PREHISTORIC ARCHAEOLOGY IN VICTORIA*

INTRODUCTION

Some Australians still believe that the history of their continent commenced in 1788 with the first European settlement in New South Wales. Although we do not know when man first set foot in Australia, it has been established through archaeological studies that ancestral Aboriginals had occupied the continent for at least 40,000 years before the arrival of Governor Phillip. Australian history is therefore, in large part, the history of Aboriginal occupation.

However, there is a lack of factual historical data for the pre-1788 period. The reason why there are so little readily available data is that prehistoric Aboriginals, in common with hunter-gatherers elsewhere in the world, left no written records. This means that their history can only be reconstructed through an analysis of oral traditions and by means of archaeological research. The latter can only readily proceed when sites are available for investigation; in general, if there are no sites, there are no data and consequently no possibility of writing history. It is therefore important to protect archaeological sites; they are, in effect, unique historical documents which can only be interpreted by highly trained specialists. They are also extremely fragile and non-renewable.

Contained in these sites is information about patterns of human behaviour and it is the identification of these patterns, and understanding what they mean, that is of primary concern to the archaeologist. Although each site has its own story to tell, one of the aims of the archaeologist is to integrate individual stories so that the history of a region, and in the long-term the history of Australia, can be written.

In 1788, Australia was occupied by people who had developed an extremely complex relationship with the land and its environments. The Aboriginals were hunters and gatherers whose mode of existence was conditioned by networks of social relationships, by the abundance, accessibility, diversity, and seasonality of the resources of the land, by their religious beliefs, and levels of technological knowledge. Contrary to a previous prevailing opinion it is evident that Aboriginal culture in 1788 was immensely varied throughout Australia, concomitant with the wide range of environments and the great size of the continent. Moreover, culture change is evident in the archaeological records stretching back thousands of years into the last ice age (hereafter referred to as the Pleistocene period) when Australia was a much larger continent. How Australia was colonised by Aboriginals and the sequence of events that eventually produced the complex and variable societies that were extant in Australia in 1788 is a story that is still waiting to be told.

The trauma of European settlement and its tragic effects on the Aboriginal populations and cultures is still being documented. In Victoria, the Aboriginal population was given its first demonstration of the efficiency of European weapons in 1803, when Lt Colonel David Collins R.M. attempted to found a settlement at Sorrento. This was followed by a grim period when sealers landed on the Victorian coastline, kidnapped Aboriginal women, depleted stocks of seals and kangaroos, stripped wattle bark, and probably introduced deadly diseases such as measles and venereal disease.

The period of documented racial strife began in the Western District in 1834 with the arrival of the Henty brothers at Portland. Large areas of Aboriginal land were annexed by new colonists in a scramble to take up the best pasture land, with disastrous consequences for the Aboriginals. It is estimated that the Aboriginal population of the Western District declined from about 8,000 around 1800 to fewer than 750 in 1865. The Victorian Aboriginal population fell from around 15,000–20,000

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in 1800 to about 1,100 in 1877. These changes were accompanied by an inevitable breakdown in traditional culture. Indeed by the time Europeans began to take a serious scientific interest in Aboriginals there were few knowledgeable informants left. Much that is known about nineteenth century Aboriginal culture derives from the superficial observations of untrained European observers. Major works such as R.B. Smyth's *The Aborigines of Victoria* and James Dawson's *The Aborigines of Australia*, which are regarded as standard texts, are based largely on this sort of information. Other works such as *The Native tribes of South-East Australia* by A.W. Howitt (1904) and publications by Edward Curr and J. Mathew have more substance, but they contain an overdue emphasis on Aboriginal social systems and languages. More recently, the journals of George Augustus Robinson have provided vital new insight, but most of them are unpublished.

Aboriginals had their own histories, transmitted orally from one generation to the next. While these traditions, shrouded as they are in symbolism and mythology, would hardly satisfy historians trained in the context of Western intellectual traditions, it is clear that they were the lynch-pin of Aboriginal culture, providing explanations for the temporal and spiritual. Laws that governed their society and behaviour were also encoded into these traditions. The loss of these traditions, usually imparted to individual members of society over their lifetimes, was one of the most serious consequences of European settlement. The net result is that Aboriginal descendants from these terrible years of violence and change have inherited a much impoverished version of their ancestral culture and this in turn has tended to diminish their spiritual well-being.

Given this diminished pool of traditional information, the status of surviving prehistoric sites and relics is greatly enhanced, not only because of their intrinsic information but for their emotive and psychological value as tangible links with a remote past. Today, Victoria's Aboriginal communities are becoming increasingly aware of the importance of sites and relics as a means of enhancing the process of revitalising their culture.

HISTORY OF ARCHAEOLOGY IN VICTORIA

On 4 April 1841, G.A. Robinson, the Protector of Aborigines, measured, described, and drew a fish weir located on the Moyne River in the Western District. In so doing he was responsible for one of the first archaeological records in Victoria. Unfortunately similar records of Aboriginal sites were only rarely made during the nineteenth and twentieth centuries. It was not until 1972 that the Victorian Government passed legislation to establish the machinery for the systematic recording and protection of the Aboriginal cultural heritage.

A century ago it was believed that Aboriginals were a doomed race. There was some statistical evidence to support this view because the Aboriginal population in Victoria declined from an estimated 1,700 in 1861 to 850 in 1901. Two further concepts were paramount: that Aboriginals were recent arrivals in Victoria (and the rest of Australia), and that all variability in material culture (e.g. stone tools, boomerangs, baskets, spears, clubs, etc.) could be explained in terms of variations in the abundance and availability of local raw materials. These views were advocated and supported by respected academics such as Sir Baldwin Spencer and Professor J.W. Gregory, which gave them credibility. In his important review of the evidence in an article entitled 'The antiquity of man in Australia', in 1904, Gregory assessed the evidence available such as the controversial Buninyong bone, the remains of extinct marsupials from Lake Colungulac, and Aboriginal traditions believed to describe events when volcanoes in the Western District were active. His conclusion was unequivocal: there was no evidence of a long occupation of Victoria by Aboriginals.

Such views gave authority to the argument that if Aboriginals were recent arrivals in Victoria, then there was no point in digging up their sites, as no new information could be obtained about Aboriginal culture other than that available in historical records. Thus there was no incentive for archaeological investigation. The consequences of such assumptions were that as sites had no time depth they could be dug up and/or destroyed with no loss of information. This effectively gave numerous collectors a licence to pillage Aboriginal sites. Thousands of artefacts (stone tools) were taken from sites and little about this material has ever been published. A notable exception was S.R. Mitchell's book *Stone Age Craftsmen*, published in 1949, which is still the most comprehensive work available on stone tools in Victoria.

Hale and Tindale's now famous excavation at Devon Downs on the Murray River in South Australia in 1929 demonstrated once and for all that Aboriginal culture had time depth, and that there were technological changes over time. Yet the implications of these discoveries passed unnoticed in Victoria, where the conclusions of an important review paper entitled 'Fossil man in the state of Victoria, Australia' by D.J. Mahony, W. Baragwanath, F. Wood Jones, and A.S. Kenyon (1933) were similar to those of Gregory in 1904.

D.A. Casey, an archaeologist with wide overseas experience, and with a particular interest in stone tools, returned home to Australia from Britain about 1934, and from that time devoted himself to the study of ethnology (the division of anthropology devoted to the analysis and systematic interpretation of cultural data) and archaeology in Australia. Shortly afterwards he commenced fieldwork in Victoria. In 1938 he reviewed the Australian stone tool evidence at the third Congress of Prehistorians of the Far East in Singapore. This was a significant event as it was the first time a synthesis of Australian archaeology had been presented at an international forum. Casey ranks as the first professional archaeologist resident in Victoria, and he brought from overseas the scientific rigour and technical knowledge that is absolutely essential to properly record and interpret archaeological evidence.

In 1938, Casey, together with colleagues sharing similar interests, founded the Anthropological Society of Victoria, a society that was to play an important role in encouraging the Victorian Government to legislate to protect Aboriginal sites. Unfortunately many members of the Society were also collectors, and membership of the Society, in a sense, sanctioned and promoted this form of activity.

The year 1940 is an important landmark in the history of Victorian archaeology. In that year workmen accidently unearthed a human cranium in the upper sediments of the Keilor flood plain. D.J. Mahony suggested that the cranium could have an antiquity of 140,000 years. This was a controversial assertion and it initiated vigorous scientific debate, making Keilor central to Australian archaeology. The discovery of the cranium initiated a number of major scientific investigations which have continued intermittently ever since and involved all of the central figures responsible for the development of archaeology in Victoria.

One of the researchers was E.D. Gill who has maintained an interest in archaeology in Victoria throughout most of his working life. His wide range of interests and areas of expertise have enabled him to contribute to the discipline in a number of ways. His major contribution has been to apply scientific techniques to the solution of particular archaeological problems and in his persistent efforts to demonstrate the value of evaluating archaeological evidence in the context of well documented geological and geomorphological sequences. His 1953 review paper 'Geological evidence in western Victoria relative to the antiquity of the Australian Aborigines' was yet another update of Gregory's earlier paper. Gill skilfully combined geological and archaeological evidence to claim that Aboriginals had occupied western Victoria for several thousand years. Gill's professional acquaintance with F.B. Libby, the inventor of radio carbon dating, in 1955 enabled him to obtain the first radiocarbon date for an archaeological site in Australia. This was an Aboriginal coastal midden at Armstrong Bay in western Victoria.

One of his better known contributions to Victorian archaeology was his effort to determine the stratigraphic provenance and date of the Keilor cranium. He employed a series of scientific techniques, including fluorine dating (a technique of relative dating used on bones), the first application of this method to an archaeological site in Australia.

The 1950s also saw the emergence of another important figure in Australian archaeology. D.J. Mulvaney, a University of Melbourne historian fascinated by archaeology, teamed with D.A. Casey, and together they proceeded to give archaeology in Australia an intellectual context and some direction. Mulvaney began with the excavation of a rock shelter site at Fromm's Landing on the Murray River in 1956, followed by field reconnaissance in the Western District in 1957. In 1960 he went on to excavate two small rock shelters at Glenaire, Cape Otway. Using his new data he was able to review the Australian archaeological evidence, and in 1961 published a landmark paper entitled 'The stone age of Australia' which clearly defined his perception of the outstanding problems in Australian prehistory.

While Mulvaney was busy erecting a broader intellectual framework for the interpretation of Australian prehistory, research continued at Keilor. From the early 1960s, Alexander Gallus and a small band of volunteers began fieldwork there with the object of dating and investigating the association of archaic stone tools and the remains of extinct fauna which appeared to be eroding from deposits at the site. Gallus eventually found unequivocal evidence of Aboriginal occupation in the lower terraces, and in the same levels, though not associated, he located the remains of extinct giant marsupials (megafauna). Gallus claims great antiquity for the site and has proposed dates of more than 100,000 years for the earliest levels of occupation. Moreover, he has distinguished several suites of hitherto unknown tool types from the lower layers. Gallus' findings have proved to be controversial,

and there are still many mainstream archaeologists who do not accept his interpretations. However, it is widely accepted that the site is old, that it has a minimum antiquity of c. 38,000 years and that there should be evidence in the lower levels of a direct association between man and megafauna.

Gallus' work provided a field focus for many interested persons who would otherwise never have been able to work on an excavation. This resulted in the formation of the Archaeological Society of Victoria and that Society was closely linked with the Keilor project. The Archaeological Society, together with other interested organisations was largely responsible for influencing the Victorian Government to pass legislation to protect Aboriginal sites. In 1984 about 200 members continue to provide an intellectual stimulus for citizens interested in the discipline. The Anthropological Society of Victoria, by contrast, gradually lost membership and in 1978 it amalgamated with the Archaeological Society.

