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# RESULTS OF AN ARCHAEOLOGICAL SURVEY OF THE HUNTER RIVER VALLEY, NEW SOUTH WALES, AUSTRALIA

## Part II: Problems of the lower Hunter and contacts with the Hawkesbury Valley

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### CONTENTS

Introduction .....	388
Problems of the Hunter Estuary .....	392
Contacts between the Hunter and Hawkesbury Valleys .....	396
The Wollombi Excavations .....	397
Big L .....	398
Yango Creek .....	398
The Macdonald River Sites .....	401
MR/1 .....	403
Materials and Computer Analyses .....	415
Discussion and Conclusions .....	421
Acknowledgements .....	424
References .....	424

### INTRODUCTION

The first part of this report, published in 1970, described the survey and excavations carried out in the upper Hunter Valley from its source down to the Singleton area and in the Goulburn Valley from its rising on the watershed of the Divide down to its junction with the Hunter near Denman. The sites selected for excavation were all found to be Bondaian throughout (i.e. backed blades and microliths predominated). The valley sites were dated to around 2000 BP, whereas the one site excavated outside the valley on the Divide, near the headwaters of the Goulburn, appeared to date from about 7750 BP. (But see note at end of introduction.) At this stage, the number of occupation sites investigated was not sufficient to form any conclusions.

On completion of this section of the project at the end of 1967, the intention was to continue the survey downstream to Maitland and the Hunter estuary, in order to provide material for a comparison between Aboriginal exploitation of the freshwater and tidal zones of the river system. However, after extensive reconnaissance, it became clear that any occupation sites on the lower Hunter likely to contain *in situ* remains had been obliterated or destroyed by the intensive European use of the region.

As was described in the historical introduction to Part I of this report, the timber of the lower Hunter was progressively stripped from 1802 onwards and subsequently the fertile alluvial flats were extensively modified for agriculture and grazing. In addition, the valley periodically suffered devastating flooding. Around Newcastle itself vast areas of estuarine shell middens were removed and burnt for lime to make mortar. From the start of settlement in 1801 the progressive exploitation of coal seams also brought about substantial modification of the landscape. A particularly drastic change was the removal of cover upstream from the Hunter-Paterson junction by cedar-getters during the 1830s and 1840s. The early surveyors, such as Henry Dangar, reported impenetrable scrub and rainforest on both sides of the river for several miles (see Wood, 1972: 2-3) and this may well have formed an effective barrier to communication between the Aborigines of the lower and middle Hunter in prehistoric times. It is also possible that this was a survival of a

Records of The Australian Museum, 1981, Vol. 33 No. 9, 388-442, Figures 1-15.

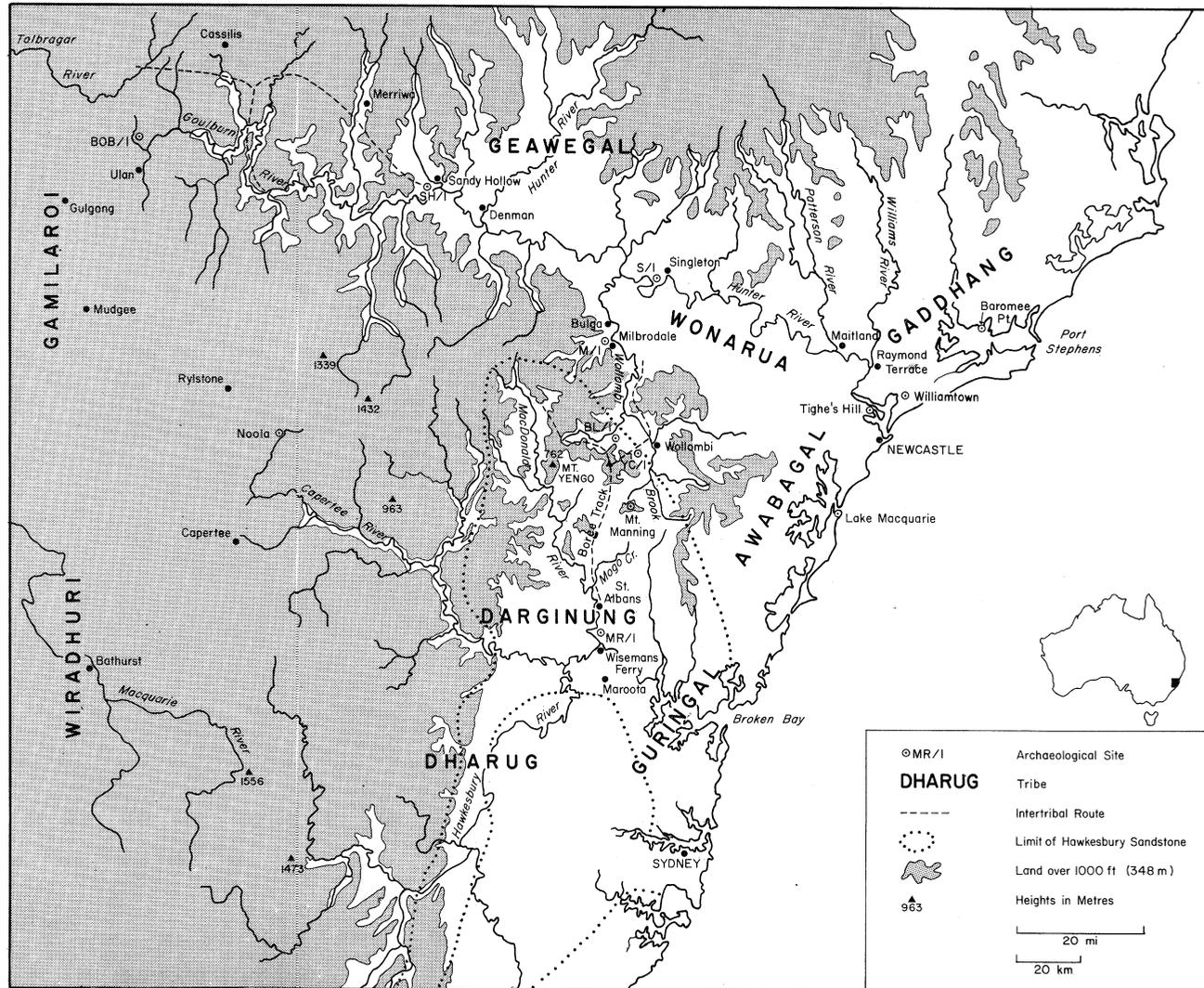


Fig. 1. Archaeological Map: Hunter and Hawkesbury River Systems

much more extensive rainforest system which had gradually contracted as a result of decreasing rainfall after the cessation of the last glacial. However, it is unlikely that rainforest could ever have existed except on the rich alluvial flats of the lower Hunter.

At the time of the commencement of this survey some remnants of the formerly huge shell heaps on the swampy islands in the Hunter estuary still remained (see Fig. 5), but before it was possible to investigate them in any detail they were bulldozed out of existence for road-fill and factory development. Attention was therefore turned to the valleys of the Paterson and Williams Rivers, which feed from the north into the lower estuary of the Hunter, but here also modification by agriculture and flooding had obliterated all signs of the previous Aboriginal occupants. The few caves and rock shelters in the area showed no signs of occupation deposits, nor was any rock art encountered.

Along the coastline north and south of the Hunter entrance innumerable remains of shell middens can still be seen, but these almost invariably amount to no more than random scatters of shells on shifting dune systems which after storms produce flakes and implements in large numbers. These scatters have been picked over by collectors for many years and some of these collections are deposited in museums, as will be described in the next section.

Since the lower Hunter area seemed unlikely to provide any sites suitable for excavation, the survey was next extended up the coastline north of the Hunter entrance and eventually included Port Stephens. According to Enright (1932) and earlier observers, such as Dawson (1830) and Threlkeld (1824-59), the Gaddhang (or Worimi) people occupied the northern bank of the Hunter estuary and their territory extended as far north as Port Stephens. So it was felt that a stratified site, if such could be found, even as far afield as the northern shores of Port Stephens could provide useful evidence to compare with the upper Hunter sites. After extensive reconnaissance, it was decided to test a consolidated midden on a rocky headland at Baromee Point (Port Stephens, 1-63360, ref. 063605). Although there are remains of open middens at many points around Port Stephens (for example at Tahlee, Mulwee, and North Arm Cove), they appear to have been interfered with and modified, either by collectors or for use as road fill, whereas the Baromee Point site was covered with grass and unlikely to have been affected by European activity. One test square was dug in the centre of this site, during January 1968. The excavation went through five 6-inch levels to 30 inches, where tumbled rock and heavy clay were reached. Apart from much fragmented shell and some bone fragments, the test square produced little except large natural chunks of the local conglomerate rock. These might have been used for knocking shellfish off rocks, but there were no definitely identifiable implements in any level. Nor was there any indication whatsoever of stratification.

As a result of the inconclusive outcome of all these reconnaissances, it was decided to divert the survey to the area between the middle Hunter and the Hawkesbury Valley to the south, along the line of the Wollombi Valley, Mogo Creek, and the lower Macdonald Valley. This area is rich in both rock engravings and cave paintings and is documented (see Sim 1966) as having been a traditional route along which the Darginung of the Hawkesbury made contact with the Wonarua of the central Hunter region. This survey was commenced in 1969 in the Wollombi area and many art sites and rock shelters were inspected. Most of these had suffered interference and vandalism, but two sites selected for testing were apparently intact. One was a painted shelter high in the hills on Stockyard Creek, west of Wollombi, the other, a large overhang without paintings, was on a creek near the Mount Yango road, south-west of Wollombi. These test excavations were completed in 1970 and both the material obtained and the results of radiocarbon dating

closely paralleled the Hunter sites previously investigated.

Reconnaissance in the rugged country southward to St Albans revealed much rock art but an almost total absence of occupation sites. One painted shelter at Mount Manning had already been excavated and published by Macintosh (1965), the deposits being apparently no more than a few hundred years old. Others who had worked over the area recording rock art (notably I. M. Sim, pers. comm.) confirmed that occupation sites were extremely rare, so attention was concentrated on the lower Macdonald Valley, between St Albans and Wisemans Ferry.

