Full Citation Details:
Human history is first of all the history of hunting and gathering communities. More than 99% of tool-making man's time on earth has been occupied by this way of life. Agriculture, cities and atomic weapons are, by comparison, an almost instantaneous and probably unstable development out of a long and highly successful adaptation.

Today, almost all hunting and gathering societies are extinct, crushed out of existence by the population densities and cultural intolerances of agricultural man. There are now no communities which remain unaffected by the modern industrial world, which is unable to tolerate any exclusions from its hegemony.

Australia is the continent most recently intruded on by machine-age man. Consequently its hunters and gatherers, the Aborigines, represent the longest-lived and least externally-affected of all societies practising this economy. They can demonstrate, more clearly than any other communities, the potentials and handicaps of that way of life. This is not to imply that Australian Aborigines are representatives of Palaeolithic man, except insofar as any sample group, when studied from a particular viewpoint, may be said to embody some of the characteristics of the whole group as defined by that viewpoint. What the Australian Aborigines can teach us is how men and women have lived, adapted, created and innovated without so many of those mechanical aids which today we regard as essential.

The Aboriginal adaptation in the Australian continent (including Tasmania), has evolved over a long period of time—at least 30,000 years and possibly considerably longer. During that time both Aboriginal culture and the environment have undergone considerable change. The causes, nature and rate of these changes are of considerable interest since they disprove the widely held belief that "savages never invent anything". The underlying theme of this chapter is that while Aboriginal cultures may have been conservative, development and invention was also part of their lifestyle. Since the writer is a prehistorian, this will be illustrated primarily from the archaeological record, which, over the last ten years, has increasingly forced upon us a re-examination of the theoretical framework through which we view man's past. Therefore, following a brief description of traditional Aboriginal culture as known from ethnographic sources, attention will be given to the description and analysis of some archaeological discoveries which raise important themes in our current views of man's cultural development.
The Ethnographic Present

In 1788 A.D. the 3,000,000 square miles of Australia supported some 300,000 people. About two-thirds of these lived in woodland and coastal regions, especially around the tropical north coast and in certain favoured coastal and riverine regions in the southeast. In the richest areas population densities might reach one person to the square mile; in the desert an average of one person/100 square miles was common.

These 300,000 people spoke over 500 different languages, grouped into twenty five families. One language family covered seven-eights of the continent, with all the others being crowded into the north-western corner of the continent. In Tasmania the 3000 - 5000 people spoke five different languages, divided into two groups. Tasmanian languages cannot be linked to any Australian languages, nor can any resemblances be found between the latter and any languages outside the continent.

In spite of minor variations in physical appearance, there is no evidence that Aborigines belonged to more than one race, which adapted to the Australian environment over many thousands of years. There are also good reasons for believing that the Tasmanian Aborigines belonged to this same race, with their apparent differences of skin colour, hair form, stature and the like, having evolved during their 10,000 years of isolation on the island. The same is true of so-called pygmy or Negrito groups who inhabited some tropical rainforest; they appear also to be simply a locally variable group whose blood groups and other genetic characteristics place them clearly within the Australian race.

Over the whole continent Aboriginal groups lived by hunting wild animals and gathering plants, shellfish and other immobile resources. For most of the year these groups numbered 10 - 50 people whose movements around the countryside were based on a keen appreciation of the seasonal variation in food supplies. In the monsoonal north, for instance, the distinction between the wet and dry seasons is critical. In the wet the plains are inundated and the swamps overflow so that animals and men retreat to higher ground, and plant food is scarcer and more erratic in occurrence. In the dry, roots, fruit and estuarine fauna are more abundant and accessible and people can exploit a wider range of foods. Wet season camps tend to be larger, semi-permanent affairs whereas life in the dry season is more nomadic and each group numbers fewer people.

In southern areas, where seasonal variation between summer and winter is more noticeable, group patterning was related to this factor. Summer is a time when a wider variety of vegetable food is available, some fish come closer inshore and shellfish are more easily and pleasantly gathered. Hence there is a concentration of
people on the coast and larger groups can more easily come together. In winter food resources are more scattered and so smaller groups of people distributed themselves more uniformly over the countryside to take advantage of what food there was. Approximately the same pattern of movement occurred also in Tasmania.