Mulvaney and Casey also figure in the Keilor story. In 1965 another quarry operator unearthed bones in the terraces at nearby Green Gully and this initiated a major excavation and detailed studies of the terraces by geomorphologists D.J. Mulvaney, D.A. Casey, and R.V.S. Wright, who all worked at the site; the human remains were studied by N.W.G. Macintosh. As a result of this work Macintosh produced a new synthesis of the Australian skeletal evidence, and the geomorphologists were able to solve many of the complex chronological and stratigraphic problems associated with the Keilor terraces. Keilor is still one of the most interesting archaeological sites in Australia and ranks among the earliest dated sites in this country.

In 1976 the site was purchased by the Victorian Government and from 1977 to 1982 excavations were conducted by the Victoria Archaeological Survey and the Division of Prehistory, La Trobe University, with the object of testing some of the theories proposed by Gallus. These investigations have been completed and the results are being evaluated.

Concurrent with the development of archaeology in the 1950s there were some advances in the field of ethnology. Aldo Massola was appointed curator of Anthropology at the National Museum of Victoria in 1954. From 1956 onwards, Massola published on various aspects of Aboriginal material culture and produced several valuable distribution maps. He also published two popular and influential books: *Journey to Aboriginal Victoria* and *The Aborigines of south-eastern Australia as they were*. Massola established a network of contacts throughout Victoria through whom he obtained information about painted caves, sites, and artefacts. He also established a rapport with many members of the Aboriginal community.

Massola's successor, A.L. West, was appointed in 1967. He reorganised and documented the extensive collections held by the National Museum of Victoria, a task that is still in progress.

West also featured in another important episode in the history of Victorian archaeology. In 1962 a farmer dug up human skeletal remains on the north-eastern shores of Kow Swamp and the remains eventually ended up in the National Museum of Victoria where they lay for a number of years inadequately provenanced. In 1967, A. Thorne, at that time assistant to N.W.G. Macintosh, came to Melbourne to sort and catalogue the collections of human crania at the Museum. While going through the collections he picked out these particular remains because of their robustness and high degree of mineralisation. Consequently it became important to determine where they had been found. West became involved in a most extraordinary piece of detective work which eventually led to the discovery of the original burial site. As a result of this work, A. Thorne and R.V.S. Wright conducted extensive intermittent investigations in this area between 1969 and 1979, unearthing more than forty individuals at three locations. The specimens have proved to be of immense scientific importance because they have provided information pertinent to the debate about human evolution and initiated considerable speculation about the origins of the Australian Aboriginals and the colonisation of Australia.

In 1972 the Victorian Government passed the Archaeological and Aboriginal Relics Preservation Act to provide for the protection of archaeological sites in Victoria. The Act created the office of Protector of Relics, and in 1973, when the administrative arrangements were enacted to implement the new Act, the office of Protector was assigned to the Director of the National Museum of Victoria. Under this Act all Aboriginal sites are protected and suitable arrangements are made to maintain surveillance of sites, compile a register of sites, and to mount a public education programme.

In 1975 the responsibility for administering the Act passed to the Ministry for Conservation and in a later series of amendments to the Act, the title of Protector of Relics was abolished. The organisation previously known as the Archaeological and Aboriginal Relics Preservation Office became the Victoria Archaeological Survey (VAS). From 1975 to 1983 the staff of the VAS has steadily increased to enable it to meet its growing responsibilities. In 1980 it was charged with the task of administering

historical archaeological sites in Victoria, and in 1982, with the passage of the Historic Shipwrecks Act through the Victorian Parliament, it was given the responsibility of administering this Act also. At January 1985 it had a staff of more than twenty-five, including nine archaeologists.

When the original Act was passed there was no consultation with Aboriginal communities, and in recognition of this oversight, the Victorian Government has gradually increased Aboriginal participation in the activities of the VAS. An advisory committee set up to advise the Minister on matters pertaining to the administration of archaeological sites and relics has three Aboriginal members (out of a total of eleven members) and the Survey has several Aboriginal staff including an Aboriginal Liaison Officer who holds a senior position.

Since its inception the VAS has been preoccupied with establishing a register of Aboriginal sites. To this end it has conducted surveys and research programmes in areas of high archaeological sensitivity. Major surveys and excavations have been completed in the areas defined by the Willaura, Ararat, and Warrnambool 1:100,000 map sheets, and the Swan Hill 1:100,000 map sheet has been partially surveyed. Systematic surveys and excavations have been comducted over more than 50 per cent of the Victorian coastline. Major site surveys have been commissioned in priority regions with the aid of grants from the Australian Heritage Commission, the Australian Institute of Aboriginal Studies, and the Environmental Studies Section (now defunct) of the Ministry for Conservation (now the Ministry for Conservation, Forests and Lands). Using this approach, surveys of Aboriginal sites along the coast at Discovery Bay, of the Melbourne metropolitan area, of the Mornington Peninsula, Phillip and French Islands, and the region around the fringes of Western Port have now been completed or are in progress. Survey and documentation of rock art sites in Victoria is well advanced, and surveys of archaeological sites on the Bellarine Peninsula have recently commenced. In the Western District, huge complexes of stone house sites, canals, and weir systems used for fishing have been recorded and investigated.

Currently there are more than 8,000 Aboriginal sites on the VAS register and the most significant of these have been declared Archaeological Areas, giving them special legal status. Much research remains to be done, and at the present rate of progress it is estimated that it will take some hundreds of years to complete an inventory of the State's archaeological resources.

In 1965 D.J. Mulvaney left the University of Melbourne and it was not until 1975 that academic research continued with the creation of a Prehistory Division within the History Department at La Trobe University. Since that time the staff of the Division has carried out or supervised several significant archaeological projects in Victoria which have added much to our knowledge of prehistory.



FIGURE I. Language groups and social patterns of Victorian Aboriginals at the end of the prehistoric period.

Interstate archaeologists also have been interested in Victoria. This activity includes research by I. McBryde into Aboriginal axe quarries, by H. Lourandos on western Victorian earthen canal systems, and by R.V.S. Wright and colleagues, who conducted painstaking and sophisticated research on a fossil bone site at Lancefield, where the remains of thousands of kangaroos (of a species now extinct) have been recorded.

Archaeological research in Victoria over the past twenty years has demonstrated that Aboriginal people have resided here for at least 40,000 years. Many archaeological manifestations of this lengthy period of occupation have been discovered, including scarred trees from which Aboriginals cut bark to make shelters, shields, canoes, trays, etc.; earthen mounds that were used as camp sites and/or rubbish dumps; shell middens or refuse deposits comprising deposits of shells, bone, stones, and charcoal which are found along the coasts and in association with lakes and rivers; quarry sites from which Aboriginals won stone to make tools; grinding grooves which were used to sharpen axes; scatters of stone tools and artefacts (lithic scatters) which identify locations where Aboriginals made and discarded them; rock art, and rock arrangement sites where Aboriginals performed religious ceremonies; canals, weirs, and traps which were associated with the capture of eels and other fish; burial sites of various sorts; and stone house sites found in association with fishing complexes in the stony rises in western Victoria. These sites provide information that is enabling archaeologists to reconstruct a coherent picture of Victoria's prehistoric past.

It is not yet possible to write a complete prehistory of Victoria but there are certain themes that can be developed and these form the subject matter of the remainder of this chapter.

POPULATION AND SOCIETY

Around 1834 Aboriginal population densities varied from one area to another. Estimates vary between 6,000 and 20,000 for the total population but recent research suggests that the figure is more likely to be closer to 20,000. Aboriginal social organisation was extremely complex; there were rules governing marriage, and social and inter-group relationships. The largest unit recognised by Aboriginals has been called by anthropologists 'the tribe'. It comprised a loose association of about 500 people who shared a number of cultural traits such as language, and was large enough to allow marriage between groups within the tribe. Its members claimed affiliations with particular tracts of land by virtue of association with some supernatural or mythological character.

There is evidence that more than thirty tribes occupied Victoria and that the area which each one occupied varied. Detailed analysis of the ecology of some of the tribal areas has demonstrated that they were each associated with a diverse range of resources sufficient to sustain moderate populations. Population densities of the order of one person per two square kilometres may have been reached in some coastal areas of Victoria, while densities greater than one person per six square kilometres were probably not uncommon in the Murray Valley. If the estimates of coastal population densities are reasonable they are among the highest in Australia.

Aboriginal society was divided into a number of smaller, often inter-related social groups including descent groups, clans, sections, sub-sections, and bands. (See Figure 1 on page 5.) For example, descent groups were related by reason of kinship, descent, and religion. Clans were named lineal descent groups, members of which claimed descent from a common ancestor, often mythological, and recruited children of either male or female members, but not both. Classes (or moieties) were a division of a tribe into two complementary social groups. This division was important for social and ceremonial reasons and inter-marriage of people from the same class was not allowed. In Victoria there were essentially five types of class system, the most widespread of which consisted of two classes associated with male descent. The band was the land-using or food-gathering unit comprising a number of families and consisting of about fifty people. Bands identified with particular tracts of land.

The relationship between band territory (the terrain over which bands hunted and gathered) and tribal territory is not clear. In coastal south-west Victoria, it has been estimated that there may have been as many as sixty-two bands residing within the Gunditjmara tribal area, and up to thirty-four in the Tjapwurong tribal area located in the central Western District.

At the end of the prehistoric period three major groups of languages were spoken by Victorian Aboriginals – the Kulinic, Yotayotic, and Kurnic. (See Figure 1 on page 5.) Kurnic speakers were confined to Gippsland, Yotayotic to north-east Victoria, and elsewhere Kulinic languages were spoken. There were many sub-groups and hundreds of dialects.

Although some of the factors that regulated Aboriginal populations are known, it is not clear which factors, if any, were the most important, or whether there were conscious attempts to maintain the

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population at particular levels. Clearly the environment could have imposed constraints. There is compelling evidence that the practice of infanticide was widespread in Victoria and this may have been a regulatory mechanism. However, observers noted the practice during a traumatic period in Aboriginal history when there were grounds for postulating a much higher rate of infanticide than might have been prevalent in the prehistoric period. Inter-group warfare and disease must also have played some part in regulating the population. However, it is the complex social relationships that are known to have existed between groups which are likely to have played a dominant role. The rules governing kinship and marriage, trade and exchange, and the complexities of initiation ceremonies, are likely to have been sufficient in themselves to have maintained the population at conservative levels.

Demographic patterns are often difficult to discern from archaeological records and when they can be perceived they are generally of the broadest kind. The present state of archaeological knowledge in Victoria is such that it is not yet possible to perceive patterns at a tribal, class, clan, or even band level. Consequently it is not known how late prehistoric demographic patterns evolved, or over what period of time. Some of the factors affecting demographic patterns are discussed briefly below.

Burial customs

At the end of the late prehistoric period, Victorian Aboriginals disposed of their dead in a variety of ways, and although considerable knowledge is available about these practices it is not known why particular methods were used.

In the Murray Valley there were two principal modes of burial. In the first, corpses were flexed and rolled up in possum skin rugs and buried either in a sitting position or on their sides. A second method was used when important persons were buried. Bodies were interred in mounds and these were surmounted by thatched huts and covered with nets to protect the graves.

A feature peculiar to the Murray region was a practice associated with mourning. Widows poured a gypsum cement over their hair which they cropped and covered with a reed net to prevent the gypsum sticking to their scalps. Sometime after the burial the 'widows' caps' (as they were called) were removed and placed on top of the burial site. Widows' caps have been observed in many archaeological sites along the Murray and Darling Rivers.

