archival records" (Débarbat 2002). This paper represents a contribution towards this key objective by presenting two national inventories: for Australia, and neighbouring New Zealand. Critical here was an acceptable definition of the term "astronomical archives of historical interest" mentioned in objective number 1, above, for this would determine which specific records would or would not feature in the inventories. After some deliberation, I decided to only include archives that related to individuals and/or observatories that (a) made a significant contribution to world astronomy, or (b) made a long-term local or national contribution to astronomy.

In the first of these criteria, the term "significant contribution" was loosely interpreted to accommodate any astronomer who published *on a regular basis* in leading astronomical journals, not just those who were at the forefront of astronomical research and are now deemed by international consensus to have been the leading practitioners of the day. By contrast, when it came to the second criterion the decision was made to include not just observational astronomers, but also those who were particularly active instrument-makers, who contributed in a positive and sustained way to the popularisation of astronomy, or who played a leading role in the development and success of local or national astronomical societies.

This research paper documents historically-significant astronomical archives held in Australian and New Zealand repositories, but it is important to remember that if definitive histories of astronomy are to be prepared for these two countries then resources in other, non-local, repositories must also be consulted. Such records can be found in various overseas countries, but especially in England at the RGO Archives in Cambridge and at the RAS Archives in London (see Bennett 1978). For an extensive listing of Australian and New Zealand astronomical archives in British repositories the reader is referred to Mander-Jones's (1972) masterful *Manuscripts in the British Isles Relating to Australia, New Zealand, and the Pacific*. Meanwhile, the Mitchell Library in Sydney contains important manuscript material relating to New Zealand astronomical history, and this is discussed in Orchiston (1985).

2. Australian Astronomical Archives

2.1. Australian astronomy: a potted history

Although Australia has an Aboriginal astronomical history that dates back more than 40,000 years (Haynes 2000), scientific astronomy only arrived with European explorers during the late eighteenth century, and the first permanent astronomical facility, the short-lived Dawes Observatory in Sydney, was established in 1788. Parramatta Observatory existed from 1821 to 1847, and during the second half of the nineteenth century Government-funded observatories were established in Melbourne, Sydney, Adelaide and Perth (Haynes et al. 1996; Orchiston 1988). The critical period, 1850–1899 also witnessed the founding of the nation’s first astronomical groups and societies (Orchiston 1998a); the emergence of the first home-grown amateur telescope-makers (Orchiston 2003); visits to Australian shores by overseas astronomers bent on observing the 1874 and 1882 transits of Venus (e.g. Orchiston & Buchanan 1993); and the appearance of Australian amateur astronomers of international importance (Orchiston 1989). Most prominent of these was John Tebbutt, who for the last three decades of the century was arguably Australia’s foremost astronomer (Orchiston 2004; White 1979).

A feature of Australian astronomy between 1880 and 1920 was the continued adherence to positional astronomy by the nation’s professional observatories, at the expense of the newly-emerging astrophysics, and it was only with the founding of the Commonwealth Solar Observatory near Canberra in 1924 that forefront astronomy once more took root in Australia (Allen 1978; Haynes et al. 1996). The 1940s would see this institution shift its focus to non-solar astronomy and change its name to Mount Stromlo Observatory (Frame & Faulkner 2003).

Another important development that occurred in Australian astronomy during the 1940s was the emergence of the CSIRO’s Division of Radiophysics, which quickly became an international leader in the new field of radio astronomy (see Sullivan 1984). Over the years, such instruments as the Potts Hill grating interferometers, Dapto radio spectrographs, Parkes Radio Telescope, Culgoora Radioheliograph and Australia Telescope all assumed international importance (see Haynes et al. 1996; Robertson 1992).

The final phase in the evolution of Australian astronomy was the development of undergraduate courses, post-graduate degrees and research facilities by many of the nation’s universities. Most prominent were the University of New South Wales and Sydney University in

the state of New South Wales; the Australian National University, in the Australian Capital Territory; Monash and Melbourne Universities in Victoria; the University of Tasmania; and Adelaide University in South Australia. In addition to strengths in optical and radio astronomy (including astro-chemistry), a number of Australian institutions pursued theoretical studies, infrared, gamma-ray, X-ray and cosmic ray astronomy, and radar observations of meteors. For a useful overview of university astronomy in Australia see Haynes et al. (1996).

