

### Discussion

D.H. DeVorkin : Just to comment that it might have been possible to see crater detail, Hale around 1908 (?) observed "faint interlocking curved filaments" on Mars with the 60" diaphragmed to 48"(?) in the region of what is now known as the crater EDM. His observation was reported by Antoniadi in his Mars column, as well as by others. Hale was motivated to observe Mars as part of a site controversy with Percival Lowell and W.W. Campbell.

P. Moore : I have observed Mars with the 40 inches Yerkes refractor, and I am bound to say that I found it hard to believe that craters could be distinguished. Also, members may be interested to know that within two years the Rosse telescope at Birr Castle will again be working.

P. Brosche : Should one not generally ask for the reality of reported recognition of fine details by visual observers ? E.g. on the surface of the Moon by Philipp Fauth.

D.E. Osterbrock : I think your research on John Mellish at Yerkes Observatory was excellent. But I must say that I am sceptical that he observed craters on Mars visually in 1915. The fact that he did not report it in writing until 20 years later means his memory is all-important ; most memories tend to be very imperfect over such long times. Also, the fact that the reported observation was made three months from an aphelion opposition, but no one else reported a similar observation at closer (perihelion) oppositions at better sites, makes me sceptical. Of course no one could say that Mellish *did not* see the craters on Mars, but I would have to say that the verdict that he *did* see them is "not proved"

## A HISTORY OF AUSTRALIAN ASTRONOMY

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**Overview.** This study has been undertaken by Raymond Haynes, Roslynn Haynes, David Malin and Dick McGee. It provides the first detailed investigation of the development of astronomy in Australia. It looks both at the concepts of astronomy seen from the perspective of the Aboriginal peoples and, it provides the first complete review of the development of all branches of astronomy in Australia since 1788 and sets these into a social context of the day. The study is being published in a series of papers and in a book by Cambridge University Press (UK).

**Areas of emphasis in the project.** Australia contributes to research in fields as diverse as optical, radio, infra-red, cosmic-ray, x-ray, gamma-ray, and gravity-wave astronomy and plays a major role in international research contributing both scientists and instruments to the world community. This project is timely. Here I can only touch on some of the points addressed in the study. Aboriginal peoples have lived in Australia for over 50,000 years. Today less than 30 aboriginal languages survive out of the 120+ that existed in 1788. Their's was, and is, an oral culture rapidly being lost forever. An investigation of Aboriginal astronomy was overdue. Hopefully, our study helps rectify this. Many of the early white settlers were convicts. A strong trait that consequently developed and which has influenced the development of astronomy was the one of anti-authoritarianism, of rebelliousness to bureaucratic decision making. This trait showed up many times in our study. Another important factor was the one of isolation. Vast distances existed between early settlers in the country causing a 'make do' or 'fix it' mentality, which in turn led to a strongly innovative early community of astronomers. This still exists today. The early dependence on Britain for all things material was broken abruptly in 1851 with the discovery of gold in Australia. This in turn changed attitudes and relationships between the nascent astronomy community and Britain. The pursuit of astronomy provided a very clear sign of an awakening national

independence for Australia. We have traced the development of astronomy from colonial to international modern-day science and we place Australian astronomy into a world context. We needed to understand how the influential astronomers of the day operated in holding together their research teams. We thus needed to investigate their leadership styles. It was important also to research the breadth, ie. the range of astronomy undertaken, and the depth, ie the level of specialisation, achieved by astronomers. We have also researched the role played by individuals in the politics & funding of the science. One of the most important factors in the success of Australia astronomy has been the relationship between the public, amateur astronomy groups and professional astronomers. This has been investigated in the project.

**In Conclusion.** The trend today is for the astronomy community to coordinate its funding and political action to obtain new observatory facilities. The day of the National Facility has arrived. The effect of this process is discussed and we outline why an interest in astronomy in university is growing rapidly again in Australia. The types of tensions that existed between university groups and CSIRO in the 1960's have entirely disappeared and creative relationship exists today.

**What the project did not do.** It does not document very piece of the historical jigsaw, document every action and event, or study the all the work of every individual, or record all discoveries.

#### Discussion

W. Orchiston : In your study do you examine the long-term impact that the International Astrographic Project had on the development of professional astronomy in Australia ?

R. Haynes : Yes. It was an important factor in the history of Sydney and Melbourne Observatories.

C.R. Chamblis : What sort of astronomical work is done on Macquaine Island ? Subantarctic islands do not have good weather for normal astronomical observations.

R. Haynes : A combination of cosmic ray and austral astronomy.

P. Brosche : The connection with meteorology seems to have played a major rôle in the earlier years (eg. G. U. Neymayer and Melbourne).

W.E. Howard : Now that astronomy has evolved from optical to radio, to X-ray, UV, space etc., it might be interesting historically to study the differences in approach to astronomy among these subdisciplines and also from country-to-country, as from continent to continent.

R. Haynes : The Australians began in strong isolation but always yearned to be included as respected members of the international community of astronomers. Some were included ; others went about their work in isolation doing their research on their own.

## TWENTY-FIVE YEARS AT WESTERBORK

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In 1995 the Westerbork Synthesis Radio Telescope (WSRT) will have been in operation for a quarter century. Several events are being planned to celebration this milestone, including the preparation of a history of the facility. Dr. Ernst Raimond (NFRA) will take the lead in writing this history. Here I wish only to note our plans in this regard, and to mention aspects of the history of the facility that may be of particular interest.

As is well known the origins of the WSRT are to be found in Benelux Cross Antenna project of the early 1960's. The initial concept was a single