The remains of more than a thousand individuals have been cursorily investigated from sites in the Murray Valley, and some of the burials have been dated. Leaving aside the important series of burials from the Kow Swamp and Cohuna area which are discussed in more detail below, the burials date in the range 750 BP* to 5,900 BP, with most falling in the 3,500 to 5,900 BP range. In general the burials are not orientated in any consistent direction.

While most of the burials are isolated occurrences, there is now considerable evidence to suggest that some localities were used consistently to inter the dead and consequently these sites could be called cemeteries. Recently an important site of this type was discovered near Robinvale. It is estimated that between 245 and 1,400 individuals are buried in the site which has an antiquity greater than 3,000 BP.

In the Geelong-Melbourne area and in the central Western District, both cremation and inhumation methods were used at the end of the prehistoric period. Bodies were prepared for burial, as on the Murray. Corpses were usually cremated when there was insufficient time to complete burial rituals and practices. The charred remains were then collected and carried about by the relatives before they were finally buried.

One burial investigated from the Western District consisted of bones from two people laid out so as to produce a facsimile of one individual. Unequivocal evidence for such a practice has also been discovered at Green Gully near Keilor, where composite remains were dated to c. 6,500 BP. On the Werribee River, several inhumation burials have been investigated dating from c. 7,300 BP. There the bodies were desiccated and some of the bones stained with red ochre before burial.

Occasionally Aboriginals used rock shelters and caves to bury their dead. The remains of a teenage girl dated to c. 330 BP wrapped in a container of coarse knitted fibre were recovered from a cave near Mansfield. Once again there is evidence that the body had been desiccated before interment. The burial was associated with grave goods including a small bundle of feathers and fragments of animal pelts.

In Gippsland burial practices also varied but it was common practice to wrap the corpses in bark sheets, and after allowing them to completely dry out, perhaps for some years, the bones were placed

*BP refers to 'before present', i.e. the years before 1950 AD.

in hollow trees. One ritual peculiar to Gippsland was the practice of removing one of the deceased person's hands. After it had been thoroughly dried out it was worn around the neck.

Genetic affinities

There is evidence from Victoria to suggest that there may have been a number of regional populations distinguished by slight genetic differences, though how these populations evolved and changed over time remains to be established. Studies of crania from sites less than 7,000 BP in the Murray Valley, from mound sites of the Western District, from coastal sites in eastern Victoria, and from Green Gully suggests that they are all 'modern' in the sense that they have typical Australoid (Australian Aboriginal) characteristics. Even so, comparative analysis indicates that there is considerable variation from one region to the next. The Murray Valley crania can be distinguished from those found in coastal areas of central Gippsland and coastal areas of southern New South Wales and they seem to have more in common with crania from the Mallacoota district in the far south-east. Unfortunately there are insufficient samples from most areas of Victoria to enable regional characteristics to be defined and compared.

So far the oldest human remains found in Victoria come from Keilor. A cranium along with some other fragments were accidentally unearthed in a terrace of the Maribyrnong River during quarrying operations in 1940 and these have been dated to approximately 13,000 BP. The cranium (of a female), has 'modern' characteristics (i.e. it is gracile, with fully rounded forehead and lack of prominent eyebrow ridges), is larger than average modern examples, and is in some ways similar to gracile populations at Lake Mungo in western New South Wales.

Studies of one cranium from Cohuna and the remains of about 40 additional individuals from Kow Swamp and other locations in north-central Victoria have heightened speculation about the origins of the Australian Aboriginal. A range of individuals and a variety of burial modes were found. The burials date between 9,300 BP and 13,000 BP and at the present time comprise one of the largest populations of Pleistocene or 'Ice Age' (pre-10,000 BP) human remains in the world.

The crania of this group of burials are readily distinguishable from their modern counterparts. They tend to be very robust, the brow ridges are prominent, and the frontal bones are flattened and broader anteriorly. In addition the mandibles tend to be massive and as a population they were of tall stature. This group of crania falls outside the modern range and diverges from the 'modern' range in the opposite direction from the Keilor cranium and other Pleistocene crania discovered in the vicinity of Lake Mungo in New South Wales and which are also gracile.

When considered in conjunction with cranial evidence from Lake Mungo there are grounds for proposing that Australia was originally settled by at least two separate populations. One theory is that



FIGURE 2. A possible 2,000 year old Aboriginal painting of a Tasmanian tiger (*Thylacine*) from north-eastern Victoria.

the Kow Swamp crania have affinities with the *Homo erectus* (a precursor of modern man) fossils from Java. However, this is currently a matter of contention. Recent studies have demonstrated that some Kow Swamp crania have been artificially deformed, and this could account for some of their archaic traits. Nevertheless there are still other aspects that need to be explained and the Kow Swamp crania remain an enigma in the Australian genetic spectrum.

Religion

Evidence of a religious nature is difficult to identify in prehistoric contexts. In some instances archaeologists can make inferences about religious practices from burials, non-functional stone arrangements, and rock art. However, Aboriginal religious practices directly or indirectly doubtless affected a wide range of archaeological features. In Victoria (at November 1984) there were approximately eighty-two art sites of which sixty-seven had been recorded in some detail. The art sites are unevenly distributed and the majority are found in the Grampians. This may be due to differing preservation factors. The art was painted on both granite and sandstone rock, but the former has a tendency to flake off when it weathers so that it is likely that most of the art executed on this medium has disappeared. Much of the surviving art is found in sandstone rock shelters of the Grampians, but even there the art is generally in a poor state of preservation and is slowly disappearing.

Many of the galleries consist of a few motifs only, but conversely there are a few sites where large numbers of motifs occur. The most famous of the latter group is the Glenisla rock shelter which has approximately 3,000 motifs.

Intensive studies of the art have suggested that there is considerable diversity. Red ochre was by far the most common mineral employed to produce a colouring medium but yellow pigments and white pipe clay were sometimes used. The art tends to be highly stylised and symbolic, though there are rare occurrences of motifs that have recognisable forms. One of these is a painting that appears to be of a Tasmanian tiger (*Thylacine*), an animal that is now extinct on the mainland. (See Figure 2 on page 8.)

The distribution of some forms of motifs in the Grampians is of particular interest, since they are found in several shelters in the same general area but nowhere else in Victoria, and one of these shelters usually has a predominance of the dominant motif. Such distributions suggest that there may have been regional art styles and these in turn may be reflections of demographic patterns.

The question of the chronology of the rock art is difficult to resolve. Detailed studies of the rock art have suggested that there are several phases of overpainting in many of the shelters, and there is a strong possibility that the use of white pipe clay is a recent innovation. Radiocarbon dates from archaeological deposits in the floor of three rock shelters have demonstrated that they were used during the period c. 3,300 BP to 780 BP. However, no direct connection has been found between the material recovered in the floor deposits and the rock art on the walls.

One of the most interesting results of these investigations emerged from the Glenisla rock shelter where volcanic glass was found consistently throughout the occupation levels. It is a very distinctive stone material and occurs only rarely in contemporary deposits in another rock shelter not far distant from Glenisla, and only rarely in archaeological deposits elsewhere. The fact that it occurs consistently at the Glenisla shelter suggests that the people who occupied the site had a traditional knowledge of the source of this material and that exploitation was directly associated with the occupation of the site.

The most important art site in Victoria is a small and unpretentious hollow in a large granite rock known as Bunjils Cave situated 10 kilometres south west of Stawell. It has been the subject of controversy in recent years because the art motifs seemed to be anomalous in the context of those known for the region. However, it has now been demonstrated beyond reasonable doubt that most of the motifs are genuine. The site is important because it is the only one in Victoria that can be connected with an Aboriginal tradition. The figure depicted on the walls of the Cave is the supernatural and anthropomorphic being Bunjil, an ancestral figure who was widely venerated throughout south-eastern Australia and who is said to have led tribal groups to their territories. He created the first people and was responsible for giving them laws, customs, and rites.

Rock arrangements are another form of ceremonial site that may have been common in Victoria at one time. Unfortunately few examples survive today and none of these have been dated. Only three examples are known in Victoria. The best known rock arrangement in Victoria is located at Carisbrook, in the Maryborough district. It consists of several alignments of small rocks including one of boomerang shape approximately thirty-one metres long, three circles, and a rock cairn.



FIGURE 3. A model of a late prehistoric Aboriginal economy along the Murray River, illustrating the relationship between the rise and fall of the river, the seasonality of popular foods, population movements, and campsite locations.

PREHISTORIC ARCHAEOLOGY IN VICTORIA

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There are no descriptions of these sites being used by Aboriginals, but judged on evidence from elsewhere in Australia they are likely to have been used for ceremonial purposes.

Three undated earthen rings consisting of 'shallow circular dish-like hollows' have been located and archaeological investigations have led to the tentative conclusion that the rings formed part of an Aboriginal ceremonial ground. The features are barely visible and like all earthen features are prone to erosion and destruction by natural and man-made means. To date they are the only examples of this type of site in Victoria, though there may have been many more of them in Victoria at one time.

Regional lifestyles

Along the Murray River and its tributaries east of Robinvale, it has been established that by 2,500 BP and probably earlier, Aboriginals had developed a highly organised method of disposing of waste from their cooking operations. Stone suitable for use as hearthstones was in short supply in the Murray Valley, and Aboriginals used baked clay pellets in lieu of stone. However, the pellets were fragile and had a high breakage rate. Aboriginals developed the technique of depositing their refuse into piles. As the ovens were used repeatedly these piles gradually grew in size to become mounds. The archaeological evidence suggests that in most instances Aboriginals did not live on the mounds, but camped beside them.

Evidence from the Nyah and Vinifera Forests located to the north-west of Swan Hill, suggests that some of the mounds have been added to periodically over a long period of time; in some instances, for more than a thousand years. The sites in this area are located on the flood plain and during the flood seasons they were mostly drowned; hence they could only have been used during the non-flood season. However, occupation sites of similar age occur beyond the limits of high flood levels, and these sites could have been used at any time of the year. Because there are these two suites of sites in close proximity (on and off the flood plain) it has been suggested that the Aboriginals of this area may have led a semi-sedentary existence, moving out onto the flood plain during non-flood seasons and beyond the margins of the flood waters during flood periods. (See Figure 3 on page 10.) In consequence the form of settlement perceived for this area is highly patterned, both in a structural and seasonal sense, and it can be postulated that this pattern is an adaptation to increased population densities in the Murray Valley over the past few thousand years.

Mounds do not occur to the north-west of Robinvale, where the typical riverside site is the shell midden. Sites investigated consist of heaps of freshwater mussel shells in association with small hearths dating from c.16,000 BP. One site spans 10,000 years to c.1,000 BP and once again exemplifies highly patterned behaviour over an extensive period of time. These riverine sites would appear to be typical for the region, and probably reflect a stable population.

In the central Western District, extensive surveys and excavations covering an area of approximately 6,500 square kilometres (650,000 hectares) have enabled the distribution of other types of mound sites to be mapped. There are basically two sorts: those that have been built up prior to occupation and then added to through the accumulation of occupation debris, and those that appear to have accumulated through the deposition of occupation debris alone. The important difference between these mounds and those found in the Murray Valley is that Aboriginals lived on those found in the central Western District, i.e. they were habitation sites. Excavations have demonstrated that they contain, variously, hearths and ovens, cooking pits, debris from stone tool manufacture and stone tools, food refuse (including animal bones and bird egg shell), freshwater mussels, post holes, and burials. Again the evidence suggests that these sites have been occupied periodically, and like those investigated in the Murray Valley, some were occupied over extensive periods of time. There is one documented site for example, that was used intermittently for more than a thousand years. Judged on the faunal evidence from these sites, on their environmental contexts, and in particular their disposition relative to hydrological resources (rivers, lakes, swamps and creeks), it has been postulated that many of the sites were occupied sometime between late autumn and spring. (Figures 4(a) and 4(b) on pages 12 and 13 illustrate the relationships between environment, population movements, seasonality, and campsite location.) Recent studies suggest that many of the mounds are an adaptive response to water-logged and wet environments, providing Aboriginals with well-drained house platforms that could be resculptured with relative ease.