2.2. Master list of significant astronomical archives

Table 1 contains a listing of the most significant astronomical records held in various Australian repositories. Useful listings and summaries of some of these records have already been published¹, but more extensive descriptions of many of these are warranted. As a start in this direction, note that the Duffield and Giovanelli Papers are discussed in detail by McCarthy & Sankey (1987) and McCann & McCarthy (1989) respectively, while Orchiston et al. (2004) provide a well-illustrated overview of the ATNF's unique Historic Photographic Archive (which provides a rich pictorial perspective on the history of Australian radio astronomy). Meanwhile, these Proceedings includes a report on the Tebbutt Papers in the Mitchell Library.

3. New Zealand Astronomical Archives

3.1. New Zealand astronomy: a potted history

New Zealand was one of the world's last major land masses to be settled by man, between 750 and 1000 years ago, and the Maori occupants had an intricate astronomical knowledge system (Best 1922; Orchiston 2000) that was only superseded with the arrival of the first European settlers, and particularly the astronomers on Cook's three voyages to the South Seas (see Orchiston 1998b).

¹References in Table 1 refer to ¹Cross 1973; ²Mourot 1973; ³McCarthy n.d.: 53; ⁴Mozley n.d.: 19, 98; ⁵Mozley n.d.: 99; ⁶Orchiston 2004; ⁷Mozley n.d.: 41, 98; ⁸Drake 1973; ⁹Mozley n.d.: 91; ¹⁰McCarthy n.d.: 173; ¹¹Chambers 1995, ¹²Orchiston et al. 2004; ¹³Mozley n.d.: 83; ¹⁴McCarthy & Sankey 1987; ¹⁵Mozley n.d.: 89; ¹⁶McCann & McCarthy 1989; ¹⁷Haenke 1973; ¹⁸McCarthy n.d.: 3; ¹⁹Mozley n.d.:78–79; ²⁰McCarthy n.d.: 60; ²¹McCarthy n.d.: 20; ²²McCarthy n.d.: 194; ²³Mozley n.d.: 1, 115; ²⁴Mozley n.d.: 90.

Table 1. Master list of Australian astronomical archives.
Type refers to State (S), Jesuit (J) and National (N) archives.

Repository and Records Held	Type	Reference
Archives Office of New South Wales, Sydney	S	1
Parramatta Observatory records		
Sydney Observatory records		
Mitchell Library, Public Library of N.S.W., Sydney	S	2
Dawes Papers		3
Parramatta Observatory records		4
Macdonnell Papers		
P.P. King Papers		
Russell Papers		5
Tebbutt Papers		6
Dixon Library, Public Library of N.S.W., Sydney	S	
Parramatta Observatory records		7
Powerhouse Museum, Sydney	S	
Sydney Observatory records		
Riverview College Archives, Sydney	J	
Riverview Observatory records		8, 9
National Archives of Australia, N.S.W. Branch, Sydney	N	
Parramatta Observatory records		10
CSIRO Division of Radiophysics records		11
CSIRO Division of Physics records		
CSIRO Australia Telescope National Facility, Sydney	N	
CSIRO Division of Radiophysics records		12
CSIRO Australia Telescope National Facility records		12
Basser Library, Australian Academy of Science, Canberra	N	
Mount Stromlo records		13
Duffied Papers		14
Pawsey Papers		15
Giovannelli Papers		16
National Archives of Australia, Canberra	N	
Melbourne Observatory records		17
National Library of Australia, Canberra	N	
Parramatta Observatory letters		15
C.W. Allen Papers		18
State Library of Victoria, Melbourne	S	
Melbourne Observatory records		19
Public Record Office of Victoria (Melbourne)	S	
Melbourne Observatory records		20
Tasmanian Library (Hobart)	S	
Records of notable amateur astronomers		
Archives Office of Tasmania, Hobart	S	
Records of notable amateur astronomers		21
Mortlock Library, Adelaide	S	
Adelaide Observatory records		22
State Records of South Australia, Adelaide	S	
Todd Papers		23
Perth Observatory, Perth	S	
Perth Observatory records		24

In Wellington, the nation's capital, a Provincial Observatory was established in 1864, and just five years later this was relocated to a nearby site and reconstituted as the Colonial Observatory – now with national rather than local responsibilities (Eiby 1977). New Zealand's attractive location proved a drawcard for British, French, German and U.S. transit of Venus expeditions in 1874 and/or 1882 (e.g. see Orchiston et al. 2000), and during the last two decades of the nineteenth century Canterbury University College's charismatic Professor Bickerton captivated audiences at home and abroad with his 'partial impact theory' (Gilmore 1982).