Although there were differences in different environments, vegetable foods everywhere formed the basis of the diet, usually contributing between one-half and two-thirds of the total food. While the hunted meat and speared fish that men contributed were usually more highly valued socially—and were, of course, essential to diet—it was the women's reliably regular provision of gathered foods which enabled the continuing existence of every Aboriginal group. In coastal areas it was the women who collected shellfish and it was they also who caught fish by hook and line, where these were in use. Women, that is, were responsible for all foods which were stationary or could be regarded as being "collected". Honey, highly valued by all, formed one of the few exceptions to this near-universal division of labour.

Since this complex integrated economic adaptation to the various Australian environments depended so markedly on the women, much of the social organisation and ideology of Aboriginal culture may be seen as mechanisms for distributing woman-power fairly between groups. Anthropologist N. Peterson has pointed out that older men, no longer able to hunt, were totally reliant on the food-gathering activities of women and hence tried to acquire younger wives and to keep their daughters within their group. Older women, still able to collect roots and seeds for themselves, were able to maintain themselves much later in life than men were. We may thus see the old-man-dominated social and religious life of Aborigines as a functional replacement of their declining economic contribution. By admitting that the old men possessed the specialised knowledge necessary for the maintenance of the world order—how to enact the deeds of the continually-present Dreamtime; the content and meaning of cults, legends and sacred objects—the group provided a mechanism which allowed them to cherish those whom they loved but who could no longer make a strictly economic contribution.

Industrial societies are less able to legitimize the existence of their old people.

How did this successful way of life come into existence? Are we here faced with a discarded corner in man's progress or a new, barely-understood contribution to the human condition? To these, and other questions answerable solely from the prehistoric past, we will now turn.

The Prehistoric Past

In this section the writer turns from a general description to one particular localised archaeological discovery, which he
will use as a point of departure for the discussion of various general problems.

In 1968 a human cremation burial was discovered in a lunette bordering a now-dry Pleistocene lake in Western New South Wales, ca. 750 km. west of Sydney. Radiocarbon dates of 26,000 years ago have been obtained from the skeleton itself and the surrounding deposit. In an area of about 150 m. around the burial, all belonging to the same depositional horizon, were 16 flat, open hearths associated with fragments of animal bone, shellfish and stone artefacts. This discovery at Lake Mungo raises a number of features of interest which may be discussed under the following headings: date, skeletal remains, funerary practices, artefacts, art and man-environment relationships.

**Dating.** The dating of the Lake Mungo site to ca. 26,000 years ago is consistent with dates from five other archaeological locations scattered through Australia. So far no good evidence of human culture older than these has been obtained, despite several claims. We may therefore suspect that man had entered and adapted to the varieties of elevation, climate, flora and fauna of the Australian realm by ca. 25 - 30,000 B.C. What are the implications of this?

The Australian realm, with its well-known marsupial fauna, is clearly distinct from its immediate continental neighbour, southeast Asia, where modern placental mammals are everywhere in evidence. The division between the two realms has been maintained for tens of millions of years. While within Pleistocene times - the last 2 million years - both the southeast Asian and Australian continents have extended their shores towards each other during periods of lower sea levels, there has always remained a sea barrier between them. This barrier, Wallacea, stretching from North to South through central Indonesia, has always been a mosaic of sea and islands, requiring by any route a minimum voyage of 95 km. between adjacent islands if it is to be crossed.

Wallacea was a barrier to the movement of early man for hundreds of thousands of years. The discovery of *Homo erectus* (*Pithecanthropus*) remains in Java, at least one million years old, is not paralleled by comparable discoveries in Australia. Even, if, as has recently been suggested, there is Pleistocene occupation within Wallacea, that settlement never reached Australia. By 30,000 B.C. however, and perhaps rather earlier, we must envisage the ancestors of Australian Aborigines crossing sea barriers of some magnitude.

Off-shore voyaging and inter-island travel at this date need not imply that highly sophisticated canoes were involved; indeed, it is likely that simple rafts or bark canoes were employed.
Nonetheless, even these artefacts imply a technological history rather different from that known in the West. In Europe, for example, the first evidence of any real familiarity with the sea occurs only in Mesolithic times, later than 10,000 B.P. and islands such as Corsica may not have been occupied prior to this time. The general absence of sea fish in Palaeolithic sites is also well known. By contrast, the island world of Indonesia developed a marine orientation within Pleistocene times. Their techniques were adequate to cross, even if only occasionally, quite major water barriers. And furthermore we must see in this development the start of a maritime tradition which was eventually to lead to the settlement of the entire Pacific world.