The antiquity of this form of mound, like those along the Murray River, is still not established, but they are unlikely to be more than 5,000 BP, and they may be more recent still. These types of mounds also seem to have a specific distribution, being confined to areas south of the Great Dividing Range, although they are found to the west of the Divide as far as Casterton. They are distributed throughout



FIGURE 4(a). A model of a late prehistoric Aboriginal economy during summer and autumn in the inland areas of the central Western District.

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Population disperse over landscape during winter to areas with timber and good choice of food resources eg. margins of savannah woodland, Return Ground sodden and collect plants to solidly built weather proof houses, very wet Mounds occupied fishing bird snaring become semi-sedementary. WINTER River Mound-/ Creek Swamp GRASSLAND OPEN WOODLAND HEATH OPEN WOODLAND SAVANNAH WOODLAND Camped around swamp to take birds and eggs 1 Population probably focussed on rivers shellfish rats and creeks in grassland. Becomes Aboriginals occupy mound sites daisy yam snakes more mobile, move to creek, swamp in early spring until ground begins & riverside locations, camp in sandy fishing/ crayfish lizards < to dry out. environment. ЗÈ: L. July SPRING River Mound-/ Creek Swamp OPEN WOODLAND HEATH OPEN WOODLAND SAVANNAH WOODLAND GRASSLAND

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FIGURE 4(b). A model of a late prehistoric Aboriginal economy during winter and spring in the inland areas of the central Western District.

POPULATION AND SOCIETY

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the Western District on the basalt plains from Geelong westwards, but occur less frequently towards the coast and are not found in Gippsland at all.

Mounds appear to be archaeological manifestations of a comparatively recent, highly patterned form of settlement which may have evolved in response to changes in man-land relations, precipitated by population intensification. Certainly by the time Europeans arrived, the form of settlement noted in historical records for the central Western District was highly patterned and at certain times of the year, semi-sedentary. Early observers saw 'village sites' located in favourable environmental situations comprising well-made, spacious huts that were principally half cupola in form, framed in sticks, and insulated with sod and clay. (See Figure 5 below.) The archaeological manifestations of these village sites may be small, low mounds but this still needs to be confirmed by excavation. Mounds are frequently described in the historical literature, but there is no compelling evidence that early observers saw Aboriginals living on them or using them. Thus, one must conclude that they were abandoned soon after European settlement began.

In the stony rises of western Victoria large numbers of stone structures have been located around the margins of large swamps at Lake Condah, Condah Swamp, and Louth Swamp. (See Figure 6 on page 15.) Archaeological investigations have demonstrated that they were Aboriginal houses, circular to U-shaped in plan, some 2 to 12 square metres in area, and in general orientated so that their entrances were located away from the prevailing winds. The low walls, of the order of one metre high, were constructed of basalt rubble. Historical information suggests that they were roofed with timber and bark. The houses were associated with small hearths, some inside, and others outside the entrances.

Two large complexes have been investigated in detail, one of 116 sites on the margins of Condah Swamp, the other of about 50 sites on the margins of the Louth Swamp, which connects with Condah Swamp. Both these swamps were once rich and diverse environments that provided Aboriginals with abundant and reliable food resources. The houses occur singly and in clusters, and from their disposition they have the characteristics of 'village sites' seen by early European observers around wet-lands out on the basalt plains. These sites may be seen as adaptations to the rocky environment of the stony rises. Archaeological evidence suggests that this form of site had its origins in the prehistoric period.

On the coast, sites dating from 7,300 BP have been recorded, though most are more recent than 5,000 BP. In general, sites found along the 'high energy' or open ocean coastlines fall into or somewhere between two basic groups: task specific sites usually associated with collecting, cooking, and consumption of shellfish; and base camps, where a number of activities were carried out,



Source: State Library of New South Wales, Mitchell Library, Sydney

FIGURE 5. An example of a very substantial Aboriginal house (left) in the central Western District. A cupola shaped house (right) situated on an earthern mound on a rise, probably a common site in the central Western District before the arrival of Europeans.



FIGURE 6. Plan of an Aboriginal village site located in western Victoria. The houses were made of stone and entrances faced away from prevailing winds.

including the manufacture and repair of stone tools, from which a wide range of fauna were hunted and gathered. Investigations at several diverse locations along the Victorian coastline have demonstrated highly patterned behaviour over the past few thousand years which must in turn be related to demographic patternings. (See Figure 7 on page 17.)

Surveys and excavations of artificial canals and weir systems at Lake Condah and at Toolondo have shown that Aboriginals built the devices to facilitate the harvesting of freshwater fish. The Toolondo system comprises four kilometres of earthen channels joining two swamps through a series of crab holes. The channels effectively extend the drainage system over the Great Dividing Range. It is estimated that some 7,644 cubic metres of soil was removed in the process of constructing these channels, which represents a considerable investment of manpower and labour. A radiocarbon date from a piece of river red gum found in one of the channels, suggests that the complex is older than 210 BP.

The Lake Condah system is even more impressive. Before the drainage was altered in recent times the levels of the lake fluctuated, the excess water being drained off through natural underground channels. The southern margin of the lake consists of immense areas of broken basalt or stony rises, which form natural embayments. Within these embayments Aboriginals constructed artificial channels by prising out basalt boulders. Canals were constructed by erecting free-standing stone walls made from basalt blocks. Some of the channels and canals have tributaries and wing walls to direct fish into the channels. To catch the fish Aboriginals inserted nets at convenient points along the canals and channels. Free-standing stone walls have been constructed around the perimeters of some of the embayments presumably to stop the fish from leaving the systems.

The channels and canals are found at various levels above the bottom of the lake, so that as the water level increased some systems drowned and others became operational. When the floodwaters receded large rock pools were left behind, and Aboriginals would have been able to fish in them for some time afterwards. There are no dates available for the Lake Condah fishing complexes, but they are likely to be of prehistoric origin.

Both the Lake Condah and the Toolondo systems can be seen as attempts to manage aquatic resources and, viewed in the context of the evidence presented in the foregoing, they too may have been an adaptation to increasing population pressure, and accompanying pressure on resources.

The distribution of specific artefacts or material types adds little additional information as the distribution of key artefact types in Victoria is still not known with any certainty. However, in the prehistoric past the Murray River appears to have formed a natural boundary between groups to the north and south. Artefact types such as the distinctive Pirri point and the Tula adze are common in South Australia and in western New South Wales, but do not seem to occur in Victoria. Within Victoria, outside of Gippsland, there was a tendency to manufacture stone axes out of greenstone*, while in Gippsland, where sources of greenstone are scarce or absent, they were manufactured from waterworn pebbles of hard rock. In western Victoria, south of the Great Dividing Range, grooved basalt axes are common. These tend to be heavily weathered and so far as can be judged from the historical sources were not made or used during the late prehistoric period. There is some historical documentation which suggests that dress and personal ornamentation may have varied from region to region, but so far these aspects remain invisible in the archaeological record. (See Figure 8 on page 18.)

In the coastal districts of Victoria, essentially from Wilsons Promontory westward, most of the artefacts found in association with late prehistoric archaeological sites are made either of quartz or flint. The latter derives from nodules washed up on the beaches. As one moves inland, the proportion of flint artefacts in the various sites diminishes and is replaced by other forms of stone such as chert, chalcedony, and silcrete. However, quartz is still predominant at many sites, and is a key material in older sites such as Green Gully, Kow Swamp, and Lake Bolac. In the Mallee quartz is rarer, and the predominant stone is silcrete. Likewise, recent studies of the distribution of greenstone from known sources (e.g. Mt William near Lancefield, Mt Camel north of Bendigo, and Berrambool west of Lake Bolac) have shown that the majority of axes made from these materials have been found within well-defined regions, which in turn reflects the extent of local trade and exchange networks during the prehistoric past.

Thus on the basis of the information available at present, it seems likely that the distribution of stone materials, in the first instance is directly related to the geological provenance of the resources, rather than to demographic factors, although once acquired the quarried materials must have been

*A type of meta-basalt or diorite used predominantly for making hatchet heads.



FIGURE 7. A model of a late prehistoric Aboriginal economy in the coastal regions of the Western District.

distributed through appropriate trade and exchange networks. Judged on the distribution of greenstone artefacts from known geological provenances, it would appear that Gippsland was not included in the major distribution networks.

Inter-group relationships

It is now realised that the relationships between the Aboriginals and their land were complex, linking their economy and spiritual beliefs. There is ample evidence that Aboriginals were territorial and regarded themselves as the owners of the countryside. In some areas of Victoria particular clans laid claim to specific tracts of land and resources; for example, the Mt William axe quarries, and parts of the Salt Creek, an eeling stream near Lake Bolac.

The complex networks of social relationships that existed between Aboriginal groups also served to regulate their behaviour towards each other, and to ensure that resources could be shared equitably. Thus kinship networks allowed related groups to move into neighbouring territories and share resources in times of stress. However, one of the most important aspects of Aboriginal social and economic life was the large, often annual, meetings of related groups to share food resources, settle quarrels, arrange marriages, communicate news, perform ceremonies, and exchange goods. (See Figure 9 on page 20.) The trade and exchange networks were large, and bands travelled to these centres from areas hundreds of kilometres distant. Messengers were used to summon bands to meetings and an elaborate protocol was involved in accepting invitations, approaching the meeting places and camping at the venues. Meetings normally took place during summer, when resources were most diverse and plentiful.

Other than at these venues, where quarrels were settled in a ritual way, often without death or serious injury, the extent of inter-group and inter-tribal relationships is not known. Historical information suggests that conflicts were persistent and frequent, but to a large extent these were the direct result of dislocations precipitated in Aboriginal society by European colonisation. If William Buckley's account is any guide, small-scale conflicts were common and deaths frequent, which calls into question the efficacy of annual meetings to settle serious quarrels.

Aboriginals believed that deaths were never natural but were caused by their enemies. Thus a system of 'pay-back killings' was institutionalised in Aboriginal culture. European colonisation resulted in (among other things) the annexation of Aboriginal land, and reduction in the number of women in bands (caused by premature deaths, prostitution, and abduction by both Aboriginals and Europeans), and caused the cycle of pay-back killings to increase in frequency. More Aboriginals became involved, and the use of guns gave some groups a decided advantage.

Inter-group relationships are difficult to perceive in the archaeological record. Distributions of exotic stone materials have been mentioned already, and are valuable indicators of the extent of the trade and exchange networks. In this respect the most important research has been conducted on the distribution of greenstone hatchet heads from known quarry sites. The most important of these is the Mt William hatchet head quarry near Lancefield, which was still being exploited in the early 1840s. (See Figure 10 on page 22.) Material from this source has been found north of the Murray River, in South Australia, and between 600 and 700 kilometres from the quarry site. Hatchet heads from the Mt Camel axe quarry north of Bendigo, also had an extensive distribution, being found up to 600 kilometres away from the source. Other quarry sites such as those at Berrambool and Baronga on the Hopkins River have more localised distributions with most of the hatchet heads being found within a 100 kilometre radius of their sources.

The distribution of hatchet heads about their sources is not uniform and appears to be directional. When the distribution of hatchet heads is considered it seems that the Great Dividing Range served to insulate Gippsland Aboriginals from their northern and western neighbours. Elsewhere, the Hopkins, Goulburn, and Loddon Rivers probably facilitated the passage of goods and information over large distances.