One feature of New Zealand's shortage of professional astronomy positions and its small scattered communities was the emergence of a national network of amateur astronomers, some of whom soon established international reputations (and in some cases *de facto* 'city observatories'). Most prominent were John Grigg of Thames (Orchiston 2001b), Joseph Ward of Wanganui (Orchiston 2001a, 2002) and later Auckland's Ronald McIntosh (Bateson 1977), while Charlie Gifford's hallmark papers on the meteoritic origin of the lunar craters escaped wide recognition at the time because they were published in a generalist New Zealand scientific journal (see Hoyt 1987).

In 1907 the Colonial Observatory was replaced by the Hector Observatory, the primary role of which was to provide a national time-service. In 1925 it was renamed the Dominion Observatory, and its research focus shifted to seismology, so it was only in 1941, with the founding of the Carter Observatory (also in Wellington), that astronomical research would once again attain any momentum in New Zealand (Orchiston & Dodd 1995). Partly as a result of this professional vacuum, the various observing Sections of the Royal Astronomical Society of New Zealand assumed national prominence – and in the case of the Variable Star Section, international eminence, under the capable leadership of Dr Frank Bateson (see Bateson 1989).

Although New Zealand hosted a number of radio astronomy research projects in 1945 and the immediate post-war years (Orchiston 1994), it was the radar meteor astronomy of Ellyett and Keay at the University of Canterbury in the 1950s that quickly received international recognition (see Keay 1965). But the final phase in the professional development of astronomy in New Zealand only occurred when the University of Canterbury founded the Mount John University Observatory and developed vibrant undergraduate and post-graduate programs (Cottrell 1991a; Tobin & Evans 1996). Academic astronomy later blossomed, but on a much smaller scale, at the University of Auck-

Table 2. A master list of New Zealand astronomical archives.

Repository and Records Held
Auckland Observatory (Auckland) Auckland Astronomical Society records Auckland Observatory records Ward Observatory (Wanganui) Ward papers Ward Observatory records National Archives (Wellington) Colonial Observatory records McIntosh Papers Alexander Turnbull Library (Wellington) Bateson Papers Bickerton records Cawthron Solar Observatory site-testing records Gifford records Stock records U.S. 1874 Chatham Islands transit of Venus expedition records Carter Observatory (National Observatory of New Zealand, Wellington) Adams Papers Bickerton Papers Carter Observatory records Colonial Observatory records Gifford Papers Grigg records Maori astronomy records Royal Astronomical Society of New Zealand records Wellington City Observatory records Museum of New Zealand Te Papa Tongarewa (Wellington) 1874 and 1882 transits of Venus records Colonial Observatory records Solander telescope records Marist Fathers of New Zealand Archives (Wellington) Meeanee Observatory records Hocken Library, University of Otago (Dunedin) Beverly records Skey records

land, Victoria University of Wellington and at the University of Otago in Dunedin (Cottrell 1991b).

3.2. Master list of significant astronomical archives

Table 2 contains a listing of the most significant astronomical records held in various New Zealand repositories. In contrast to the Australian

astronomical archives, it is notable that no descriptions or listings have been published of any of these New Zealand records. This is an urgent challenge for New Zealand historians of astronomy.

4. Concluding Remarks

Significant astronomical records are to be found in seventeen different Australian repositories, comprising seven archives, seven libraries, a museum, an observatory and a national radio astronomy institute. These are scattered throughout Australia, in almost every state, and even though Canberra is the national capital, this city is home to just three repositories (18% of the total), as opposed to Sydney's seven repositories (41% of the total). Most Australian institutions with astronomical records employ staff trained in the care and maintenance of archival material, provide storage facilities that meet international standards, and have access to professional conservators if required. On this basis, the future of Australia's astronomical archives looks secure. If there is a 'downside' though, it relates to the absence of any published catalogues or lists of the Sydney Observatory records in the Archives Office of New South Wales and the Powerhouse Museum, and the Melbourne Observatory records in the State Library of Victoria and Public Record Office of Victoria. These are urgently needed.

Important New Zealand astronomical records are housed in eight different repositories: three observatories, two archives, two libraries and a museum. Five of these institutions (62.5%) are located in Wellington, the nation's capital. Unlike the Australian astronomical records, there are no published catalogues or lists of any of the New Zealand astronomical archives mentioned in Table 2, and this remains an immediate priority. Furthermore, none of the observatories included in this Table currently employs a trained archivist, and the conditions under which the astronomical records are stored in these three institutions leaves much to be desired. It will take considerable time, money and effort to bring the astronomical archives of New Zealand – as a whole – up to the standard enjoyed by their Australian counterparts.

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