**Skeletal Remains.** The Lake Mungo skeleton consisted of a young adult female of gracile build and short stature. All cranial features appear to be typical of modern Aborigines. A similar, modern pattern occurs also in the famous Keilor skull, now dated to ca. 7000 years B.P.

Other fossil skeletal material, however, exhibits a different appearance. For example, in the Kow Swamp burial ground, where at least 25 individuals were buried in the period 8 - 10,000 B.P., all skeletons have a much more "archaic" appearance. The skeletons, along with several others from the same general area of southeastern Australia, are all marked by large brow ridges, large palates and very thick skulls. The unusual features are concentrated on the mandible and front part of the cranium, and in these areas at least all measurements fall outside the range of those taken on modern Aborigines and are within the range of *Homo erectus*.

This raises a problem of some interest in that the "archaic" features appear to exist considerably more recently than the evolution of 'modern' ones. Three solutions to the problem have been proposed.

One is to say that in the Kow Swamp and similar material there is the record of the earliest settlers in Australia, and that these formed a population which maintained its separateness for a considerable period of time. The Lake Mungo skeleton, according to this theory, would represent a more "modern" population which presumably arrived in Australia somewhat later in time. The implications of this explanation are considerable. First, in contradistinction to what has been said above, the settlement of Australia must have occurred well before 30,000 B.C. and perhaps as much as two hundred thousand years ago. This is necessary because the archaic features of the Kow Swamp material, according to its discover A. Thorne, form an almost unmodified *erectus* form, and such early humans ceased to exist in southeast Asia a few hundreds of thousands of years ago. Thus we should find human skeletons like those at Kow Swamp dating from
much older times in Australia.

The second implication is that this population maintained its physical distinctiveness from the later-arriving 'modern' Aborigines - presumably through social means - for at least 25,000 years. It should be noted, moreover that both human groups occur in closely adjacent areas - Lake Mungo and Kow Swamp are only 300 km. apart. We know too little at this stage to do more than point to the problem, but one may well wonder just what social mechanisms would be used by two groups of hunter-gatherers to maintain such isolation - and why would this be done anyway? It has certainly not occurred among groups apparently more racially distinct than these two (e.g. Europeans and Aborigines) and never for such a long period.

The second solution to the problem is to suggest that Mungo and Kow Swamp are simply separate records of a population which contains a great deal of variation and that we may expect to find local expression of aspects of this variation at different places and times. This solution also tends to throw doubt on the phylogenetic implications of such features as have been described as 'archaic' and to ascribe them to more transitory causes such as diet and disease. One problem with this solution is why the range of variation as observed on recent (including sub-fossil) Aboriginal skeletons does not include that found in the Kow Swamp material.

The third solution, recently proposed, is to see the 'archaic' features as being for some reason genetically adaptive in Late Pleistocene Australian conditions. This would allow for the entry of a 'modern' population into Australia ca. 30,000 - 40,000 years ago and the subsequent emergence of 'archaic' features which were appropriate around 10,000 years ago but have subsequently been rendered obsolete by changing conditions and have disappeared. Attention is drawn here to the fact that the pattern exhibited by 'archaic' features is unlike any so far found among possibly ancestral populations in southeast Asia. This solution is, of course, a fascinating one in terms of the potential for studying long-term plasticity in isolated human populations of some size.

It may be noted here in passing that Tasmanian Aboriginal remains show very few major differences to southern Australian materials. Fragments of 8 skeletons, dating to ca. 1000 B.P. have recently been analysed and show a morphology entirely consistent with modern Aboriginal remains. The apparent difference of the Tasmanians noted by early explorers - such features as skin colour, hair form and body proportions - can be related to the total separation of the island from mainland Australia for the last 10,000 years, along with environmental stimulus and more rapid genetic changes in a population which never exceeded 5000 people.
Funerary Practices. The Lake Mungo skeleton was cremated as a complete and fully fleshed corpse. After burning the remains were carefully smashed, with particular attention being paid to the skull. The ash and smashed bones were then gathered up and placed in a small hole beneath, or immediately beside, the pyre. This method of disposal is known from both southeastern Australia and Tasmania and it was practised in both areas until the ethnographic present.