There is little archaeological evidence for the flow of goods towards the quarry sites. However, coastal flint has been found in archaeological sites in the central Western District, at Lake Bolac, in mound sites, in the floors of rock shelters in the Grampians, and in many inland surface sites.



Source: (left) State Library of New South Wales, Mitchell Library, Sydney (right) R.B. Smyth 'Aboriginals of Victoria' Vol. 1, p. 278

FIGURE 8. The personal ornamentation of most Victorian Aboriginals, mainly from the Western District, included a short length of reed or bone through the nose and short, tubular sections of reed worn in the hair. Necklaces (right), consisting of short pieces of reed strung on twine or spun animal hair, were frequently worn.

Fragments of marine mussel have been found in one of the mounds near Lake Bolac. Berrambool greenstone and coastal flint occur in several dated contexts in the central Western District, the earliest being c. 2,300 BP. Hence it is likely that these trade and exchange networks were established at that time, and perhaps much earlier.

At Lake Bolac there is an immense archaeological site on the side of the lake. Excavations have demonstrated that the shoreline has been occupied intermittently from at least 12.500 BP up until the end of the prehistoric period. The upper layers of the site are associated with a great variety of stone materials, many of which are not of local origin. Moreover, at one time the eroded sections of the site were littered with hundreds of grinding stones which have been picked up by collectors over the past 100 years. The archaeological evidence from this site, reviewed in the context of a once rich and diverse local environment, indicates that Lake Bolac was a regular meeting place for Aboriginals, as the historical sources would suggest. Judged on the stratigraphic evidence, it is likely that the site assumed this role before c.500BP, at which time there is clear evidence for intensification of occupation along the margins of the lake. Lake Condah is likely to have served a similar role during the late prehistoric period.

There are two other aspects of inter-group relationships that merit mention, but for which there is no, and may never be, any archaeological evidence. The first of these is cannibalism. Several historical accounts claim that Aboriginals were cannibals, though eye witness accounts were few and the evidence tends to be ambiguous. Assistant Protector Seivwright witnessed the dismembering and consumption of an Aboriginal woman near Lake Tarong in 1841, and some credence must be attached to this account. Moreover, it is generally agreed that some Aboriginal groups practised ritual cannibalism.

Ceremonies, commonly known as corroborees, were another important aspect of Aboriginal spiritual and social life. Some of these were held in secret, some with just one sex, while others were held communally and were of a more secular nature. They were held frequently to honour a visiting group, to celebrate victory over a rival group, to cement friendships at the end of a conflict, or to celebrate a successful hunt. Dancing was accompanied by chants and songs, and body art was an integral part of these activities. The art was applied with the fingers and the media included charcoal, mixtures of white pipe-clay, red ochre, and animal fats. The important role of ochre in these ceremonies, and for the decoration of implements, has yet to be properly evaluated. However, it is known that it was an important item of trade and exchange in its own right.

ECONOMIC STRATEGIES

The strategies Aboriginals used to obtain food depended on a number of factors including seasonality, abundance, accessibility, and diversity of resources available in their foraging areas, as well as on technological and social factors. The availability of food resources varied from area to area.

Hunting and gathering

For most of the year Aboriginals foraged in families or groups of families known as bands. Their hunting and gathering activities tended to be confined to an area within a reasonable distance, usually a 10 to 15 kilometre radius, depending upon the geography of the surrounding terrain. Foraging activities were divided between men and women, with women focusing on activities such as collecting food plants and shellfish, or fishing, and the men on the hunting of larger animals such as kangaroo and emu.

Some foods were particularly sought-after and these can be divided into three groups: perennial, seasonal, and windfall, although the latter group was of marginal economic importance. Perennial and seasonal food can be divided further into staples and non-staples (the latter group can also be regarded as supplements).

Plant foods were the mainstay of Aboriginal diet in Victoria, and hundreds of plants are known to have been exploited. The myrnong or daisy yam* (*Microserus scapigera*) and bulrush (*Typha*) were particularly important in the Aboriginal economy and in season (spring-summer and summer-autumn, respectively) immense quantities of these plants were collected by Aboriginal women who sought their roots.

Seasonal runs of eels were exploited during March-April and shellfish from the seashores, estuaries, and margins of rivers and lakes, were favoured at certain times of the year. (See Figure 11 on page 24.) In the eastern highlands, Aboriginals congregated during October–November to catch the

*Daisy yam could be collected all year round, but it was easier to collect during the flowering season.



FIGURE 9. Locations of some trade, exchange, and ceremonial centres used by Aboriginals of the Western District and the approximate routes by which goods were brought to these centres.

Bogong moth, and in summer they sometimes congregated in the central Western District, or in the Murray Valley to conduct large-scale kangaroo drives.

Aboriginals tended to focus upon food resources which gave a high energy yield for minimum energy outlay. Other foods were chosen selectively for a variety of reasons; for example, to provide raw materials for the manufacture of artefacts, for their medicinal value, or because they were delicacies. Windfall seasonal foods were rarely passed over. Stranded whales are one example, berry fruits another. Contrary to popular belief, animals such as kangaroo, wallaby, or emu were not staples, because they were hunted with no guarantee of success.

In north-western Victoria, the Murray River maintains a varied and rich biota on the flood plain. The river is seasonal, swelling and flooding downstream in spring. Archaeological studies of large numbers of Aboriginal sites in the Nyah and Vinifera forests have thrown light on some aspects of Aboriginal economy in this area over the past 2,000 years. The available food resources in this area would have been reliable and confined to accessible and manageable areas in prehistoric times. Three basic types of sites, all artificial mounds, have been found. They consist of oven refuse (a mixture of charcoal and burnt clay pellets, flood plain sediments, and in varying degree, accumulated food refuse). The most common form of site, consisting almost exclusively of oven refuse, is located on the flood plain, and, was drowned during flood periods. For this reason they could only have been used during non-flood periods, that is, between late summer and autumn. There is no evidence that Aboriginals lived on the mounds, and it is likely that they camped adjacent to them on the flood plain.

The second type of mound site is rare. It tends to be very large and is located on a slight rise or on the levee banks of the anabranches. The core sediments are similar to those of the first type of mound, but there is evidence that they have been deliberately built up by adding sediments from the surrounding flood plain. This type of mound becomes an island during flood seasons, and since the upper horizons contain faunal debris and evidence of hearths, it is likely that they were camped on. However, the evidence of occupation is sparse which suggests that they were used only intermittently. Analysis of the faunal remains suggest that these sites were used during flood periods, according with historical accounts. They seem to have been used as bases from which Aboriginals were able to exploit the resources of the Murray River while it was in flood and/or when the flood waters were receding, when the flood plain itself was uninhabitable. Another unconfirmed possibility is that Aboriginals foraged for food on the mounds themselves.

A third type of site was found on the flood plain beyond high floodwater levels. In composition it resembles the second type of mound but it has no core. Its sediments contain a rich variety of animal bones, some tools, and charcoal. It has been tentatively suggested that these sites were base camps occupied during flood periods and that it was from these sites that Aboriginals conducted forays into flooded areas to camp on the larger mounds.

Only a few fragments of shell and bone have been recovered from the first type of site, so that little is known about the Aboriginal economy during non-flood periods. However, the major preoccupation on the island mounds during flood periods was fishing (including crayfish), supplemented by some shellfish gathering. However fish, kangaroo, emu, lizard, water rat, snake, and bandicoot were hunted from the base camps, and shellfish were collected. Consequently both riverine and terrestrial environments were exploited.

The archaeological and historical evidence for the area are in close agreement, and the economic model that is emerging from this area, spanning a period of at least 2,000 years, is of Aboriginal communities leading an essentially sedentary way of life, moving out onto the flood plains during non-flood seasons, and back towards the Mallee (beyond high flood levels) during flood periods.

The historical evidence suggests that the exploitation of food plants was particularly important, especially the harvesting of the bulrush (*Typha*) which was at one time very abundant in this area. Not only was it an important food plant, but its roots were used for making cord, which in turn was employed in making a variety of artefacts. Thus while there is no archaeological evidence for the exploitation of food plants, given a close correlation between the historical and archaeological evidence, it can be assumed that plants such as bulrush were consistent components of the diet.

Detailed archaeological studies elsewhere along the Murray River have so far thrown little light on Aboriginal economy. Some ephemeral campsites, dating from 16,500 BP, where Aboriginals have discarded the shells of freshwater shellfish after consuming them at the site, have been found. Judged on historical evidence from other parts of Australia, these are most likely to have been women's camps, occupied for a few hours during the day, when shellfish were gathered from the Murray River.

The central Western District is a flat to undulating, poorly drained basalt plain and the most significant physiographic feature of the region is the large number of perennial and intermittent lakes



Source: Dr I. McBride, Australian National University

FIGURE 10. Mt William, near Lancefield, was the most famous source of stone for axes. Called diorite, this stone was traded over a wide area (shown shaded in map) with the exception of Gippsland, where diorite axes were rare.

and swamps. Although the vegetation associations were diverse, there were two major associations of special economic importance; these were the grasslands and savannah woodlands. Many of their resources were seasonal. The grasslands had one serious drawback: a lack of fuel for fire, and timber and bark for manufacture of artefacts and habitations.

Archaeological surveys in the central Western District have located numerous types of sites including earthen mounds, lithic scatters, scarred trees, quarry sites, axe grinding grooves, rock wells, rock hearth sites, and rock arrangements. The earliest site (at Lake Bolac) dates from c.12,500 BP where there is evidence to suggest that Aboriginals were hunting and butchering red kangaroo (*Megalia rufa*). Given the extensive nature of the site, and evidence of this animal, it is possible that communal drives were used to capture it.

From 12,500 BP until about 3,000 BP there is a gap in the archaeological record, but from 3,000 BP until the end of the prehistoric period there is considerable archaeological evidence from the central Western District. A synthesis of the evidence suggests that there were two forms of campsites in the central Western District:

(1) Earthern mounds associated with occupation between late autumn and spring; these are located invariably beside creeks, lakes, or rivers. The majority of the mounds occur singly, but there are many clusters of up to sixteen. (However, they occur more frequently in pairs or triples.) Aboriginal 'village sites' have already been mentioned, and these too were located adjacent to reliable hydrological resources. Although none of these have been identified equivocally during archaeological surveys it is likely that some of the clusters of low mound sites are archaeological manifestations of these villages. (2) Lithic sites, frequently located in sand dunes, around the margins of swamps or lakes, or on river terraces, and the largest of which are located adjacent to perennial water resources.

An analysis of the size of the mounds in environmental context, demonstrated that almost without exception the largest mounds are located in the most favourable environmental niches, whereas smaller isolated mounds and those not located within the general vicinity of larger mounds, are situated in less reliable, more ephemeral environmental niches. Many of the mounds are directly

associated with highly ephemeral or seasonal water supplies. The same analysis enabled mounds to be classified into three groups:

(1) those that were located in areas with highly predictable resources that could have accommodated band-size or larger groups, were occupied regularly and could have been associated with semi-sedentary occupation;

(2) those that were located in areas with seasonal but less predictable resources that were probably exploited when the opportunity arose and where occupation would have been more intermittent; and (3) those that were located in areas where resources were unpredictable, and where occupation would have been very intermittent.

Faunal evidence from the larger mounds suggests that Aboriginals hunted a wide range of fauna including freshwater crayfish, snake, lizard, turtle, bird, bandicoot, wallaby, kangaroo, and native rat, as well as collecting birds' eggs (including emu), and freshwater mussels. A range of habitats was exploited – aquatic, terrestrial, and subterranean – and a variety of food-getting strategies are implicit (collecting, hunting with nets, snares, and spears, digging, and fishing). All these fauna are known to have been hunted or gathered by Aboriginals at the end of the prehistoric period (before c. 1840 AD), and the particular techniques are described in the historical literature. So far no evidence for the exploitation of plant foods has been found, though cooking pits suitable for processing the roots of the daisy yam have been unearthed in some of the mounds.