Eventually a large shelter containing very faded paintings, on the southern side of the river, was selected for excavation. A test square excavated in 1972 indicated that the site was a promising one and charcoal processed at Sydney University indicated an antiquity of at least 6000 BP for the start of occupation. Due to the author's commitments to fieldwork in the Cape York region during the next few seasons, it was not possible to follow up this promising lead until 1976-77, when full excavation of a transect from back wall to talus slope was completed. Although the yield of implements was scantier than in the Hunter sites, it was clear that the deposit was Bondaian throughout and a much wider variety of materials had been used, including some undoubted Hunter Valley cherts. Study of the sources of these materials seemed likely to provide evidence for trade, both northward and southward, so this was undertaken under the supervision of Professor D. Branagan of the University of Sydney. At the same time a computer programme was commenced by David Hain, of the C.S.I.R.O. Computing Research Centre, to see whether any significant information could be obtained from a statistical comparison of samples of Bondi points from all of the excavated sites. Samples from surface collections from sites north and south of Newcastle were also included. The intention of this project was to ascertain whether any differences in technique and material could be detected, both synchronically and diachronically, as well as spatially.

The remainder of this report will consider the problems of the Hunter estuary in more detail, then describe the Wollombi and Macdonald River excavations, and finally the results of materials analysis and computer comparisons will be outlined, in order to draw conclusions from the total results of the survey.

As in the first part of this report, all basic data obtained from the excavations will be given in full, to enable other research workers to make comparisons with their own findings. All of the actual material from these excavations, together with sundry surface finds, is in the archaeological collections in the Australian Museum and can be made available for future study. In addition, data from all field reconnaissances made by the author have been incorporated into the central records of Aboriginal sites maintained by the N.S.W. National Parks and Wildlife Service.

#### **Note on dating of Site BOB/1**

Subsequent to the publication of Part I of this report, further charcoal samples from site BOB/1 were processed. The original date for charcoal from 25''-30'' at this site, on Bobadeen property, near Ulan, seemed too early for the Bondaian material with which it appeared to be associated (ANU-124:  $7750 \pm 120$  BP), so a further sampling was made. Charcoal from 25''-26'' was dated to  $5150 \pm 170$  BP (ANU-287) and from 21''-23'' to  $4120 \pm 175$  BP (ANU-790). The consistency of these dates seems to indicate that occupation at BOB/1 began at about 6000 BP. Possibly the few artifacts associated with ANU-124 had been trodden down into pre-occupation deposits containing charcoal from bushfires.

## PROBLEMS OF THE HUNTER ESTUARY

Judging by the sparse early accounts of Aboriginal life on the Hunter estuary (e.g. Paterson, 1801, Barrellier, 1802, Dawson, 1830, Threlkeld, 1824-59), it is likely that the people spent a large proportion of their time on the river, poling themselves around in their bark canoes and either catching fish with line and spear or landing to collect shellfish and plant foods. So far as shell foods are concerned, some idea of the range collected and eaten in the estuary may be indicated by a sampling made on 12/3/70. This sample was collected independently by the author and another archaeologist, Dr S. M. Bard, from the bulldozed section of the last remaining shell heap on Ash Island (Newcastle 1-63360, ref. 750360). This section may be seen in Fig. 5. When the two samples were compared, the principal food shells represented appeared to be as follows (The assignment of percentages is subjective, derived from the visual appearance of the section):

<i>Ostrea angasi</i> (Sowerby) — "mud oyster"	c.40%
<i>Anadara trapezia</i> (Lamarck) — "Sydney cockle"	c.30%
<i>Succostrea commercialis</i> (Iredale & Roughley) — "rock oyster"	c.10%
* <i>Chlamys lividus</i> (Lamarck) — "Tasmanian scallop"	c.10%

Shells represented in lesser quantities were:

<i>Notospisula trigonella</i> (Lamarck)
<i>Trichomya hirsuta</i> (Lamarck) — "estuarine mussel"
<i>Velacumantus australis</i> (Quoy & Gaimard) — "whelk"
<i>Septa (Monoplex) parthenopea</i> (v. Salis)
<i>Circe sugillata</i> (Reeve)
<i>Conuber conica</i> (Lamarck)
<i>Conuber sordidus</i> (Swainson)
<i>Neosolen correctus</i> (Iredale)

These identifications were made by Dr W. F. Ponder of the Australian Museum.

Special mention is made in early reports of the considerable dependence of the estuary Aborigines on "fern roots", by which presumably the common bracken fern (*Pteridium esculentum*) is meant, but probably bulbs and succulent roots of swamp and marsh plants were also included. Before European settlement the estuary was fringed with mangroves, behind which, especially on the left or southern bank, existed extensive marshes where not only innumerable waterbirds could be easily caught but also an abundance of water-lily and other roots were available. The Hexham Swamp, a basin about eight kilometres in diameter ringed with low hills, has been almost completely drained and turned into grazing land. Search of the surrounding hills failed to reveal any clue as to location of Aboriginal campsites, but there, too, European settlement had brought about extensive modification long before the end of the nineteenth century and now the whole area is covered with pasture.

Nearer the Hunter mouth on the southern side was another extensive swamp and floodplain, traversed by tidal creeks and protected on the seaward side by Nobby's Head and Shepherds Hill. This area was separated from the Hexham Swamp by an isolated elevation of the Tomago coal measures, capped with sandstone. On this slight ridge are now situated the inner suburban developments of Mayfield, Tirrikiba and Tighe's Hill. In pre-European times this ridge would have formed the only dry land in the whole swamp area and would obviously have been a favoured campsite. It is significant that all three of these suburbs have in the past been prolific collecting grounds for Aboriginal stone implements. One such collection was made during the first quarter of this century by D. F. Cooksey of Mayfield and presented to the British Museum in 1927. This collection contains representative artifacts from each of these localities, including Bondi points, large split pebble slices and massive core choppers. The latter two categories are not

\*It has been suggested by Professor L. K. Dyal of the University of Newcastle that this and other huge shell heaps on the islands of the Hunter estuary may not, in fact, have been Aboriginal middens but rather the result of European dredging, which commenced early in the life of the settlement. Certainly it is difficult to see how the Aborigines could have obtained *Chlamys lividus* in the Newcastle area. Artifacts were present in these heaps, but were rare. These could, of course, also have been dredged up from the river bed.

represented in the upper and middle Hunter sites excavated. The author was able to examine and photograph this collection in 1969 (see Fig. 6). Some remnants were presented to the Australian Museum by the collector's son in 1929 and contain the same range of implements.

The presentation to the Australian Museum of a collection made on one site at Tighe's Hill during 1964-66 by A. J. Gwynne of Lambton first drew the author's attention to this area and in 1969 he was shown the actual find spot by Mr Gwynne (ref. Newcastle 1-63360—775323). The material had all eroded from the east side of Tighe's Hill due to the bulldozing of a flat for a factory site. The top of the hill had obviously been an important Aboriginal camping place, but the whole area of Tighe's Hill was intensively built over as a suburban development during the late nineteenth and early twentieth centuries. In fact, the houses and yards are constructed on top of what appears to be an extensive stratified midden and it was from one edge of this that the Gwynne collection was obtained. It is not now possible to excavate anywhere in the area, but should further development occur, salvage excavations should certainly be carried out, since this is probably the last remaining place where a datable sequence for the lower Hunter can still be found.

The Gwynne collection is an important one, because it represents a careful gathering over several years of all implements and waste flakes eroding from one particular part of this site and may be treated as a random sampling reasonably representative of the total site. In addition to Bondi points, massive flaked slices and core choppers similar to those in the Cooksey collection are well represented. There are also very large backed blades, like giant eloueras (see Fig. 7). The majority of these implements are made from the pale grey to white chert obtained from the outcrops to the south of the Hunter entrance, designated geologically as Mereweather chert but known popularly as "Nobby's chert" after the headland of that name; pink quartzite and black chert are also present in small quantities. The Gwynne collection contains a total of 419 artifacts and a count of the basic types represented gave the following proportions:

<b>Implement Types</b>	<b>Range (max. dimension) (centimetres)</b>	<b>Percentage of total sample</b>
Cores ("horsehoof", "turtleback", and other)	2.5-10	6%
large flake slices ("worimi cleavers")	>10	2%
Truncated blades ("choppers", "adzes")	2.5-12.5	4%
Large unmodified blades	5-7.5	11%
Short blades ("side scrapers")	2-5	14%
Short pointed blades ("knives")	2-5	14%
Backed blades ("Bondi points")	2-5	2%
Narrow flakes ("points", "end scrapers")	2-7.5	8%
Broad flakes ("scrapers")	1-6.5	33%
Utilised pebbles		1%
Miscellaneous flakes		4%

In addition there was one nosed blade ("drill") and one edge-ground axehead of

coarse tuff. It is noticeable that the large core and flake component is very heavily patinated to a dark brown colour, though the basic material is preponderantly white-grey chert, whereas the small-tool component shows little discolouration. Examples of the main tool types present in this collection are illustrated in Fig. 7.

More recently, from 1965 on, Dr (now Professor) L. K. Dyall of the University of Newcastle carried out a long-term project to systematically collect over erosion and sand-dune sites in an area extending from Port Stephens in the north to Lake Macquarie in the south. In many cases his sites coincide with those previously collected by Cooksey. Dyall's collections, with excellent documentation, have been progressively deposited in the Australian Museum and he has published two papers summarising his findings in *Hunter Natural History* (Dyall, 1971, 1972). Although his categorisation of types does not exactly coincide with that used here, a breakdown of his figures for collections from near Williamtown, to the north of the Hunter mouth, and from the Swansea area, at the mouth of Lake Macquarie, show percentages similar in the main to those given above for the Gwynne collection:

<i>Williamtown site. N = 1717</i>	
Cleavers .....	0.3%
Knives .....	9.8%
Scrapers .....	36.7%
Bondis .....	14.1%
Geometrics .....	23.5%
Cores .....	11.7%
Pebble tools .....	0.9%
Miscellaneous .....	3.0%
<i>Swansea Heads site. N = 500</i>	
Cleavers .....	5%
Knives .....	10%
Scrapers .....	25%
Bondis .....	3%
Cores .....	10%
Pebble tools .....	27%
Miscellaneous .....	20%

Bondi points from these two sites have been included in the computer analysis of backed blades from all the sites excavated during this survey, to provide a comparison with the coastal and estuarine region.