The interesting feature here is the antiquity of compound burial practices. While simple burials, often accompanied by grave goods or ritual offerings are known from Asia and Europe since ca. 60,000 B.P., compound processes of disposal of the dead are less well documented until much more recent times. The Mungo cremation is, in fact, at present the oldest in the world.

Furthermore, this cremation also shows that the complex patterns of disposing of the dead used by Australian Aborigines today are not, as some have thought, the result of a diffusion from some agricultural group or civilization. Rather, we must see these practices, existing in Pleistocene times, possibly developed but certainly elaborated within Australia, as probably stemming from a long southeast Asian continuum. Clearly more data are needed from that area, but we may already propose that we have evidence of a tradition distinct from that in Europe and Western Asia, where simple burial with gifts of food and precious objects is almost universal from the time of Neanderthal man onward. We may well also have an indication here of a basic difference in religious attitudes in the two areas, but at present this would be merely speculative.

Artefacts. The stone artefacts found with the Mungo skeleton were simple core and flake tools, consisting of steep-edge scrapers and other ad hoc heavy duty tools. There were also some unworked waste flakes, but it is clear that the site was not a prehistoric workshop.

The tools found are typical of those that occur on other Australian sites until about 7,000 years ago, and are similar to those found in the New Guinea Highlands and in Tasmania until the time of European contact. More importantly they are within the same general tradition as the southeast Asian 'chopper-chopping-tool' industries which persisted in that area from the time of Java man until the post-Pleistocene.

This tool tradition is quite different to that found in other parts of the world and we are only now beginning to comprehend the importance of the difference. The technological history of Europe, Africa and western Asia has, for the last two centuries, been seen by anthropologists as dominated by the increasing complexity and diversification of stone and bone tool forms, reaching an apogee
in the extraordinary variety exhibited by the French Upper Palaeolithic. When studied in these terms southeast Asia certainly appears to be — and has often been claimed to be — a "backwater", devoid of technological advances. The area does not exhibit an increase in the number and variety of stone tools. But we may note that within tropical forest areas today wood in all its forms is far more important than stone in subsistence activities. To cite one example, where available, bamboo knives are longer, sharper and more used for cutting meat than are stone knives. The "conservative" southeast Asian tradition may reflect then a tool specialisation and a sociological focus on wood and its various uses, most of which, of course, leave no trace in the archaeological record. Further, man's ability to rapidly and successfully colonise the new world of Australia indicates that his tools were as efficient as the more elaborately flaked stone artefacts of the Western world.

The tool tradition found in Australia in late Pleistocene times also contains one remarkable new invention: the ground stone axe. Although not found at Mungo, the importance of ground stone axes in traditional and popular views of prehistory is such that they must be discussed here.

To most people, the division of world prehistory into the technological stages of Paleolithic, Neolithic, Bronze and Iron Ages is a basic and familiar one. The distinction between the first two stages was originally made on the basis of stone-working, the Neolithic being characterised by grinding, the Palaeolithic by chipping alone. In Europe at least this technological division is accompanied by an economic one, with the earliest ground-stone implements normally being found in early farming communities. Later research into the origins of agriculture in southwest Asia have not broken this nexus and it is still widely believed that ground stone axes — undoubtedly more efficient than chipped ones — were only developed when it became necessary for early farmers to clear their land. So familiar and basic is this model to most prehistorians that it has been believed for many years that the appearance of ground stone axes in non-agricultural societies such as Australia must be the result of diffusion following their invention by agriculturalists elsewhere. The following quotation is typical:

"But we can completely eliminate the supposition that the neolithic phenomena in Australia originate independently of outside influences. In the light of the whole character of the Australian cultures, such an independent origin is to be regarded as out of the question. On the contrary, the neolithic cultures which penetrated into Australia appear to have undergone a rapid process of degeneration, typified by the deterioration in stone tools and in the loss of ceramics and agriculture". (C. von Führer-Haimendorff, 1938)
During the last five years, however, ground stone axes have been found in late Pleistocene contexts in both Australia and southeast Asia. The best-documented of these discoveries are of 15 whole axes found in sands at the base of two sites in the tropical north of Australia. Five radiocarbon dates give consistent readings of 18 - 22,000 B.P. These axes were associated with steep scrapers and other tools similar to those found at Lake Mungo. It is clear that in Australia and New Guinea at least, these axes are not associated with, and occur thousands of years before, the development of agriculture anywhere in the world.