Evidence from rock shelters in the Grampians suggest that Aboriginals in that area hunted small animals such as lizard and bandicoot, collected freshwater shellfish, and emu eggs. Plant remains have been found in the deposits and some of the species identified are known to have been exploited by Aboriginals for food or for medicinal purposes. In general the faunal assemblages in this area are indicative of a transient population that hunted and collected in the immediate vicinity of the sites.

Lithic scatter sites tend to occur in the same general area as mounds, but are mutually exclusive of them. Since the largest sites tend to occur in association with perennial water resources, it has been postulated that these sites were generally occupied during the warmer months of the year, when such locations would have been more comfortable and convenient than alternative venues. (See Figure 12 on page 26.) Unfortunately faunal data have not been found at these sites, so that it is not possible to test this hypothesis, or to identify the target resources associated with this aspect of the settlement pattern. However, if these sites were occupied between spring and summer, judged on historical information, it is likely that there was a strong emphasis on the gathering of food plants, fishing, bird snaring, and the hunting of reptiles, and to some extent, larger animals.

Eel fishing was particularly important during autumn, but these fish can also be captured at any other time of the year. However, eels can only be taken in the streams and wetlands associated with drainage systems to the south of the Great Dividing Range, as the animals require access to the sea to breed.

The picture that is beginning to emerge for the central Western District is of Aboriginals leading a highly patterned existence, for at least the past 2,000 to 3,000 years, living on earthen mounds located in poorly drained areas or in village sites in better drained localities between late autumn and spring, and practising a broad spectrum economy. Sites were carefully chosen to allow access to a wide range of resources. During winter occupation was semi-sedentary and between spring and autumn Aboriginals moved off the mounds or out of their village sites to become more mobile and follow the seasonal schedules of local flora and fauna. At this time of the year there was more emphasis on the harvesting of food plants. During the height of summer, Aboriginals tended to camp along the margins of the major stream systems and around perennial water resources where fuel, food, and water were comparatively abundant and readily accessible. During autumn, they continued to locate themselves adjacent to streams and wetlands until the eeling season began and possibly while it was in progress, at which time they once again moved on to the mounds or to their village sites.

Like the riverine environment, coastal areas tended to be rich in potential food and useful natural resources and these could be both diverse and localised. The coastal area can be divided into a number of zones:

(1) offshore ocean, high energy;

(2) intertidal, which includes sections of both high energy and low energy coastline;

(3) foredune/cliff areas immediately behind the intertidal zone; and

(4) hinterland, an area up to ten to fifteen kilometres inland from the coast.

The bountiful resources of the ocean can only be tapped when man possesses appropriate technology. A major prerequisite is an ability to build and maintain safe seacraft. Even then, the



Source: Australasian Sketcher, 31.7.1880, p.181 FIGURE 11. A scene showing Aboriginals using a three pronged fishing spear to catch eels.

frequency of hunting and fishing is limited by prevailing weather conditions. The Aboriginals of Victoria do not seem to have had such craft, and so far there is no convincing archaeological evidence from the many coastal midden sites investigated that Aboriginals exploited offshore marine resources, either along the high energy coastlines, or in less volatile areas such as Western Port and Port Phillip Bay. Nor is there such evidence from historical sources, though it is known that Aboriginals made journeys to French and Rabbit Islands, and there is archaeological evidence on the Great Glennie and Lady Julia Percy Islands which suggests that they made occasional journeys to them.

The intertidal areas were the focus of considerable economic activity, both along high energy and low energy coastlines. Resources of this zone vary: shellfish are available from the sandy beaches and rock platforms, crayfish, crabs, and many species of fish, particularly labrids, can be caught in rock pools and the inshore areas; stranded whales, seals, and bird carcasses occur on the sandy beaches, and seal colonies were once probably more common along the coastline than they are today. Some of these resources are seasonal or have seasonal trends.

In areas immediately behind the intertidal zones, in the sand dunes and on the headlands, other potentially rich food resources were available. These included birds, such as mutton-birds and penguins, which are highly seasonal but relatively easy to catch during breeding seasons. There is also a range of terrestrial animals such as rats, snakes, and lizards.

A variety of environments are found behind the coastline, ranging from aquatic through grassland to closed forest. Each of these environments has its own characteristic range of resources which could have been tapped by coastal Aboriginal populations. Large estuaries such as Mallacoota and the Gippsland Lakes, although not common, were possibly among the richest food resource areas along the Victorian coastline. They are saline aquatic environments, the resources of which were effectively exploited by Aboriginals using fairly simple means. Since other environments bordered on the shores of these estuaries, the shorelines were favourable places to camp, because from there Aboriginals were able to tap both aquatic and terrestrial resources with relative ease.

Literally thousands of Aboriginal sites have been recorded along the Victorian coastline. Typical sites consist of scatters of shell mixed with a few stone artefacts. Aboriginals showed a strong

preference for camping in sandy environments and where possible they collected rock platform species of shellfish, particularly wavy turbo (*Subninella undulata*) and limpet (*Cellana*). Campsites were normally located within 200 metres of the coastline and not far distant from shellfish collecting areas, though in some instances shellfish were transported to sites up to five kilometres from the coast.

Two basic types of coastal camp site have already been described. Temporary camps are found along the entire Victorian coastline. Evidence from those that have been excavated suggests that they were function-specific sites associated with the gathering of shellfish and the capture of crabs and crayfish. They are frequently associated with shallow scoop hearths. No evidence of shelters has been found in them.

While there are numbers of base camps in evidence along the coast, they are rare by comparison with temporary camps. So far only four such sites have been investigated in detail. These are located at Armstrong Bay situated near Warrnambool (dating from c. 5,000 BP), Seal Point at Cape Otway (dating from c. 1,400 BP), Yanakie Isthmus north of Wilsons Promontory (dating from c. 5,000 BP), and Captains Point at Mallacoota (dating from c. 2,000 BP). All these sites are located in favourable environmental contexts with ready access to a wide range of resources.

Leaving aside the Yanakie sites where no faunal data other than shellfish were recovered, there is evidence at the other three sites of shellfish gathering involving a number of strategies, the hunting of terrestrial animals such as kangaroo and wallaby as well as smaller animals such as possum, of sea mammals such as seal, and of burrowing animals such as bandicoot. At Seal Point and Captains Point there is also evidence of fishing. All three sites are associated with bone points and the manufacture of throwaway stone tools. The Yanakie sites yielded abundant evidence for the production of a wide range of stone tools. Seal Point is particularly interesting because several circular depressions were discovered that have been interpreted as house sites.

Evidence from two other sites situated in the hinterland not far distant from the coast is also relevant. These are the Glenaire rock shelter near Cape Otway (dating from c. 370 BP) and the most recent deposits in a cave overlooking the Bridgewater Lakes (probably less than 2,000 years old).

The Glenaire site has many of the characteristics of a base camp, including a specialised industry for the manufacture of bone points. However, the evidence also suggests that it was occupied very intermittently, and the range of fauna represented in the occupation deposits is quite different from what one would expect given a knowledge of the surrounding environment. Hence this site falls somewhere between a base camp and a temporary camp and could have been associated specifically with the production of bone points.

In contrast, the Bridgewater cave site yielded evidence of a wide variety of fauna fairly representative of the range available locally. Stone was plentiful also but a high wastage rate suggests a throwaway tool kit was used. By comparison with the Glenaire site there were few bone points. This site has the hallmarks of a base camp, and even though it is located some 2 kilometres inland from the coast, some maritime resources were exploited. However, the emphasis was on the hunting of terrestrial animals.

One aspect that all recent sites seem to have in common is that all of the faunal remains other than shells tend to be highly fragmented, frequently burnt, and often calcined. This was the case at sites in the Grampians, in the mounds, in the stone houses, and at coastal sites. The reason for this is not clear, and no explanations are forthcoming from the historical sources.

Catching, collecting, and processing foods

Aboriginals used all manner of artefacts and devices to capture game and to collect foods. Many of these are invisible in the archaeological record because they were made from organic materials which have not survived. However, some are adequately described in the historical sources and give an indication of the diversity of strategies available to Aboriginals at the end of the prehistoric period. In relation to economic pursuits, they may be divided into three basic groups:

(1) extractive, those that are directly associated with the food quest;

(2) supportive, those indirectly associated with the food quest; and

(3) processing, those involved with techniques for disposing of the food hunted and gathered. Some of the artefacts associated with each group are briefly described below.

Fishing techniques and equipment varied from area to area. On the Murray River some fish were caught with nets and fishing lines, some were poisoned, and some were trapped behind weirs built across tributaries of the river. There were different kinds of nets, including hand, set, and drag nets. The largest were seine nets often hundreds of metres long and up to two metres wide.



Source: LaTrobe Collection, State Library of Victoria

FIGURE 12. 'Native encampment on banks of Yarra', 1847. A watercolour by Joseph Cotton. This scene shows several temporary shelters, probably a summer camp, constructed from tree branches and bark sheets, some covered with leaves. The woman has a wooden digging stick, headband, and possibly a European blanket.

A type of hoop net about two metres long was used to catch crayfish. The nets were made from the fibres of the bulrush. Bulrush roots were cooked in an oven, and after removing the skin, the plant was masticated until only the fibrous materials remained. These were cleaned and scraped with a mussel shell and then rolled into hanks to make ropes, nets, and strings.

One of the most useful artefacts for capturing fish was the reed spear. Strong tall reeds were cut from the bulrush beds and tipped with points made from emu bone or fire-hardened wooden points. Some fish spears were armed with multi-pronged barb points. Fishing lines, some 30 to 40 metres long, were also used with bone fish-hooks which were baited with shellfish meat. So far bone fish-hooks have been found in only one archaeological context along the Murray River, but there is no doubt that they were used in prehistoric times.

Canoes were an important aid to fishing. Normally they were made from red gum bark, could hold up to six people, and lasted for about two years. They were propelled by poles and for fishing at night they carried small clay fireplaces where fires were lit to attract fish to the surface and on which the fish were cooked. There is abundant archaeological evidence of canoe making activities along the Murray River, where thousands of scarred trees can still be seen.

In the central Western District weirs were constructed from basalt boulders and/or rushes and small timbers, and placed across streams. (See Figure 13 on page 30.) Holes were left in the weirs, where large tapering nets were fitted to capture fish when they tried to swim through. Other forms of fishing devices have already been described for the Lake Condah and Toolondo areas. However, these were not unique. In 1841, G.A. Robinson observed numerous earth channels, weirs, and fish traps in an area covering several hectares to the south-west of Mt William.

Fish were also captured with spears in the central Western District and night fishing was conducted on the margins of swamps and lakes. Fishermen operated from stages erected over the water, attracting fish to the surface by means of torches so that they could be dispatched with spears. Baited fishing lines were used but in this area hooks were not employed.

On the coast, fishing methods also varied. In Gippsland, exclusive of the Mallacoota area, Aboriginals used shellfish hooks, and around the Geelong district fishing lines were fitted with bone bi-points. Nets and spears were used, some armed with bone points. In the largest estuaries, canoes were used. These were more complex than those made on the Murray River. They were made from a sheet of bark, the ends of which were folded, tied up, and stopped with clay. They were strengthened by fitting them with wooden ribs.

On the Murray River, seine nets were also used for capturing ducks. They were erected just above the water line. The ducks were then startled and driven into the nets. Nets were used also to take emus and kangaroos. Spears were employed to kill a wide range of animals including kangaroos and emus. The favoured implement was a reed spear about 2 metres long, tipped with a long fire-hardened wooden point. However, hunters often carried a variety of spears with them to give them maximum flexibility while out hunting. Possum and koala hunting in the forests was another important economic activity and required a hatchet for cutting toe holds. Wombats were also hunted and digging sticks were required in order to capture them.