Although backed blades and microliths appear in considerable quantities in most of these estuarine and coastal sites, there is usually the further component of large flake and core implements not present in the excavated middle and upper Hunter sites. It may possibly be connected with shell-gathering activities, or perhaps with the chopping down and preparation of mangrove timber, which must have been widely used for poles, paddles, canoe stretchers, and all situations where toughness and resilience to water action were required. Alternatively, it may represent the earlier large core and flake tool tradition identified elsewhere in the continent as preceding the microlithic or small-tool industry. The marked patination of the Tighe's Hill large tools might be taken to support the latter supposition. It is also significant that whereas this large tool component was completely absent from the upper Hunter excavated sites, it was present in the surface collections made by McCarthy and Davidson (1943) on the Gowrie terrace and at Bulga, west of Singleton. This would imply that the large core and flake tool tradition preceded the small-tool industry on the freshwater reaches of the Hunter and it is likely that this would also have been the situation in the estuarine section. It is, however, possible that

the large tools continued to be made in the estuary and on the coast for specialised uses, such as those suggested above. In the absence of a stratified and dated sequence for the Newcastle district, it is impossible to be certain which of these options is correct.

So far as the wooden implements and weapons of the lower Hunter people are concerned, we are fortunate to have two sets of illustrations, drawn directly from actual objects. The first of these is in the Scottowe manuscript in the Mitchell Library and is reproduced in Gunson (1974:81). This was drawn by the convict artist, R. Browne, presumably in about 1813, since this is the date of the manuscript notes accompanying the illustrations. Included are four types of spears: a four-pronged fish spear, plain and single-barbed hunting spears, and a fighting spear with three wooden barbs cut in. An elliptical shield is decorated with a double grooved St George's cross and a single grooved St Andrew's cross. The spearthrower is the typical east coast spatulate type, with cut-in wood peg. Two clubs are shown: one has a thin handle, swelling slightly towards the further end, which is pointed, the other has a disc-shaped head narrowing to a point. The axe illustrated appears to have a European iron blade, but is hafted in the traditional fashion, with a sapling or strip of cane passed around the head. The boomerang is pointed at both ends and slightly elongated at the held end. Also shown are a palmleaf basket with handle, a water-carrier made of a hollowed tree-gnarl, a twined dilly bag, and a fishing line with shell hook. The other illustration was published by B. McKiernan in *Anthropos* in 1911 and was drawn from a small collection unearthed in good condition during the digging of a drainage ditch near Raymond Terrace. It shows a prong from a multi-pronged fish spear (two were in fact found), a shield somewhat different from that in the Browne sketch, since it has incised wavy lines running along its whole length and two recesses on the edges at the middle, presumably for binding on a handle. A spearthrower is also illustrated, of the spatulate type, but in this case the peg is attached with gum.

If one adds the pounding stones for roots and nuts, the stout digging sticks, and various types of coolamons mentioned in early accounts as used by the women, then the essential maintenance and extractive gear of the region is almost complete. Bark canoes and huts, together with sewn skin cloaks and blankets were additional basic equipment. We do not have any information on the implements used in this region for the very essential function of fire-making.

On checking over this list, it is immediately apparent that remarkably few components are likely to survive in an archaeological context. Edge-ground axe heads, stone pounders, and possibly shell fish hooks might be expected to endure, and bone spear points and barbs appear occasionally in specific horizons. However, none of the accounts of the Aboriginal toolkit in the Hunter region supply any explanation for the profusion of backed blades and microliths which have been collected over the years on innumerable coastal and estuarine sites. Nor do they definitely identify the large core and flake component as having been in use in the historical period.

At this stage, this is as far as one can go in evaluating the tools, weapons, and ecology of the Hunter estuary. For this reason, the survey was diverted to the Wollombi-St Albans axis, as was explained in the introduction. The next (and main) part of this report is therefore devoted to the field reconnaissance and excavations carried out during 1969-77.

## CONTACTS BETWEEN THE HUNTER AND HAWKESBURY VALLEYS

As previously mentioned, there are many occupation deposits in rock shelters in the area drained by Wollombi Brook (a southern tributary of the Hunter), whereas in the rugged and mostly dry watershed between the headwaters of Wollombi Brook and the Valley of the Macdonald (which enters the Hawkesbury near Wiseman's Ferry) rock shelters are rare and occupation sites even rarer. However there are in this area some other potential sources of information not present in the Hunter estuary, for it is one of the richest rock-art regions in the whole of eastern New South Wales. This art has been discussed by Sim (1965), McCarthy (1956, 1959, 1961, 1965), Maynard (1965), and others and it is not intended in this context to cover the same ground again. However, certain observations may well have an important bearing on the archaeological situation and, in fact, it was largely due to these considerations that the survey was extended into the Wollombi-St Albans area.

Firstly, then, the rock engravings of the Sydney region are confined strictly to the Hawkesbury sandstone area, that is from the Bulli escarpment in the south to the southern watershed of the Hunter in the north. The actual northern limit may be seen on the archaeological map at the beginning of this part of the report (Fig. 1). The style of the rock engravings throughout the Sydney-Hawkesbury region is homogeneous, although there are considerable variations in motifs in the differing ecological zones. In the area between Wollombi and St Albans, as well as a number of outstanding engraving sites, there are also some painted rock shelters, and the paintings in these seem to conform in general to the Sydney style which is characterised by comparatively realistic representations of people and animals, either totally infilled or else in charcoal or ochre outline, groups or lines of small human figures dancing and carrying out other activities, and various types of stencils. Certain connexions, in both style and motif, with the rock engravings of the same area can be detected (see Maynard, 1965).

Secondly, in the area immediately to the north of the Hawkesbury sandstone, particularly around Wollombi, Broke, Milbrodale, and Bulga, there are innumerable painted caves which have many features in common but which differ considerably from the cave paintings to the south. In this area there is an extensive use of stencils of hands, sometimes including the whole arm, of weapons and tools such as boomerangs, spearthrowers, axes, etc., and occasionally stencils of miniature human figures. Also common are series of straight white lines ("tally marks") and radiate figures in white ("sun symbols"). Representations of animals are extremely rare. Some shelters contain what seem to be meaningless masses of stencils with indiscriminate superimposition; in others they seem to be carefully placed in some significant relation to one another. The problems concerning the use of stencils in this area have been discussed in the author's paper given during the symposium on "Schematisation in Art" at the Australian Institute of Aboriginal Studies General Meeting in Canberra in 1974, subsequently published under the editorship of P. J. Ucko (1977), and need not be repeated here.

R. H. Mathews (1897a) obtained definite information from Darginung remnants at Windsor in 1895 that the traditional Darginung territory extended from the Hawkesbury to near Wollombi, so it is a reasonable assumption that the northern limit of the engravings coincides with the junction of the Darginung and Wonarua territories. This would mean that all the cave paintings on the southern fringes of the Hunter Valley, including Milbrodale and the Wollombi Valley, are the products of the Wonarua or their ancestors, whereas both paintings and engravings south of Wollombi as far as the Hawkesbury were part of the Darginung culture. Nevertheless, both areas would undoubtedly have been visited by both groups at different times, for ceremonies and trade exchanges, such as are frequently referred to in the early accounts. Incidentally,

Mathews, in the same article, states that some of the old Darginung men had seen both rock engraving and painting carried out by members of their tribe in about 1843-1855.

However, one site in Wonarua territory does not seem to fit the tribal art pattern suggested above. This is the well-known open shelter at Milbrodale, adjacent to excavation site M/1 and already mentioned in the first part of this report. The interpretation of this site is discussed in the author's paper referred to above (in Ucko, 1977), but it is the stylistic relevance of these remarkable paintings that has more point here. They comprise one large red human figure with very elongated outspread arms and a number of widely spaced stencils of hands, arms, and implements, including boomerangs, axes, and a spearthrower (see Fig. 15). These appear to have been very carefully placed in order to tell a definite story related to the giant human figure. This site is totally unlike any other in the whole Hunter Valley and is also possibly of greater antiquity than any other, since it was so old at the time of first settlement in the vicinity that the local Aborigines knew nothing about it (or, at least, this was what they stated. See Mathews, 1893). The only art in the whole Sydney-Hawkesbury region with which it appears to have any affinity is another well-known painted site at Maroota, just south of Wiseman's Ferry, reported on by McCarthy (1961). This shelter also contains a large human figure, with a bird-like head, which extends from floor to roof and even overhead onto the roof itself. This site also has carefully placed stencils and in addition, a long and sinuous snakelike figure extending back and forth across the back wall. The application of ochre in the main figures is also similar at both sites, it having apparently been applied by rubbing hard along the surface, as if with a greasy crayon. This has left nodules of colour on all small projecting parts of the rock and has also forced the ochre well into the surface. The technique is unusual and it may be responsible for the remarkable state of preservation of both sites. (It should be added that McCarthy's identifications and interpretations differ somewhat from those given here.)

All of this leads to the possibility that the Milbrodale paintings may have been done by people either from the Hawkesbury or at least well-acquainted with the art of the Hawkesbury area. It is possible that the groups encountered historically on the Hunter were comparatively recent arrivals and that the southern fringes of the valley had previously been included in the territory of the Hawkesbury Valley people. Similarly, the frequent incursions of the Gamilaroi from the west of the Divide into the Goulburn and upper Hunter may be related to a late occupation by the Wonarua and Geawegal. This would accord with the lateness of the dates from occupation sites in the valley itself, as compared with sites excavated immediately outside the Hunter and Goulburn Valleys, which appear to have been occupied three or four millenia earlier. These suggestions will be further considered in the Discussion which concludes this report.

Having established the art context of the area under discussion it is appropriate to continue the report of the archaeological survey and to describe the excavations carried out in Wonarua and Darginung territory.

