The 46th ANZAAS Congress was held at Canberra in January. For the first time, archaeology was given a separate section, bringing together at a single venue, speakers on prehistory, marine and historical archaeology, and the archaeological sciences.

In a symposium entitled *Pleistocene case studies*, two of the earliest known prehistoric sites in Australia were described. Dr A Gallus reviewed his several years of research at Keilor, Victoria, where stone core and flake tools were discovered in a level dated to between 25,000 and 30,000 years BP, and where even earlier dates for human occupation seem likely. Recent developments in the continuing saga of the Willandra Lakes, in western New South Wales, were presented by Dr I. McBryde and Mr W. Shawcross. Excavations in the Lake Mungo lunette revealed stone implements at the base of the Mungo stratigraphic unit. Charcoal in association with these tools was found to be beyond the range of C¹⁴ dating, but an antiquity much greater than 40,000 BP is not anticipated. Around the shores of Lake Arumpo, several Pleistocene shell middens were investigated. Dissimilar dates for charcoal (ca. 26,000 BP) and shell (ca. 36,000 BP) from one of the middens raises problems that further research is designed to illuminate.

Messrs R. Luebbers and J. Dodson described their combined archaeological and palynological investigations at Wyrie Swamp, where well preserved wood and other plant materials were found. Among wooden artefacts were several boomerangs and the tip of a one-piece barbed spear. Pollen cores and carbon dates showed that the swamp had been a lake with shores particularly favourable for human occupation between 10,000 and 8,500 years ago, the period to which the artefacts are dated.

Mr G. Pretty and Dr M. Prokopec presented their analysis of 120 human burials at Roonka, on the lower Murray river. Differences, both in grave orientation and in grave goods, were seen by Pretty as having social causes. Prokopec's anatomical study suggested that the Roonka population had lived under considerable environmental stress, excessive wear of the teeth and a low life expectancy indicating that a hunter-gatherer's life in that part of Australia was tough and brief.

A different view of Aboriginal life was expressed by Ms B. Meehan in the symposium, *Hunter-gatherers and horticulturalists in prehistoric perspective*. Meehan studied a present day group still living mainly by hunting and gathering on a part of the Arnhem Land coast. In an environment rich enough for the group to be semi-sedentary, shellfish gathering was prominent, providing a large and dependable source of meat for several months of the year. The archaeological manifestation of shellfish gathering in Tasmania was described by Dr R. Vanderwal, who contrasted a task-specific site, where shellfish gathering was the only activity, while nearby sites evidenced a more varied economy.
In a quixotic paper, Mr I. Davidson tilted at what he thought were two windmills in Australian prehistoric studies: the excessive use of ethnography in interpreting the more distant past, and an obsession about the absence of a "Neolithic revolution" in Australia. The overuse of ethnography, Davidson believes, may lead us to a position where we believe that no society existed unlike that observed ethnographically; also, hunting and gathering has survived only in areas where resources are particularly rich, giving a false impression of the total picture.

A one-day symposium entitled Science, Archæometry and Archaeology viewed some of the more recent developments in the use of scientific aids. Mr W. Ambrose described how measuring the hydration rate of obsidian flakes could provide absolute dates for the time at which the flakes had been struck. Using the method on open sites presented difficulties because of fluctuations in temperature and humidity, but in some sites, such as caves, where the environment is constant, these problems can be avoided. Dr A. Mortlock reviewed some of the archaeological applications of thermoluminescence dating, particularly at Lake Mungo where some of the early TL dates were at variance with C14 dates. Mortlock suggested that differences in the rate of cosmic radiation, caused by changes in the earth's magnetic field, may have affected the C14 scale for early times. Another dating method, malachronology, was described by Dr K. Conover. One application is the recognition of shells which had been gathered at the same time, through examination of growth rings.

Messrs G. Connah and J. Stanley showed an impressive array of data to support the use of the proton magnetometer, an instrument largely neglected in Australian field archaeology, despite its extensive and successful use overseas. Not only does the instrument detect the presence of subsurface features; by stacking profiles, it can also plot isometric images of buried features. Connah thought that the magnetometer would have particular value at sites like Lake Mungo, where it could be expected to reveal the presence of hearths and burials before their exposure through erosion.

Another scientific aid for archaeologists is petrology, discussed for the distribution of 'greenstone' axes in southeastern Australia by Dr I. McBryde and Mr A. Watchman. Their petrological studies show that whereas axes from the Mt William quarry had a wide distribution, thereby confirming the ethnographic trade pattern, other axes had a highly localised distribution pattern. In a thought-provoking address, Mr F. Dickson compared Aboriginal stone axes with European steel hatchets, suggesting that though the materials used for their heads are very different, there are optimal functional criteria to which all axes conform, particularly mass of head and length of helve.

The symposium Historical and Marine Archaeology began with a description of the archaeological manifestations of whaling in southern New Zealand, by Dr P. Coutts. Using both archaeological and historical evidences, Coutts presented his view of contact between Maoris and European whalers, notably the impact this meeting had on Maori settlement patterns. A general problem was raised in recognising
the ethnic association of post-contact archaeological evidence.

Miss J. Birmingham gave an account, impressive in its wealth of detail and breadth of scope, of some seven years research on James King's 'Irawang' colonial pottery in the Hunter River Valley. The combination of painstaking archaeological and documentary studies gave a very clear picture of the enterprise. Two papers describing archaeological work on Western Australian marine wrecks filled the rest of this symposium. Neither of the writers was able to attend the Conference. Mr G. Henderson's survey of the Western Australian Museum's ambitious colonial wrecks programme was read by Mr M. Pearson, while Dr J. Green's paper on the Batavia excavations was replaced by a film on the same subject.

Section 25A closed with a presidential address by Dr M. Wormington (Adjunct Professor of Anthropology, Colorado College) whose paper, 'Recent developments in Palaeo-Indian studies in the Americas', not only gave an up to date, comprehensive survey of the subject, but also drew parallels between it and Aboriginal prehistory. Although this address concluded the ANZAAS Conference, archaeologists continued to meet for two AAA symposia, a forum entitled The State, People and Archaeologists, and a meeting on Pacific prehistory.

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