In the central Western District kangaroos and emus were hunted throughout the year and several methods were employed to capture them. In open country the hunters hid themselves in bowers made of branches and leaves and when animals came within range they were dispatched with spears. Bird hunting was also important. They were taken with long wooden rods equipped with nooses. When the hunter moved close to his quarry, the noose was slipped over its head and pulled tight. Snares, screens, and bowers were also used to capture birds.

In scrub country Aboriginals used dingoes to run their quarry down. Communal hunting was sometimes used to capture kangaroos during summer. The hunters spread out over the plain in a large semi-circle and the animals were gradually forced into a trap where they could be easily dispatched. There are constant references in the historical sources to the use of fire, but how it was employed is not always specified. It is likely to have been used as a hunting aid, to burn off dense undergrowth to keep animal paths open. Constant burning also ensured that there was a continuing supply of new feed for herbivorous animals.

On the coast similar technologies were used for capturing game. Birds were normally caught during the breeding season and no special equipment was required for this activity. Seals were taken with clubs and in Gippsland it was the men who captured moulting swans and ducks during the breeding seasons.

All over Victoria plant foods, particularly roots and tubers, were collected by hand with the aid of digging sticks. On the Murray River the roots of the bulrush were dug out in great quantities by women during summer and autumn when the river levels were lowest. Many plants, such as bulrush and nardoo seeds, had to be processed further before they could be consumed. Seeds were often ground on a grinding stone, winnowed, and then made into a kind of damper before being cooked in an open fire.

None of the subsidiary implements associated with collecting and processing food plants have been found in primary archaeological contexts althought many grinding stones have been located on eroded sites.

Lerp is an insect secretion which covers the Mallee scrub for a few weeks during summer. It is a sugary substance and was collected in large quantities, mixed with water and drunk. To gather, process, and consume it, Aboriginals had to carry water into the Mallee in bark or skin containers. The Mallee scrub was fired periodically to facilitate production of lerp.

Shellfish were collected from rivers by diving into the water. The women, who were mainly responsible for this activity, usually carried string bags in which to store the shellfish.

On the western plains, particularly from spring onwards, women dug up the daisy yam with long digging sticks. Its tap roots were deposited in baskets and carried to campsites where they were eaten raw or steamed in large earth ovens. During spring, birds' eggs were collected and berries were plucked from trees as they came into season. As on the Murray River, the women collected shellfish from the streams and rivers and from the intertidal coastal platforms. Again, no special equipment was required for these activities, other than strong carry bags that were slung over the back.

A great deal of energy and organisation was needed to produce and maintain some of the extractive implements. In some instances both men and women were involved, and for others, particular items had to be obtained through trade and exchange networks. The production of rope and canoes are two examples already mentioned, but there are many others, for example, the production of hatchets. Aboriginals on the Murray River obtained suitable stone materials for hatchet heads by trading it in

from outside. It is known that Mt William near Lancefield was the source of some of this material. Stone had to be flaked, ground, and polished. This meant that a suitable grinding medium had to be located. The scrub had to be searched to find a suitable material for a haft and gum had to be located to fix the head into the haft. Again cord had to be manufactured or sinews collected to bind the implement into its haft.

Much is also known about the processing and ancillary equipment associated with the food quest, although specific information is lacking for many areas of Victoria and for many types of foods. One of the most serious gaps in our knowledge is the absence of information about how Victorian Aboriginals made and used stone tools, as these were very important for the manufacture and maintenance of extractive tools and for processing various sorts of food. It is known that Aboriginals manufactured hatchet heads but there are no details of how it was done. It is also known that Aboriginals in the coastal districts hafted small quartz flakes onto spear points to make barbs. Artefacts other than those made from stone are known to have been used: Aboriginals sometimes used certain species of shell (freshwater mussels and marine bi-valves) as knives and scrapers, bone points were used for engraving; baskets and bark trays were used for transporting tools and food; and wooden pegs were used for stretching animal skins.

Foods were processed variously, but in the case of mammals there was a tendency to cook them with a minimum of modification. Steam ovens were used, but foods were also roasted in open fires by covering them with hot ashes and charcoal. Many foods were eaten raw.

The archaeological perspective of extractive, maintenance, and processing tools is lean, principally because many of the key artefacts were made of organic materials and have not survived in archaeological contexts. In general, archaeological sites tend to yield only stone and bone tools, and archaeologists are left therefore with the problem of deducing function from a very selective range of artefacts. Although many sites have yielded large assemblages of stone artefacts, and others have produced bone uni-points and bi-points, the functions of many of the tools are not known still.

The historical records suggest that bone points had a wide variety of functions such as fish gouges (bi-points), spear points for hunting kangaroos, multi-pronged spears for capturing fish, nose bones (bi-points), removing splinters, piercing skins, and making nets. Bone points have been recorded from a number of sites including an early example from Clogg's Cave near Buchan, which dates from some time after 18,000 BP; from Captains Point, Mallacoota Inlet dating from c.2,000 BP; from Glenaire II and Seal Point near Cape Otway dating from 1,400 BP; and hundreds of examples from Armstrong Bay which date from some time after 5,000 BP.

Given the context of the finds at Clogg's Cave, an inland site, the points could hardly have been used to arm fish spears, and it has been suggested that they may have been used to pierce possum or kangaroo skins. At Mallacoota, there is clear evidence that bone uni-points were manufactured on site, and grooved sandstone blocks used for grinding the points have been recovered. Moreover, fishing and hunting of terrestrial animals were two major activities in evidence at the site, and it is very likely that the points were used to arm hunting spears.

A range of bone uni-points and bi-points were recovered from a midden at Seal Point where there is evidence that Aboriginals practised a mixed economy, though there was a strong focus on the exploitation of terrestrial fauna and seals. In this instance it has not been possible to assign functions to the points because of a lack of corroborative evidence.

Similarly the assemblage of uni-points and bi-points from Glenaire II is difficult to interpret. However, there is evidence that bone tools were manufactured at the site and that stone tools were used to make them. The points have been manufactured by two processes. In the first a rough outline of the point was engraved on mammal long bones and then the bone was gouged along the outline until it had been cut right through, or at an appropriate stage it was snapped or split with the aid of wedges. The points were then finished by grinding. The other technique involved snapping off the end of the long bones, splitting, and then grinding them.

With the exception of Clogg's Cave, no archaeological evidence of bone points or bone point manufacture has been found at inland sites. It might be anticipated that such evidence would be forthcoming in the future, particularly at sites in the Murray Valley where bone points are known to have been used. However, they are found along the entire Victorian coastline, and it seems reasonable to suppose, therefore, that at least some varieties of bone points were associated specifically with the exploitation of coastal resources.

Victorian stone tool assemblages are highly variable and it is probably true to say that to date none have been defined adequately. Extensive excavations have been conducted at Green Gully and a



Bunjils Cave, western Victoria. This site is now considered to be the most important art site in the State because it is the only one for which there is any ethnographic reference, and because of the significance of Bunjil, the All-father, in Aboriginal religion.

R. G. Gunn

An Aboriginal canal connecting two ponds made by prising out basalt boulders from the intervening area. *P. J. F. Courts*









Ghost shelter, Grampians. White paintings are thought to represent the most recent Aboriginal art phase in the Grampians. This well-preserved group of figures is one of the most dramatic in Victorian rock art. R. G. Gunn

(Right) Aboriginal tools known as 'backed blades' made from coastal flint. Such artefacts were commonly manufactured by Aboriginals between 400 and 1,000 BP (Before Present, i.e. 1950).

P. J. F. Coutts

(Below) Excavations conducted on a large earthen mound on the Murray River. These mounds comprise immense quantities of burnt clay, charcoal, and ash mixed with flood plain sediments and some food refuse. *P. J. F. Coutts*



continuous sequence of stone tools, meagre though the sample may be, has been established from the late prehistoric period to at least c.17,000 BP. These excavations have produced evidence of several types of stone tools made from quartz, quartzite, igneous rock, and other fine-grained materials. These tools were made locally. In the earlier deposits (pre-dating c.8,000 BP) three characteristic tool types have been identified: 'fabricators', 'thumbnail' scrapers, and other forms of scrapers, some of large size. Later assemblages contain slightly different suites of tools. They tend to be smaller and the industry is characterised by the presence of backed blades (tools shaped like an orange segment, less than three centimetres long and with minute working on the 'thick' margin), a variety of small scrapers and unifacially flaked pebble tools.

None of these tools have been ascribed specific functions, and the role of the fabricator in stone tool manufacture is currently a matter of debate. However, it is likely that many of the other tools were used for the manufacture and maintenance of hunting equipment.

Other assemblages of Pleistocene or early Holocene antiquity from Kow Swamp and Lake Bolac are equally ambiguous on the question of tool function. However, the Kow Swamp assemblage does share one aspect in common with that from Green Gully, since fabricators were recovered from the earliest levels.

A number of sites dating from c.5,000 BP have been excavated, but most of these are located on the coast. So far none of the sites excavated in the Murray Valley have yielded stone, though the historical evidence suggests that shells were frequently used in lieu of stone as cutting implements. Nevertheless there are large scatters of stone tools in the Mallee assemblages, comprising predominantly local silcretes together with quartzite and quartz, plus a variety of implements including scrapers and backed blades. Large core tools have been found only rarely and then only in particular localities. In general most of the sites in the Mallee appear to be late prehistoric in age and fall into two groups: large sites, where stone tools have been manufactured, repaired, and discarded; and smaller sites, where tools have been discarded and evidence of manufacture is minimal or absent.

Sites in the central Western District are usually associated with a wide variety of material types though quartz is often predominant. There is abundant evidence at some of the mounds that stone tools were manufactured, used, and discarded, and a wide range of functions can be inferred—from the manufacture and manipulation of timber to the production of barbs and points for spears. Backed blades, thumbnail scrapers, and fabricators are all present, and some of the tools were hafted to make adzes. The basic tool making technology in evidence is percussion flaking (striking a core with a hammer), though the small tools, such as backed blades, may have been modified by pressure flaking (removing minute flakes from the tools by the application of steady pressure). Flakes and cores of greenstone, together with roughed hatchet heads at these sites suggest that hatchets were made locally.

Assemblages associated with the rock shelters in the Grampians (dating from 2,300 BP) are very similar to those found in the mounds in the central Western District, though the evidence is not as substantial. Fragments of greenstone from edge-ground hatchet heads, hammerstones, and possible grinding stones have been recovered from these sites. Backed blades appear to have been used as barbs and points for spears. Other tools were probably used for maintenance activities, and some for working of hard timber. One of these sites yielded a burnishing implement that could have been used for processing skins.

On the coast, most of the cphemeral sites are associated with utilitarian stone tool kits, or no stone tools at all. Characteristically these assemblages have few, if any, readily recognisable tools. Very few artefacts show obvious evidence of use and it is likely that these tools were used for functions such as cutting soft materials (e.g. butchering fish or processing plant foods).

Assemblages from a number of base camp sites have been analysed in detail, though entirely different analytical approaches have been used by different workers. At Wilsons Promontory, for example, sites contain large quantities of manufacturing debris including artefacts of flint, quartz, and quartzite, and other fine-grained materials, plus anvils, and hammerstones. A very wide range of tools was produced including varieties of scrapers that could have been used for working both hard and soft timbers, backed blades, fabricators, and possibly awls and/or drills.

At Seal Point, Cape Otway, the Aboriginals used a similar range of materials, producing a number of scrapers that were probably used for light duty woodworking, and for the manufacture and maintenance of wooden tools. Sandstone pestles and mortars were recovered as well, and it is thought that they were used for processing bracken fern. An edge ground hatchet head (c.500 BP), made of greenstone from the Berrambool quarries was found also.