### **The Wollombi Excavations**

The country around Wollombi is both rugged and close, being well covered with sclerophyll forest and scrub, apart from where the broader valleys have been cleared for grazing. There are a great many rock shelters, both in the valley sides and in the mountains, and a high proportion of them contain paintings. Many also show signs of Aboriginal occupation, but in most cases the deposits are merely superficial or have obviously been dug through by collectors. It is not therefore easy to find sites with any likely archaeological potential.

**Big L** (Map: Cessnock, 1 to 63360). See Fig. 8.

The first site tested was reported by L. K. Dyall, who in 1968 excavated a trial trench, with the assistance of R. W. Northey of Wallsend. This trial seemed to indicate a stratified sequence of considerable age, so an inspection of the area was carried out by an Australian Museum party in April 1969. The shelter stands on a hillside, due west of Wollombi, about 200 yards above Big L Creek, which is an arm of Upper Stockyard Creek (ref. 031253). It contains paintings and stencils in a good state of preservation (see Fig. 9) and its situation is of particular interest, since it is at the extreme northern edge of the Hawkesbury sandstone. On a high ridge about one mile south of the shelter is the most northerly group of rock engravings, known as the Finchley's Trig group (ref. 014236).

The owner of the property in which the rock shelter is located, Mr G. Cooper of Wollombi, had used it as a camping place when rounding up cattle in the hills and had installed a wooden table and bed in it, but this had not interfered with the deposits to any extent. Mr Cooper readily gave permission for the excavation to be carried out.

In August-September 1970, a small party tested the site, which was code-named BL/1. A grid was laid out on a datum line with a bearing of 142°, well clear of Dyall's trial trench and in the approximate centre of the deposit. For reasons which will become apparent later, one three-foot square only was excavated across the dripline in three-inch levels. Sieving was through 1/8 inch mesh.

After the first two levels, which were composed of fairly soft loam, compacted yellow grit was reached, with frequent chunks of sandstone. Implement yield then steadily increased, Bondi points, eloueras, geometrics, and fabricators being represented. Fair quantities of charcoal and some extremely fragmented bone were also present. In level 5 an apparent fireplace was encountered in the southern half of the square. Level 7 was particularly productive, with a new component of scrapers and adze flakes of black siliceous material. Rock chunks increased in levels 9 and 10, while implements lessened and in level 11, at 38 inches, rock slabs, interspersed with yellow sterile sand, were reached.

Distribution of implements and waste by levels is shown in Tables 1-2. Charcoal from level 9 was subsequently radiocarbon dated to  $480 \pm 75$  BP (ANU-648). This is a remarkably recent date, when compared with other sites to the north with similar depths of deposit, but there was no reason to suspect contamination or other interference, so it was decided that it would not be profitable to continue the excavation. The survey was therefore extended to endeavour to find a more significant site. In 1977, in order to check this anomalous date, charcoal from level 8 was submitted to the Sydney University Radiocarbon Dating Laboratory and returned a date of  $2495 \pm 105$  BP (SUA-756). This seems more likely to be correct when it is compared with the other Hunter dates, but the reason for the unconformity between the ANU and SUA dates for BL/1 remains unexplained.\*

**Yango Creek** (Map: Cessnock, 1-63360). See Fig. 10.

After extensive reconnaissance, a promising site was found in a large unpainted overhang near Yango Creek, south-west of Wollombi (ref. 118224). The roof of this shelter is about 30 ft. high and the overhang is about 100 ft. long and 20 ft. deep. The deposit has formed over the outer half of a rock floor which slopes at about 20° and extends outside the dripline. A large wombat burrow in the centre of the deposit showed artifacts in the spoil and walls, together with shells of freshwater mussel. Subsequently

\*In a letter dated 1/2/78, Mr Henry Polach has explained that in March 1973, due to anomalies in datings of certain samples run during an equipment change in 1972, ANU-648 was rerun and gave a date of  $920 \pm 75$  BP (ANU-648/1). Part of the same sample was then again run, on a three-day count, and returned  $930 \pm 50$  BP (ANU-648/2). Nevertheless, the reversal between ANU-648 and SUA-756 still stands and is impossible to explain. Archaeologically SUA-756 seems more likely.

**TABLE 1. SITE BL/1: DISTRIBUTION OF STONE IMPLEMENTS AND WASTE**

Square		A											Total
Level		1	2	3	4	5	6	7	8	9	10	11	
Blade, backed	Bondi	2	4		2	1	9	23	9		1		51
	Elouera	1	3	1	3			1	1				10
	Microlith	1			3	6	8	9	3	3			33
	Other								1	1			2
Scraper	Side	6	7	1	9	3	5	5	7	3			46
	End	2				2		1					5
Point, worked	Uniface	2			1	4	1			1		3	12
	Other	4	2		3	5	15	14	10	3			56
Flake, utilized	Blade												
	Other					2							2
	Adze flake	3	2	1	4	3	5	7	2	4			31
	Fabricator	5	2	2	9	5	6		4				33
	Core, utilized					3	4	1			1		9
	Axe, gr. edge												
	Pebble, utilized												
	Misc.												
Sub Totals	Implements	26	20	5	34	34	53	61	37	15	2	3	290
Core*	Large	15	6	7	19	16	20	20	17		1	3	124
	Small	1	4		2	1					1		9
Waste* Flake	Large	56	117	56	200	181	229	224	182	68	24	13	1350
	Small	118	79	44	109	129	122	140	136	44	19	12	952
Sub-totals	Core & Waste	190	206	107	330	327	371	384	335	112	45	28	2435
Totals	Implements & Waste	216	226	112	364	361	424	445	372	127	47	31	2725

\*Cores are graded large or small according to whether their maximum measurement exceeds or falls below 3 cm. Waste flakes are similarly graded as above or below a maximum measurement of 2 cm.

**TABLE 2. SITE BL/1: DISTRIBUTION OF ARTIFACTS BY HORIZONS**

Horizon	Blade, backed				Scraper		Point, worked		Flake, Utilized		Adze Flake	Fabi- cator	Core Util.	Axe Gr. edge	Peb. Util..	Misc.	Core		Waste Flake		Totals
	Bondi	Elouera	Micro	Other	Side	End	Uni- Face	Other	Blade	Other							Large	Small	Large	Small	
1	2	1	1		6	2	2	4			3	5					15	1	56	118	216
2	4	3			7			2			2	2					6	4	117	79	226
3		1			1						1	2					7		56	44	112
4	2	3	3		9		1	3			4	9					19	2	200	109	364
5	1		6		3	2	4	5	2		3	5	3				16	1	181	129	361
6	9		8		5		1	15			5	6	4				20		229	122	424
7	23	1	9		5	1		14			7		1				20		224	140	445
8	9	1	3	1	7			10			2	4					17		182	136	372
9			3	1	3			3			4								68	44	127
10	1												1				1	1	24	19	47
11								3									3		13	12	31
Totals	51	10	33	2	46	5	12	56	—	2	31	33	9	—	—	—	124	9	1350	952	2725

permission to excavate was obtained from the owners of the property, Messrs Les and Noel Bailey, and a combined Australian Museum and National Parks and Wildlife Service party carried out the excavation during October-November 1970.

Code-named YC/1, this shelter seemed likely to have its maximum depth of deposit in the area of the dripline. A datum was established on a bearing of 242° and a grid laid out on either side of the datum line (see Fig. 2). Square A, just inside the dripline and adjacent to the wombat hole, was commenced. Three-foot squares and three-inch levels were used at this site. In level 2 chert and quartz implements and flakes were found, as well as bone, shell, and charcoal. The deposit was composed of brown to yellow sand, which became progressively yellower in levels 3-4. Broken bone and some small marsupial mandibles continued to appear.

In level 5 the deposit changed immediately to a darker loam. Artifacts increased, but less bone was present. Level 6 was prolific in flakes and blades and in level 7 a huge core of pink quartzite was found at 19 inches. In level 9 the brown humus gave way to yellow sand and artifact yield lessened. In level 11 sloping base rock was reached at 35 inches.

It was decided next to excavate Square DD, just outside the dripline (see Figs. 2 and 11), in the hope that there might be a greater survival of organic material in the damper environment, but in fact the situation closely paralleled that in Square A. When it rained during the course of the excavation, it was found that, due to the conformation of the overhang, there was in fact a subsidiary dripline which passed across the inner edge of Square A. One difference in Square DD was that flaked glass and an old hand-made iron nail were found in level 2 and a further glass flake appeared in level 3. The base rock shelf was reached in level 11 at 38 inches. Although much bone was present in the upper levels, most of it is unidentifiable due to fragmentation. However, the following were identified from mandibular remains: *Macropus gigantea* (Grey Kangaroo) in A/3; *Pseudocheirus peregrinus* (Ringtailed Possum) in A/2; bandicoot spp. in A/4 and A/5; and small reptile spp. in A/4. (Identifications by Mr Basil Marlow, Australian Museum).

The material obtained seemed to provide a sufficient sample of the site. It was subsequently washed and typed and its distribution is shown in Tables 3 and 4. Charcoal from Square A, level 8, was radiocarbon dated to  $2350 \pm 85$  BP (ANU-648), which accords nicely with the dating of the sites in the Hunter Valley itself (SH/1, M/1) and with the amended date for nearby BL/1. Nor was there any feature, in implements or materials, that would immediately distinguish the Wollombi sites from the Hunter Bondaian.

### **The Macdonald River Sites**

The next area for survey was along the line of the Boree Track, known to have been a traditional Aboriginal route between the Hawkesbury and the Hunter Valleys, as mentioned in the introduction. In fact, local Aborigines are reported to have guided early European settlers into the Wollombi and Howes Valley areas along this route (Sim, 1966) and ruts made by bullock waggons can still be seen on rock sections of the track. The route traversed by the Boree Track is indicated on the map at the beginning of this report. Starting from the south, after a steep initial climb from the valley of Mogo Creek, a tributary of the Macdonald, the track follows high ridges along which there are a series of engravings. About five miles along the track there is a particularly important engraved site, known as Burragurra or the Devil's Rock, and at the northern end is the Finchley's Trig group, previously mentioned. Eventually one branch of the track reaches Mount Yango, which reputedly had a particularly sacred significance for the Aborigines, whence there is an easy route into Howes Valley and on to the Hunter Valley at Milbrodale. Another branch leads into the Wollombi Valley, passing site YC/1 on the way.