It is clear that we need to rethink our ideas about not only the relationship between axes and agriculture but also the processes of technological innovation. What were these early axes used for? Is it even legitimate to characterise the stone-working traditions of this area as "conservative"? If these and similar questions can only be answered by speculation at present it is nonetheless clear that a Euro-centric view of world prehistory is entirely inadequate for today.

Art. As well as the stone tools, pellets of ochre were discovered in the grave at Mungo, suggesting some aesthetic and ceremonial situation surrounding the burial. There is, unfortunately no evidence of actual artistic expression at this site, but it is clearly documented at Koonalda cave, dated to ca. 20,000 B.P.

Koonalda cave exhibits many similarities to the art sites of the European Palaeolithic, being a large underground cave with the art being created in an area where there is no natural light, more than 150 m. from the entrance. On the soft walls of this limestone cave Australian Aboriginals made two kinds of markings. The majority consist of parallel meandering lines drawn with the fingers - similar to what is called "macaroni" in European art. The other markings are fine incised lines drawn by a stick or stone flake. Few definite patterns have been found apart from some lattices and one herringbone design: there is no merging of "macaroni" designs into animal outlines as can be seen in Europe. At other sites, later examples of incised linear and bird-track motifs can be dated only to some 6,000 years ago, by their chance inclusion in an archaeological deposit.

No such success has been attained in dating the majority of the superb rock paintings found in many parts of Australia. While there is reason to believe that the tradition is at least 2,000 years old, there can be no doubt that the majority of the paintings, which were made in shelters and overhangs rather than well-protected underground sites, date to within the last few hundred years. On the other hand, the great areal variation in artistic expression suggests that it is of very long standing, and that art was as much part of Pleistocene life as it is today.
Man-environment relationships

The animal remains found at Lake Mungo record the same fauna as that found in the area in the nineteenth century. Twenty six thousand years ago the Aborigines were eating freshwater shellfish, golden perch up to 16 kilos in weight, small birds, emu eggs and a variety of marsupial mammals. Only one bone belonging to an animal now extinct was found, and that belonged to a carnivore which became extinct in the Australian mainland only ca. 4000 years ago.

The presence of an essentially 'modern' fauna at the Mungo site raises a problem of major interest. What was the relationship of Aboriginal man to the numerous, giant, now-extinct marsupial mammals which existed in Australia in Late Pleistocene times? Did man in fact play a role in the extinction of these animals? The problem is a critical one in view of the widespread belief that hunting and gathering communities 'live for millennia in a stable relationship to their environment' (J. Deetz), are parasitic on it (M. Meggitt), or represent unchanging man in an unchanging environment (R.W. Pulleine). It is made more critical by the discovery at Lake Menindee, only 160 km. from Mungo, of a large collection of giant marsupials dated apparently to the period 20000 - 26000 years B.P., and by several, though all dubious, associations between such animals and human cultural remains.

Throughout the Pleistocene - and for long before it - the Australian fauna included a number of giant forms which, while they evolved slowly, did not seriously decrease in absolute numbers of species. Between Late Pleistocene and Recent times, however, about one-third of all the Australian mammals larger than rabbit size became extinct. Environmental change is often cited as a cause of this, in Australia as in other parts of the world, and it is certainly true that in the southern parts of the continent in particular there was a considerable change in climate in post-Pleistocene times. But this does not appear to be true in the north and we may also note that the central arid zone and its somewhat less arid penumbra changes only in size and intensity rather than in its essential nature. Thus any animals dependant on these environments at least could simply have moved with shifting climatic zones, as occurred, for example, with reindeer in Europe at the end of the Pleistocene. Further at least some of the now-extinct species were widely distributed within Australia and must be assumed to have had a high degree of environmental tolerance. This implies that they would be unlikely to be wiped out by a climatic change.

The additional factor which intrudes into the Late Pleistocene Australian environment is man, who is both a hunter and, even more
importantly, in possession of fire. Man the predator, like other predators, is dependent upon his prey: it is highly unlikely that simply by hunting he can cause the extinction of more than the occasional, highly specialised species. It has taken the complex technology of industrial man to seriously threaten the existence of a large number of species through direct killing.