At January 1985, the study of the stone tool assemblage from the Glenaire II site, not far distant from Seal Point, is the most comprehensive conducted in Victoria. The tools can be divided into several kits:

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Aboriginals built weirs (*yere. roc*) across streams to catch eels. These could be made of rocks, timber, grass, or reeds. They left holes in the weirs and inserted long funnel shaped nets called *arrabine* into them. The wing walls of the weirs channelled the eels towards the nets. When they passed out of the other end of the nets, the Aboriginals grabbed them with their hands, bit them on the back of the neck and strung them onto sticks called *lingeer*. Another device used to catch fish was the bag net (top right), a boat shaped device that could be dragged along the river bed to scoop up fish.

Source: State Library of New South Wales, Mitchell Library, Sydney

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FIGURE 13. Aboriginals used a number of fishing devices and methods to catch eels, including weirs and nets of various shapes, sizes, and materials.

(1) a boneworking kit comprising artefacts known as burins, gravers, and bi-polar tools used in conjunction with bone and wooden billets;

- (2) a woodworking kit consisting of scrapers, adzes, and stone hatchets;
- (3) a plant processing kit consisting of cutting and scraping tools; and
- (4) a stone manufacturing kit comprising hammerstones, cores, and anvils.

Effects of change in the climate and environment

Aboriginals have lived on the Victorian landscape for at least 40,000 years. During that time the climate and environment of Victoria has changed and consequently one might expect changes to have occurred in Aboriginal culture. Such changes could have been initiated from inside through invention and adaptation, as well as from outside through diffusion of ideas and as a result of changes in the environment. Around 18,000 years ago, the world was at the height of the last glacial maximum and the sea level was approximately 130 metres below its present level. At that time Tasmania and Victoria were joined by a land-bridge that commenced at Wilsons Promontory and the Victorian coastline was some kilometres away from its present position. Port Phillip Bay did not exist from 18,000 to 10,000 BP, the climate was colder and drier than it is today and many of the present Victorian lakes were either dry or held less water. From c.10,000 BP the ocean levels began to rise, and in consequence Aboriginal populations inhabiting the coastal areas would have had to retreat slowly in front of the advancing waters.

Eventually, the land-bridge between Tasmania and the mainland was cut and water filled the shallow depression that is known today as Port Phillip Bay. Between 6,000 and 8,000 BP the coastline stabilised, but in the interim an immense area of land had been lost. The Victorian coastline was unprotected, and subject to battering by high energy swells. On the positive side, Port Phillip Bay and a number of coastal estuaries were eventually formed, all of which were associated with a great diversity of readily accessible food resources.

One can readily anticipate that these changes in coastline, which may not have been perceptible to Aboriginals during their individual lifetimes, must have induced long-term changes in coastal settlement patterns, and these in turn would have affected Aboriginal communities living further inland. Unfortunately coastal Aboriginal sites that pre-date 6,000 to 8,000 BP, which could provide the vital documentation for this period of Aboriginal history, are now under water.

Evidence from a range of inland sites indicates that Aboriginals occupied the interior of Victoria during the arid phase. There is considerable evidence that prior to 15,000 BP and possibly even later, Victoria had been colonised by a number of giant marsupials that, for reasons that are not yet understood, became extinct by about this time. These animals included a hippopotamus-like creature (*Diprotodon*) which was the largest marsupial known; a carnivorous marsupial lion (*Thylacoleo*); a short-faced, heavy-bodied kangaroo (*Procoptodon*); a very large kangaroo (*Macropos titan*), probably an ancestor of the modern grey kangaroo (*Macropos giganteus*); giant emus (*Genyornis*) and (*Dromornis*); and giant lizards (of the family Varanidae). Remains of some of these animals have been found at Keilor and at an important fossil site near Lancefield. The radiocarbon dates and stratigraphic evidence from these and other sites confirm beyond doubt that Aboriginals and these now extinct animals were living on the Victoria landscape contemporaneously. However, no archaeological sites have been discovered in Victoria at which there is unequivocal evidence that man hunted the megafauna. There is much speculation about the relationship between the Aboriginals and the giant marsupials and certainly it is inconceivable that they were not hunted by Aboriginals. It is the role, if any, of Aboriginals, in the extinction of these animals that is of most interest.

Archaeological evidence elsewhere in Australia suggests that Pleistocene Aboriginals made and used tools that belonged to the so-called 'core tool and scraper tradition', that is, they possessed a tool kit that consisted predominantly of woodworking tools comprising a variety of scrapers, choppers, pebble tools, 'horsehoof' cores, and planing tools, frequently made from quartzite. So far, the Pleistocene sites that have been systematically investigated in Victoria have yielded insufficient tools to adequately define the industry.

From c.10,000 BP the climate gradually improved. Temperature and humidity increased, precipitation increased, and the lakes filled. However, some of the lakes became saline. In some areas this may have induced minor changes in human settlement patterns. There is also some evidence for a temperature maximum between 7,500 and 5,000 BP after which there have been minor fluctuations in precipitation and lake levels. Such changes may also have brought about minor changes in settlement patterns.

It might be anticipated then, that as the climate ameliorated, there would be minor changes in the

distribution of flora and fauna which in turn may have affected Aboriginal culture. Such changes ought to be reflected in the archaeological record. Indeed changes do occur, but whether these were precipitated by changes in climate has yet to be demonstrated.

Archaeological deposits that postdate c. 5,000 BP are associated with a wide range of tools, many of which have not been found in earlier sites and are clearly innovations. The new suite of tools has been labelled the 'small tool and scraper tradition', though its components vary from region to region. Some of the new tools involved complex techniques of manufacture. They involved preparing cores with particular tool types or shapes in mind. Flakes with the desired characteristics were struck off the core and then modified further to obtain the finished tool. In general the tools were smaller than those made in the previous phase, a length less than three centimetres long being quite common. There is also evidence that they were used more intensively than in the preceding phase. The production of backed blades is common during this period. During this phase there was a strong preference for making implements from fine-grained materials such as chert, chalcedony, flint, quartzites, and silcretes. However, quartz is found frequently in significant quantities in many sites. Evidence of the 'small tool and scraper tradition', and in particular the production of backed blades, is widespread in Victoria. The industry is found throughout the Mallee, but has not yet been documented for the Murray River basin.

Further on in time, there is again evidence of change. At sites such as Glenaire II, Seal Point, and many other locations along the coast of Victoria including Wilsons Promontory, and at some of the mound sites in the central Western District, there are indications of a simplification in the stone tool kit. Backed blades and evidence of blade technology are rare or absent, and the quality of the backed blades appears to deteriorate. In some areas there is evidence of a simplification in the type and variety of materials that are used. At Wilsons Promontory for example, exotic materials such as cherts, chalcedonies, and quartzites become rarer, in favour of quartz and flint. However, inland at sites in the Grampians, where quartz is the predominant material throughout all levels, the percentage of fine-grained material tends to increase over time, and at Condah Swamp, very recent sites contain only coastal flint. At Lake Bolac the most recent levels are associated with a diverse range of materials but the percentage contribution of quartz, high in earlier levels, increases further.

This apparent lack of consistency from one area to another is a characteristic of recent sites, and is a reflection of the inadequacy of current archaeological knowledge in Victoria. In the Mallacoota region sites situated only a few kilometres apart and spanning approximately the same period of time contain totally different suites of artefacts. The same situation occurs in western Victoria.

There is no simple explanation for these differences. It has been postulated that some types of coastal site reflect different ranges of activities and it is reasonable to argue therefore that different ranges of tools should be associated with them. The same argument can be applied to sites in the hinterland but at the present time it is not possible to test hypotheses because the appropriate archaeological data have not been obtained. What is likely to have happened is that over the past 5,000 years there has been considerable diversification in settlement types. This would produce regional variations in stone technology, possibly caused by restrictions on access to stone resources or by depletion of some of them.

There have been other significant changes in the Victorian landscape over the past 20,000 years. Volcanoes have erupted in the western plains, for example at Tower Hill approximately 11,000 BP, and sometime earlier at Mt Eccles further to the west. In the case of Tower Hill it has been established that the local coastline was destroyed and the major drainage system was radically altered. Clearly the eruption must have affected Aboriginal occupation of the area though the extent of the dislocation has yet to be documented. By 5,000 BP the resources of the coastline had recovered sufficiently to allow Aboriginals to re-colonise it. However, geomorphological and archaeological evidence suggests that the coastline has undergone considerable changes over the past 5,000 years. At one time it had a rocky shoreline and some sandy beaches, whereas today it is all sandy beach. Further east, at Thunder Point, the effects of the volcanic eruption were less dramatic, and Aboriginals camped on cliff tops overlooking the sea as the ash was deposited around them.

The Mt Eccles eruption blocked the major drainage system. It was filled with basalt, and as a result Lake Condah and Condah Swamp were formed, the latter about 6,500 years ago. Both the lake and the swamp eventually became important sources of food for Aboriginals of this region. A new drainage channel, the Darlot Creek, formed along the margins of the lava flow allowing excess water from these two bodies to be diverted to the sea. Some time after the eruption, when the swamps and lake systems had been colonised by fish, especially eels, Aboriginals started to build fish traps, channels, and weirs among the basalt flows along its northern margin and along the Darlot Creek.

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Changes in the coastline, other than those documented for Armstrong Bay, have taken place over the past 8,000 years and these have affected Aboriginal foraging strategies and settlement patterns. Thus over a period of some thousands of years terminating around 2,000 BP the coastline on the east side of Yanakie isthmus north of Wilsons Promontory has been converted from a series of small baylets and rocky shorelines to a single stretch of sandy beach. In so doing the range and diversity of shellfish were greatly reduced and this is reflected in the shell middens found on the adjacent coastline. At Jack Smith Lake on the Gippsland coast there is evidence of significant changes over the past few thousand years that have, in turn, affected shellfish gathering and fishing strategies in that area. Finally, there have been significant changes in the coastline in the vicinity of Mallacoota Inlet through the Holocene, and these too have affected local settlement patterns.

CONCLUSION

Victorian archaeology has come a long way since G.A. Robinson first recorded a fish weir in the Western District in 1841. Much has been lost. However, effective scientific archaeology in Victoria is only about twenty-five years old (in 1985) and it should be clear from the foregoing how little is known about the history of Aboriginals in Victoria. The immense gaps in our knowledge can be filled by painstakingly investigating the evidence that has been left behind by Victoria's first citizens. This takes time, money, and skill, and in the meantime the sites have to be preserved so that they can be studied in the future when pertinent questions have been posed. The research that has been conducted in Victoria to date has changed many of our traditional views about Aboriginals: it has shown that they have been here a very long time; it has shown them to be adaptive; it has demonstrated that in some areas of Victoria Aboriginals led highly patterned semi-sedentary lifestyles during the late prehistoric period; it has shown that there were regional differences in Aboriginal culture; and it has documented the extent of some of their trade and exchange networks.

Much work needs to be done before it will be possible to write a coherent history of the Aboriginal people of Victoria. Many intriguing questions about the prehistoric past beg investigation. How and when did the various languages and sub-languages evolve, and when did the social networks (tribes, bands, clans, etc.) that were observed by Europeans at the end of the prehistoric period evolve? What was the relationship between the peoples of Tasmania and Victoria? Were the original people marine-orientated and, if so, when was the hinterland colonised? Why and how did the 'small tool and scraper tradition' supersede or merge with the 'core tool and scraper tradition'? What happened to the giant marsupials?

Questions such as these can be answered given time and patience. However, in our present state of knowledge it can be confidently expected that every new site investigated will produce new data that will raise more questions than they will answer.

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