It seems likely that the Boree Track was an important ceremonial route, since the

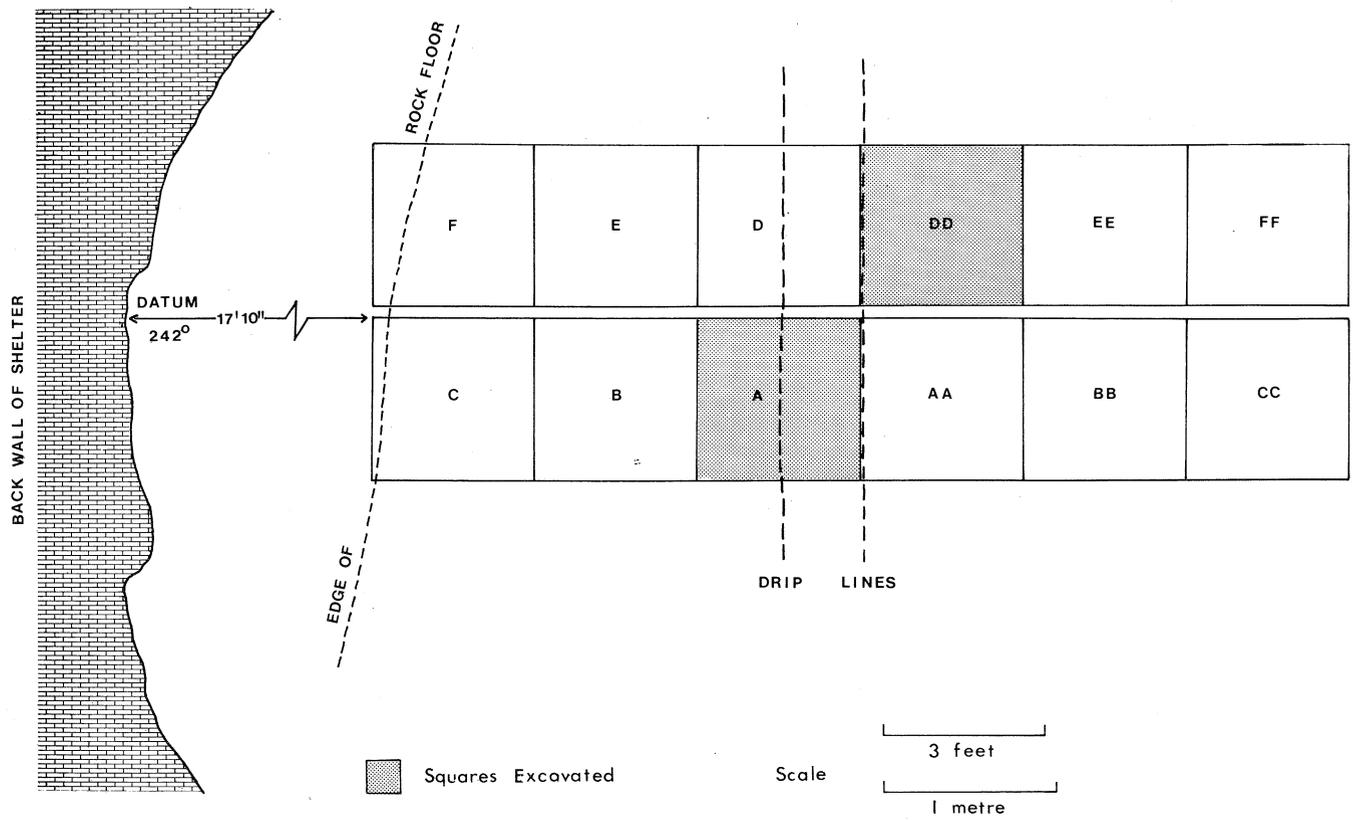


Fig. 2. Site YC/1: grid and excavated area.

engraved sites appear to link up with each other and with Mount Yango (see Sim, 1966). If this is the case, it is extraordinary that Aborigines, even when their culture was disintegrating, should have guided white settlers along it, since legendary paths and initiation grounds were the last things that they would normally reveal to Europeans. From an archaeological point of view the track is not helpful, since there appear to be no occupation sites along it. This is understandable, because of the absence of both water (except for one soak called "Halfway Waterhole") and rock overhangs.

When the Great Northern Road was eventually constructed from Wiseman's Ferry to Wollombi, it avoided the Boree Track, proceeding instead up the Mogo Creek Valley and crossing the watershed near Mount Manning. There are several rock shelters along this route, but most have been interfered with. The painted shelter near Mount Manning excavated by Macintosh (1965) has already been referred to. The deposits were apparently quite shallow with an antiquity of only a few hundred years. The paintings are quite unlike any others in the area. It is possible that the dry and unfruitful country between the Hunter and Hawkesbury Valleys was not penetrated by Aborigines until comparatively recently, whereas occupation of the fertile river valleys took place considerably earlier.

**Site MR/1** (Map: St. Albans, 1-63360). See Fig. 12.

In the absence of any promising sites north of the Macdonald Valley, the survey was extended to the lower reaches of that river, between St. Albans and Wiseman's Ferry. This would most certainly have been Darginung country and it was felt that a stratified site of some antiquity would produce valuable data to compare with that already obtained around Wollombi and in the Hunter Valley itself. It would also be of interest to compare it with the material from site BOB/1, which was just as surely in Gamilaroi territory.

In November 1971 a large shelter, about 200 feet up a steep scarp on the south side of the Macdonald, was found (ref. 969 774). Its roof is about 30 ft. high and the shelter is about 80 ft. long and 20 ft. deep (see Fig. 12). The position of the shelter (code-named MR/1) in relation to the river and scarp is shown schematically in Fig. 3. It contained an extensive occupation deposit which apparently was untouched. Some very faint remains of red ochre paintings only became apparent in the changing light after some time had been spent in sinking a small sondage into the deposits at their western end. This sondage produced a chert flake from about six inches depth and shell and charcoal from about 20 inches.

In March 1972, a datum line having been established on a bearing of 160°, a test square (Square A) was commenced at what appeared to be the deepest part of the deposits, about four feet inside the dripline. Three-foot squares and five-inch levels were used throughout this excavation since no definite stratification appeared. Implement yield in Square A was sparse, but much shell, bone, and charcoal were found down to level 6. A sample of Charcoal from level 5 was submitted to the Sydney University Radiocarbon Laboratory and returned a date of 2370 ± 100 BP (SUA-387).

It was not possible to follow up this promising lead until May 1976, when Square A was completed down to rockfall and coarse sterile sand in level 10 at 50 inches. Charcoal from this level was also processed by the Sydney University Laboratory and dated to 5820 ± 110 BP (SUA-564). This was associated with the earliest artifacts and may be taken to represent approximately the start of occupation of the shelter.

Between August 1976 and January 1977 parties went up to the site by the day to complete a transect of the deposit from back wall out to the external rockfall in front of the shelter. The excavation turned out to be a complicated one, due to the presence of

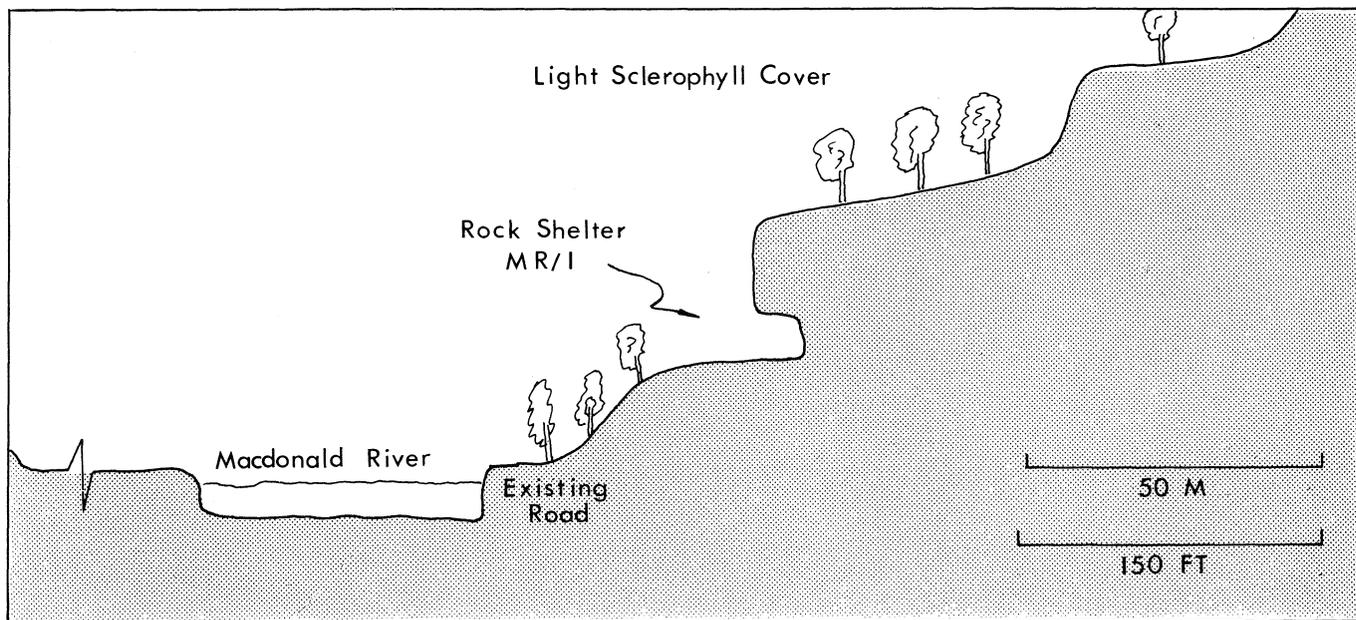


Fig. 3. Site MR/1: profile of shelter and valley.