But the use of man's cultural weapon, fire, may have more extreme effects. R. Jones has recently carefully documented the extensive use of fire by Aboriginal man throughout the continent. In Tasmania, the French, Dutch and English explorers all noted immense fires at all seasons of the year, and they, as well as G.A. Robinson who lived with the Tasmanians for 5 years in the 1830's, recorded that these were started by the Aborigines. Peron for instance in 1809 saw a man with "a lighted firebrand in his hand, setting fire here and there to the bushes which covered the land". In tropical Arnhem Land today Aborigines still ignite enormous areas of bush during the dry season and in the Western Desert R. Gould has observed the same behaviour.

It is, of course, highly likely that the existence of this universal pattern indicates a long history for the practice and considerable advantages for it. It seems, in fact, to be the case that quite large areas of the Australian vegetation are not "natural" in a classic sense, but have been set into their present pattern, and are so maintained, by man's continuous use of fire. It has been shown, for example, that considerable areas of open country in eastern and western Tasmania have reverted to thickly forested country since regular Aboriginal firings ceased 150 years ago. Similarly, the open parkland appearance of some parts of northern Australia is very probably created by annual or biennial burning of the smaller scrub growth, while this same burning also ensures that only fire resistant species have any major place in the flora.

The use of fire almost certainly affects the nature and distribution of fauna also. In 1848 Major Mitchell noted that in the parklike woodlands of an area he called Australia Felix:

"Fire, grass, kangaroos and human inhabitants seem all dependent on each other for existence in Australia... Fire is necessary to burn the grass and form those open forests, in which we find the large forest kangaroo; the native applies that fire to the grass in certain seasons, in order that a young green crop may subsequently spring up and so attract and enable him to kill or take the kangaroo with nets. In summer, the burning of the long grass also discloses vermin, birds' nests, etc."
This insight into relationship between fire-bearing man and the Australian environment suggests an approach to the problem of the extinction of the giant marsupials. We may suggest that man's arrival in this continent added both a new predator and a new agent of environmental change. It was the combination of both roles which, perhaps in conjunction with climatic change in some areas, led to the extinction of some animals and, almost certainly, the flourishing of others.

The extinction of some giant marsupials is but one case of hunter-gatherer man's effect on his environment. In Australia, where agriculture and urban societies did not exist until the nineteenth century, we are able to evaluate both short and long-term aspects of this effect, by a combination of the ethnographic and archaeological records. It is clear that Aborigines were not, any more than ourselves, simply part of the 'natural' system. The changes they caused in the environment may have been noticeably slower than those brought about by agricultural people with higher population densities and more destructive technologies, but they were certainly as important.

Having made such an evaluation, it may be asked whether it is specific to Australia, or whether we may use it to assist our understanding of the history of man elsewhere. There can be no doubt that the latter is the case.

Fire is well documented some hundreds of thousands of years ago in Europe, not merely in caves but as a hunting aid in Spain and in England at least. If used in this way, it seems likely that it was also used, as it is today, for signalling, clearing the ground and causing new plant growth. This use of fire must have significantly altered much of the environment used by prehistoric man, gradually replacing, for example, heavily forested habitats with more open savannas, richer in plant and animal food. Man, that is, was probably expanding those environmental niches which favoured his way of life well before agricultural processes began. Whether this was done intentionally is beside the point - most changes of this kind are not - but by these means he probably started many of the changes we can see going on today. Hunting and gathering man then must be looked at not as a passive parasite on nature - such a view expresses all too clearly European moral judgements on this way of life - but as a man living like other men in an environment, affecting it for his short and long-term advantage in various ways, neither better nor worse than ourselves, but certainly more successful in establishing a long-lasting economic system.

The Australian Aborigines' successful adaptation to and of their environment did not however involve that kind of floral and faunal exploitation which we know as agriculture. Why should that be the case?
The commonly accepted explanation is that the flora and fauna of Australia are unsuited to domestication. Certainly Australia's agriculture today is based entirely upon crops and animals, and most anthropologists have thus tended to accept P. Worsley's explanation of the Aboriginal situation (1961):

"Their material cultural equipment is primitive and they have been isolated for millennia in an inhospitable continent with hardly any animals suitable for domestication, and no grains... other than some wild rice in a few areas. These facts are explanation enough..."