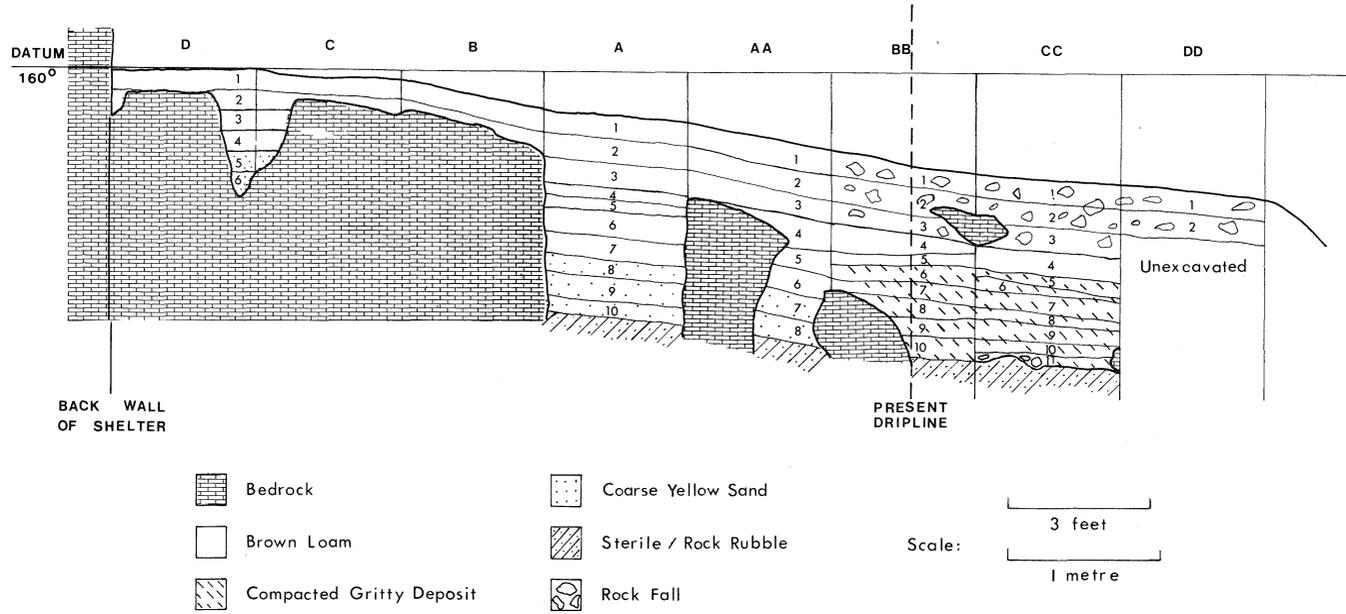


Fig. 4. Site MR/1: section of deposits.

irregular masses of base rock and rockfall, as may be seen in the section illustrated in Fig. 4. Square A had gone precisely into a deep cavity in the rock floor, but the inner squares, B, C, and D, were only a few inches deep, apart from some clefs in the base rock. Nevertheless, they contained significant quantities of artifacts, including backed blades. (See Fig. 13.)

When Square AA was commenced it produced plenty of flakes and shell but a very sparse yield of implements. In level 4 a rock ledge was encountered in the southern half of the square, but the deposit continued in the remainder. At the end of level 5 it was too constricted to continue until Square BB had been partially excavated. Meanwhile Square DD, outside the dripline, was commenced, but after two levels had been dug and nothing found but rockfall, it was abandoned and Square BB was excavated across the dripline. Much rockfall was met within the northern half, but the deposit continued with a sparse yield of flakes and implements. At 15-18 inches several flaked pieces of a diorite edge-ground axehead were found and subsequently other fragments were found at similar depths in other squares. Some small "unipoints" of bone and a very large worked bone point were found at 21 inches. In level 5 Square BB went into soft loam with some compacted areas and at the end of level 6 became more compacted and gritty with many chunks of decomposing sandstone.

At this point Square AA was continued beside and under the rock in the southern half. Artifacts continued into coarse yellow sand, which then became sterile. Square BB was continued into rockfall in level 10, artifacts, including Bondi points, appearing throughout.

It was then obvious that Square CC must be dug to complete the transect, and subsequently many artifacts were found, mixed with tumbled rock. Level 4 was particularly prolific, six Bondis being found within a small area in the south-west quadrant. Rockfall lessened in the lower levels, but bone and shell no longer appeared. Square CC went into rubble in level 10 and met bedrock in level 11, but produced backed blades to the end (see Fig. 13).

The extensive rockfall in the upper levels of Squares CC and DD was assumed to represent the disintegration of an earlier extension of the overhang and it was thought this might indicate that the occupation of this zone was earlier than that inside the present overhang, so charcoal from BB/10 and CC/8-9-10 was submitted to the Sydney University laboratory. The scarcity of charcoal in this zone necessitated this grouping of levels. The combined samples returned a date of 3650 ± 130 BP (SUA-676) which indicates that occupation of all zones, both inside and outside the present overhang, was contemporaneous.

The distribution of implements and waste is shown by squares and levels in Table 5 and by horizons in Table 6. However, it should be realised that correlation of levels was extremely difficult in this excavation, due to the complicated series of rock slabs, so that the attribution of both levels and horizons can only be approximate.

Both shell and bone were present in varying quantities in the first seven levels of Squares A, AA, BB, and CC. The shell was almost entirely estuarine mussel (*Trichomya hirsuta*), but an occasional rock oyster (*Soccostrea commercialis*) appeared. The absence of shell from the earlier levels may be due to decomposition over a greater time-span or may mean that mussel was not being collected. Nowadays the Macdonald is affected up as far as MR/1 by high tides and is usually somewhat brackish at that point, but it has greatly silted up since settlement, due to progressive clearing of cover and the resulting increase in soil erosion. Probably in Aboriginal times it was salt up to about the present

TABLE 3. SITE YC/1: DISTRIBUTION OF STONE IMPLEMENTS AND WASTE

Square		A												DD												Grand Total		
Level		1	2	3	4	5	6	7	8	9	10	11	12	Total	1	2	3	4	5	6	7	8	9	10	11		Total	
Blade, backed	Bondi				3	5	10	2	3	4				27		2	2	10	9	3	2	2				30	57	
	Elouera							1					1	1				2		3						5	6	
	Microlith				3	4	6	6	4				23	23				6	2	9	4	5	2	2	1	31	54	
	Other					2		2					4	4												4	4	
Scraper	Side End					4	5	3			2	1	4	12			4	13	7	6	2				32	44		
Point, worked	Uniface							3					3	3				7		1					8	11		
	Other				3	7	3	7	1	1			22	22	1	5	8	5	2	2	2	1			26	48		
Flake, utilized	Blade					2		1					3	3					3	1					4	7		
	Other							1					1	1											1	1		
	Adze flake					2	3	4	5	1			15	15			2	6	1		2				11	26		
	Fabricator				1								1	1				4	1	1	1				7	8		
	Core, utilized																	1							1	1		
	Axe, gr. edge Pebble, utilized Miscellaneous																											
Sub-totals	Implements				2	11	27	31	28	11	6		116	116		3	14	57	35	28	14	9	3	2	1	166	282	
Core	Large		2	6	1	16	15	21	18	4	3	1	87	87	1	2	14	28	26	24	7	7	1	3	3	116	203	
	Small																			1					1	1		
Waste flake	Large	2	10	10	3	160	192	244	188	75	27	4	1	916	916	4	8	86	518	238	227	89	44	11	11	5	1241	2157
	Small	7	21	12	4	64	85	94	152	78	23	19	4	563	563	18	13	41	103	178	136	75	14	7	5	5	595	1158
Sub-totals	Core & Waste	9	33	28	8	240	292	359	358	157	53	24	5	1566	1566	23	23	141	649	442	388	171	65	19	19	13	1953	3519
Totals	Implements & Waste	9	33	28	10	251	319	390	386	168	59	24	5	1682	1682	23	26	155	706	477	416	185	74	22	21	14	2119	3801

**TABLE 4. SITE YC/1: DISTRIBUTION OF ARTIFACTS BY HORIZONS**

Horizon	Blade, backed				Scraper		Point, worked		Flake, Utilized		Adze Flake	Fabricator	Core Util.	Axe Gr. edge	Peb Util.	Misc.	Core		Waste Flake		Totals
	Bondi	Elouera	Micro	Other	Side	End	Uni. Face	Other	Blade	Other							Large	Small	Large	Small	
1																	1		6	25	32
2	2							1									4		18	34	59
3	2				4	1		5			2						20		96	53	183
4	10	2	6		13	1	7	8			6	5	1				29		521	107	716
5	12		5		7	7		8	3		3	1					42		398	242	728
6	8	3	13	2	10	2	1	9	3		3	1					39	1	419	221	735
7	12	1	10		7	1	3	5			6	1					28		333	169	576
8	4		11	2	3			9	1		5						25		232	166	458
9	3		6			2		2		1	1						5		86	85	191
10	4		2			1		1									6		38	28	80
11			1														4		9	24	38
12																			1	4	5
<b>Totals</b>	57	6	54	4	44	15	11	48	7	1	26	8	1	—	—	—	203	1	2157	1158	3801

**TABLE 5. SITE MR/1: DISTRIBUTION OF STONE IMPLEMENTS AND WASTE**

Square		A										B			C							
Level		1	2	3	4	5	6	7	8	9	10	Total	1	2	Total	1	2	3	4	5	Total	
Blade, backed	Bondi	1	1				1	1		2		6						2	2		4	
	Elouera																					
	Microlith Other						1					1										
Scraper	Side End	1	1				4	2	1	3		12					1				1	1
Point, worked	Uni-face Other																				1	1
Flake, utilized	Blade Other																					
	Adze flake Fabricator Core, utilized Axe, gr. edge Pebble, utilized Miscellaneous		2			3	1		2	1		1	9	1		1	1		1	1		3
										1		1										1
Sub-Totals	Implements	2	4			3	7	3	3	8		30	3		3	1	2	3	3	2	11	
Core	Large Small	2	8		1	4	4	7	7	6	8	47	2	3	5	2	4	3	5	1	15	
			1		1	3	2	1		1		9	1	2	3	4		1			5	
Waste Flake	Large Small	16	22	1	3	22	40	1	57	48	23	233	16	30	46	53	11	39	42	23	168	
		10	10			7	15	7	20	15	7	91	10	17	27	21	1	6	13	3	44	
Sub-Totals	Core & Waste	28	41	1	5	36	61	16	84	70	38	380	29	52	81	80	16	49	60	27	232	
Totals	Implements & Waste	30	45	1	5	39	68	19	87	78	38	410	32	52	84	81	18	52	63	29	243	

TABLE 5 Cont.

Square		D							AA							
Level		1	2	3	4	5	6	Total	1	2	3	4	5	6	7/8	Total
Blade, backed	Bondi		1		2	3	1	7	1	1	1	1			2	6
	Elouera Microlith Other		1			3		4						1	1	2
Scraper	Side End	2	1		1	1		5					1		2	3
Point, worked	Uni-face Other										1				1	2
Flake, utilized	Blade Other															
	Adze flake Fabricator Core, utilized Axe, gr. edge Pebble, utilized Miscellaneous			1		1		2	1		3		1		1	5 1
		3						3		3					1	4
Sub-Totals	Implements	5	3	1	3	8	1	21	2	4	5	1	2	1	8	23
Core	Large Small	6	3	3	5	10	2	29	1		3	5	5	4	2	20 1
Waste Flake	Large Small	32	19	16	62	41	5	175	37	26	46	33	13	33	65	253 61
		12	3	5	21	22	2	65	11	6	12	5	4	7	16	
Sub-Totals	Core & Waste	50	26	26	89	74	9	274	49	33	61	43	22	44	83	335
Totals	Implements & Waste	55	29	27	92	82	10	295	51	37	66	44	24	45	91	358

TABLE 5 Cont.

Square		BB										Total
Level		1	2	3	4	5	6	7	8	9	10	
Blade, backed	Bondi				3	1	1		2	1	6	14
	Elouera										2	2
	Microlith						1			1		2
	Other											2
Scraper	Side End											
Point, worked	Uni-face Other											
Flake, utilized	Blade Other										1	1
	Adze flake											
	Fabricator		3	1	2	3	2	2	2	1		16
	Core, utilized				1							1
	Axe, gr. edge											
	Pebble, utilized											
	Miscellaneous		6	6	2	4			3			21
Sub-Totals	Implements		9	7	8	8	4	2	7	3	9	57
Core	Large Small	3	4	4	10	4	6 1	4	8	4	1	48 1
Waste Flake	Large Small	4 2	28 7	29 8	59 6	53 5	104 17	62 17	109 23	50 17	30 4	528 106
Sub-Totals	Core & Waste	9	39	41	75	62	128	83	140	71	35	683
Totals	Implements & Waste	9	48	48	83	70	132	85	147	74	44	740

TABLE 5 Cont.

Square		CC												
Level		1	2	3	4	5	6	7	8	9	10	11	Total	Grand Total
Blade, backed	Bondi		1	2	7			5	1	2	2		20	57
	Elouera				1			1					2	4
	Microlith					1		2					3	12
	Other			1	1	1							3	3
Scraper	Side		1	1	2	1		1		1	1		8	29
	End				1								1	2
Point, worked	Uni-face													3
	Other													
Flake, utilized	Blade												1	2
	Other				1								1	2
	Adze flake								1				1	2
	Fabricator		1	3	8	1	2	3	5	1			24	60
	Core, utilized					1				1	1	1	4	7
	Axe, gr. edge													
	Pebble, utilized													
	Miscellaneous			8	4								12	43
Sub-Totals	Implements		3	15	25	5	2	12	7	5	4	1	79	224
Core	Large	1	2	14	50	14	11	5	3	8	4	4	115	280
	Small	2	3	8	1	1	3	2					23	47
Waste Flake	Large	14	48	271	1003	320	194	117	116	78	11	26	2198	3601
	Small	1	13	49	202	39	20	23	21	13	14	4	399	793
Sub-Totals	Core & Waste	16	65	337	1263	374	226	148	142	99	32	34	2736	4721
Totals	Implements & Waste	16	68	352	1288	379	228	160	149	104	36	35	2815	4945

TABLE 6. SITE MR/1: DISTRIBUTION OF ARTIFACTS BY HORIZONS

Horizon	Blade, backed				Scraper		Point, worked		Flake Utilized		Adze Flake	Fabi- cator	Core Utilized	Axe Gr. Ed.	Pebble Utilized	Misc.	Core		Waste Flake		Totals
	Bóndi	Elouera	Micro	Other	Side	End	Uni- Face	Other	Blade	Other							Large	Small	Large	Small	
1	2				3							3				5	17	5	172	67	274
2	4		1		3	1						6				10	24	7	184	57	297
3	5			1	1		1					9				14	27	6	402	80	546
4	15	1		1	3	1				1		11	1			6	76	10	1202	247	1575
5	4		4	1	4		1					9	1			4	38	5	472	80	623
6	3		3		4							5					27	4	376	61	483
7	8	1	3		5		1					5	1			1	18	4	245	63	355
8	3				1						1	9				3	18	2	282	64	383
9	5		1		4						1	3	2				18	1	176	45	256
10	8	2			1					1			1				13	3	64	25	118
11													1				4		26	4	35
Totals	57	4	12	3	29	2	3	—	—	2	2	60	7	—	—	43	280	47	3601	793	4945

Note: Artifacts listed under AA7/8 in Table 5 have been included in Horizon 7 in this table.

site of St Albans, so the mussel represented in the MR/1 deposits may well have been collected in the vicinity of the shelter.

Most of the shell found was very fragmented, so it is not possible to estimate the number of shells present. For this reason comparative occurrence has been measured by weight and by horizon, as is shown in Table 7.

**TABLE 7. SITE MR/1. COMPARATIVE OCCURRENCE OF SHELL (BY HORIZONS)**

Horizon	Weight (gm)
1	2
2	2.5
3	7
4	4.5
5	4
6	1.5
7	2
8-11	nil

Other fauna were represented in Squares AA and BB, levels 3-6, but are not identifiable even to generic level, due to extreme fragmentation of the bone. However, the following were certainly present: wallaby; large bird; large fish.

It is clear that the subsistence strategy of the people using this site was a wide-ranging one, exploiting river, valley, and scarp resources simultaneously. Due to lack of time and facilities, it was not possible to check the deposits for possible pollen survival, so that no estimate of the plant component of the diet can be made, but it may be assumed to have been considerable, in the context of the fertile river valley systems of the Macdonald and Hawkesbury. Not more than one-tenth of the total occupation deposit in MR/1 was excavated during this survey, so it can be further investigated in the future.

During the period of excavation of MR/1 a number of reconnaissances were made in the locality and some well preserved cave paintings were discovered about five miles upstream. They are in a huge hollow boulder (MR/2) lying about 500 feet up a moderately sloping hillside on the east side of the Macdonald (ref. 984844). They include what appears to be a turtle, outlined in white and infilled with a grid pattern in white, several lines of small dancing men, together with some individual human figures in white ochre and charcoal, and, interestingly, a radiate design and "tally marks" in white, similar to those around Wollombi (see Fig. 14). A sondage into the deposit in this shelter showed it to be completely sterile.

During a reconnaissance along the top of the scarp above MR/1 a stone arrangement was found which encloses two small natural rock basins, one permanently filled with water from a spring and the other dry (ref. 962773). The arrangement is composed of natural stones piled up into a low wall enclosing an oval area 90 feet long and 20 feet wide. It seems unlikely to have been made by European settlers, since it would be no barrier to cattle or sheep, and may possibly be the remains of a bora or initiation ground. No implements of any sort were found during these investigations of the top of the scarp, but quartz nodules, similar to material used for flaking at Site MR/1, were found to occur frequently in the sandstone conglomerate.

Before proceeding to a consideration of the comparative analysis of artifacts from these excavations, attention should be drawn to the tables showing the distribution of artifacts for sites BL/1, YC/1, and MR/1. It will be noticed that at site BL/1 the maximum occurrence was in horizon 7, at YC/1 in horizon 6, and at MR/1 in horizon 4. If we

extrapolate from the levels carbon-dated, as was done in Part I of this survey, we find that horizon 7 at BL/1 dates to about 1800-2300 BP, horizon 6 at YC/1 to about 1700-2000 BP and horizon 4 at MR/1 to around 1800-2300 BP. (It should be noted that BL/1 and YC/1 were excavated in 3-inch levels, whereas 5-inch levels were used at MR/1, so the difference in rate of deposition is not as marked as might be supposed.) It seems, then, that around 1800-2000 BP was a period of maximum activity at sites at both ends of the Boree Track.

The implications of this apparent pattern will be considered further when the results of materials and computer analysis have been described.

#### MATERIALS AND COMPUTER ANALYSIS

The range of lithic materials used for flaking at the MR/1 site was much wider than at any of the other sites excavated during the survey. Since the only material suitable for flaking found in the locality was the very variable quartz present in nodular form in the sandstone conglomerate of the scarps, this seemed to imply an extensive trade in raw material for tool-making. Analysis of the stone types present in the implements and waste excavated at MR/1 was therefore undertaken and an estimate of possible sources made, with the assistance of Professor D. Branagan, Department of Economic Geology, University of Sydney. The materials present (excluding quartz, which is almost impossible to provenance) appear to group at an elementary level as follows:

<i>Material</i>	<i>Description</i>	<i>Possible Source</i>
Chert/Jaspar	Yellow/Red	Hunter/Goulburn
Chert	Lt Grey/White	Merewether, Newcastle
Chert	Dark Grey/Black	Wagonga, S. Coast
Quartzite*	Grey/Yellow	Doubtful
Quartzite*	Pink/Red	Hunter
Igneous	Diorite	New England

\*These two categories could possibly be identified as silcretes, but the term quartzite is usually applied to them in Australia.

The following chart (Table 8) shows the distribution of material at MR/1 by horizons. Only implements are included in this analysis and identifications are tentative only. Nevertheless some apparent patterns do appear.