This seems to me to mis-state the problem. The Aborigines may have been unlikely to invent agriculture, but why did they not adopt plants and animals from their external contacts and become agriculturalists in this way? For Australians were not cut off from the outside world in a totally inhospitable environment.

External contacts

Long before the arrival of Europeans, Aborigines were in contact with the people of Indonesia and New Guinea. Seven thousand years ago or thereabouts we find in the Australian archaeological record two new tool types and the dingo (wild dog). From their distribution it can be inferred that the tools were introduced from the north and certainly the dingo must have come from elsewhere, although the means by which it arrived are not clear.

The earliest definite date that we have for contact with farming cultures is about 800 years ago, when Indonesian traders were visiting the north coast of Australia. It is likely, however, that this trade is of much longer duration and farming, we now know, was practised in Indonesia at least 6000 years ago.

The Indonesian trade with Northern Australia persisted for 800 years until stopped by the government. The traders came to collect beche-de-mer for the Chinese market, and set up camps along the coast where they stayed for several months during the wet season. Aboriginal men worked in their boats and there are nineteenth century records to prove that a number of Aborigines travelled back to Indonesia and lived there for a while. The Aborigines were paid with rice, iron and tobacco, they saw pottery being made and some at least saw rice being grown, but they did not bring these skills back to Australia with them.

There was also contact between Aborigines and the farmers of New Guinea. Trade was common between the two, and the Aborigines acquired drums, masks, outrigger canoes and bows and arrows. Even
some of their ceremonies have a New Guinea look about them. Thus while northern Australia has not been isolated from the outside world, the Aborigines have adopted only items which could be employed without making major economic changes.

One explanation of this situation, implied by Worsley, is that the Australian environment is unsuitable for agriculture. There are, however, close similarities in climate, soils, rainfall and vegetation between certain areas of northern Australia and the islands to the north: agriculture of a kind possible in the latter region is almost certainly possible in the former.

Another explanation states that the conservative nature of Aboriginal religious philosophy provided for ritual rather than technological courses of action to maintain the beneficence of the environment. While the philosophy was undoubtedly conservative, this was probably as much a reflection of the lack of change as a cause of it. To give the religious aspect of a society such weight seems unjustified.

A third explanation relies on the suggestion that, in the northern tropical parts of Australia at least, the hunting and gathering economy provided adequate individual subsistence for less labour than farming would have entailed. Australian Aborigines, that is, were simply too well off to bother about agriculture and husbandry. This explanation fits in well with other studies of hunting and gathering economies. Very often, they seem to be the original 'affluent society' where leisure time is abundant - most hunter-gatherers sleep 12-15 hours a day - and sufficient food can be collected with relatively little expenditure of labour. It is only agricultural and industrial man who works 8 hours a day or more simply for food and shelter. Australian Aborigines probably had good reason to reject the laborious life of a farmer and herdsman.

In addition, it has probably been important in Aboriginal history that Australia is an island. Over most of the world, including Europe, the agricultural life was not invented but was forced upon people by farmers who took over their lands, hunted their game, destroyed their plants and made the traditional way of life impossible. Until the arrival of Europeans, this did not happen in Australia and so Aborigines were not, until the last 200 years, forced to become farmers.

We might note, however, that certain features of the agricultural economy are to be found in Australia. Some of the root crops that were cultivated in New Guinea and Indonesia found their way - presumably through man's agency - to northern Australia but were never farmed there. The Aborigines simply collected them as they
did other vegetables.

Similarly the domestic dog - the Australian dingo - was introduced from outside, and spread rapidly across the continent. In some parts it was used in hunting and in all as a companion and child-surrogate, thus filling an important role in Aboriginal communities - and one which could be readily appreciated by them.

Aboriginal conservatism that is, may easily be overstressed. It is clear that the society would adopt any new thing - animal, weapon or cult - which could be easily fitted into the basic economic pattern. In many cases of course these new features produced unexpected long-term effects on the structure of Aboriginal life, but this is true of all societies. Even today we are largely unable to predict the long term effects of such new developments as television or computers. Aborigines are no wiser or more foolish than we.

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