**TABLE 8. SITE MR/1: DIFFERENTIATION OF MATERIAL BY HORIZONS  
(IMPLEMENTS ONLY. N = 155)**

HORIZON	Chert Yellow/ Red	Chert Lt Grey/ White	Chert Dk Grey/ Black	Quartzite Grey/ Yellow	Quartzite Pink/ Red	Igneous Diorite (Grd flakes)
1	**		*	**	*	****
2	**	***			***	**** ****
3	*	*	***	*	****	**** *
4	**	**** **	****	**** ****	****	*
5	****	****	**	***	***	***
6	*	**	***	****	*	
7	***	****	***	****	**** *	
8				***	**	
9	**** **			***	**	
10	*	**		**** ***	*	
11		*				

Note: Quartz implements not included, since it is impossible to localise sources.

It will be noticed that the putative Hunter Valley cherts (col. 1), Merewether chert (col. 2), and Hunter quartzites (col. 5) appear throughout the time span of occupation, whereas the possible Wagonga black cherts come in only in horizon 7 (i.e. at about 3000 BP). Similarly the diorite flakes (all of which had ground facets) come in at horizon 5 (i.e. at about 2400 BP). This would seem to imply that at the time of first occupation (about 6000 BP) contacts were purely local, but that a widespread trading network developed between 3000 and 2000 BP. The grey/yellow quartzites, which have not been localised, appear most strongly in horizons 4-10, but are present throughout the deposits; it is possible that they are derived from a source in the vicinity of the Macdonald Valley which has not yet been discovered.

It should be added that single specimens of black chert appeared in the waste from levels 9 and 10 in Square CC only. In view of the dating for this zone (SUA-676) this does not necessarily invalidate the suggestions made above. No diorites appear in the waste earlier than horizon 5, though dolerites are present in the lower levels. These are possibly from the northern fringes of the Hunter Valley, but not from as far afield as New England.

At the conclusion of the excavations early in 1977, it was decided to attempt to extract additional facets of information from the extensive sample of Bondi points obtained from the totality of the excavated sites. The help of the C.S.I.R.O. Computing Research Centre in the University of Sydney was enlisted and David Hain, a programmer who was also studying anthropology and archaeology, agreed to undertake the project. The

summaries of computer printouts listed below have all been supplied by him, but the comments and interpretations are the result of discussions between David Hain, Ian Johnson, and the author.

The basic descriptive categories employed in the computer project were identical with those used in the statistical analyses in Part I of this report, i.e. maximum length, maximum breadth, thickness at mid point, weight, and cutting angle at mid point of the chord.

In order to include a coastal sample in the programme, backed blades were included from two surface sites extensively collected by L. K. Dyll — Williamtown Road (Map: Newcastle, 1-63360, ref. 886442) and Swansea Heads (Map: Lake Macquarie, 1-63360, ref. 664084). These sites have already been referred to in the section on the Hunter estuary. All undamaged Bondi points from these two sites were extracted and measured by the same methods used on the excavated collections. These two Dyll sites were code-named WR/1 (Williamtown Road) and LM/1 (Lake Macquarie).

The dichotomy between quartz implements and those made of cherts or quartzites soon became apparent in the computer programmes, as it did in the statistical comparisons in the first part of this report. However, the division was not made completely until late in the computer project, when it became clear that the marked differences in the quartz samples were tending to obscure the key issues.

Originally it was hoped to analyse any areal variations present in the implements, both synchronically and diachronically. Initially the total samples from all sites were included and the complexities and problems encountered in the earlier stages of the project made it premature to attempt any cross-site analyses by horizons or by dated levels.

The programmes employed initially were all taxonomic and had proved successful in applications for analyses of natural history collections. However, the size of the sample, the number of attributes included, and the very variable occurrence of quartz made interpretation of the printouts virtually impossible. There appeared to be no consistency in the attributes contributing to the various groupings, nor was there any indication of grouping by sites. At this point in the project it appeared that the distribution was almost entirely a random one. One indication did, however, stand out — the Bondi points from Dyll's two coastal sites were markedly larger (and correspondingly heavier) than those from the middle Hunter and other inland sites.

At this point advice was sought from Ian Johnson, who had had wide experience of computer applications to archaeological data in Europe and was, in fact, incorporating the Hunter statistics into his own Ph.D. research programme, on the interface between the Capertian and Bondaian phases in eastern New South Wales. He recommended switching to discriminant analysis and it was decided to try an alternative approach. The new programmes used were those described in SPSS (*Statistical Package for the Social Sciences*, by Nie, Hull, *et al*, 2nd edition, 1975). The selection method used was RAO's V — a generalised distance measure (as described on page 448 of SPSS). This was the point at which it was decided again to separate quartz and non-quartz, in order to give the new approach every chance of success.

The results of the various runs are summarised in the following paragraphs. The original printouts are included in the survey material deposited in the Anthropology Department of the Australian Museum and may be studied there.

- (i) *All tools, both quartz and non-quartz; all sites*  
 Variables: length, breadth, thickness, weight, cutting angle.  
 Result: 32 per cent of tools correctly classified as to provenance.  
 Main discriminators: length, weight, cutting angle.
- (ii) *All non-quartz tools; all sites*  
 Variables: length, breadth, thickness, weight, cutting angle.  
 Result: 34 per cent correctly classified as to provenance.  
 Main discriminators: length, weight, cutting angle.
- (iii) *All non-quartz tools; all sites, but WR/1 and LM/1 grouped*  
 Variables: length, breadth, thickness, weight, cutting angle.  
 Result: 37 per cent correctly classified as to provenance.  
 Main discriminators: length, weight, cutting angle.
- (iv) *All non-quartz tools; sites SH/1, MR/1, M/1, YC/1, BL/1*  
 Variables: all attributes used.  
 Result: 46 per cent correctly classified as to provenance.  
 Main discriminators: cutting angle, thickness, weight.  
 (Note: SH/1 was 60 per cent correctly classified and MR/1 was 55 per cent correctly classified.)
- (v) *All non-quartz tools; sites SH/1, MR/1, M/1, YC/1, BL/1, (WR/1, LM/1 grouped)*  
 Variables: all attributes used.  
 Result: 51 per cent correctly classified as to provenance.  
 Main discriminators: Weight, length, cutting angle.
- (vi) *All non-quartz tools; sites as in (v)*  
 Variables: length, weight, cutting angle.  
 Result: 49 per cent correctly classified as to provenance.  
 (Note: the slight difference in this result, as compared with (v) — 49 per cent as against 51 per cent — indicates that width and thickness play little part in selection by discriminant analysis.)
- (vii) *All non-quartz tools; sites as in (v)*  
 Variables: length, weight.  
 Result: 38 per cent correctly classified as to provenance.  
 (Note: this result, when compared with (v) and (vi) — 51 per cent and 49 per cent — indicates that cutting angle is the third most important discriminator.)
- (viii) *All non-quartz tools; all sites except coastal (WR/1, LM/1)*  
 Variables: all attributes used.  
 Result: 32 per cent correctly classified as to provenance.  
 Main discriminators: cutting angle, thickness, length, weight.  
 (Note: the 121 non-quartz Bondi points from BOB/1 were allocated as follows:

SH/1	— 20 (17%)
BOB/1	— 17 (14%)
MR/1	— 28 (23%)
M/1	— 11 (9%)
YC/1	— 35 (29%)
BL/1	— 10 (8%)

The large sample from BOB/1 and the spread of the tools into other groups during the analysis explains the drop in percentage when BOB/1 is included, i.e. from 46 per cent to 32 per cent.)

The final two runs included all eight sites previously analysed and also incorporated a series of other eastern New South Wales sites, viz., Capertee Nos. 1,2,3, and 4; Lapstone Creek; Stockton's Blue Mountains sites; Shaws Creek; and the Singleton surface collections of McCarthy and Davidson. A total of 1242 Bondi points were analysed. This additional data was kindly supplied by Ian Johnson.

- (ix) *All non-quartz tools; all sites (as above)*  
 Variables: all attributes used.  
 Result: 14 per cent correctly classified as to provenance.  
 Main discriminators: Weight, length, cutting angle.
- (x) *All non-quartz tools; all sites (as above)*  
 Variables: all attributes used.  
 Result: 27 per cent correctly classified as to provenance.  
 (Note: The Hunter sites — SH/1, BOB/1, MR/1, M/1, YC/1, BL/1 — were formed into one group, WR/1 and LM/1 into another group, and the remaining New South Wales sites listed above were entered individually. The Hunter group showed 52 per cent internal consistency and the coastal group 58 per cent consistency.)

In Table 9 the basic data employed during this computer analysis are given in condensed form.

The upshot of this analysis is that in the Hunter region, at least, there are significant variations between sites in the attributes of the tools produced and these have persisted over a time span of several millenia, the most marked variation being between coastal and inland sites. The industry at Bobadeen (BOB/1), when the quartz component is excluded, is the most generalised of the whole series (see Run viii above). This may be a product of the size of the sample or of the greater time-span of the site, as compared with the Hunter occupation period. Alternatively, it may be a difference of tradition between the western slopes and the eastern river valleys. The coastal craftsmen certainly appear to have produced consistently well-shaped and usually longer backed blades than those of the inland groups. Whether this was deliberate (being perhaps connected with shell-fish gathering activities), or whether it is a mechanical product of the high quality of the Merewether chert which predominates in coastal collections, can only be determined when considerably more archaeological work has been carried out in the area.

**TABLE 9. BONDI POINTS: COMPARATIVE STATISTICS ALL SITES**

Attribute	Site	NON-QUARTZ			QUARTZ		
		N	Mean	Std Dev.	N	Mean	Std Dev.
Length (cm)	SH/1	58	2.51	.724	0		
	BOB/1	121	2.19	.725	76	1.63	.346
	MR/1	33	2.07	.414	4	1.33	.222
	M/1	27	2.28	.613	1	2.00	
	YC/1	43	2.02	.460	4	1.68	.299
	BL/1	32	1.92	.503	7	1.47	.150
	WR/1	49	2.70	.648	0		
	LM/1	69	2.86	.867	0		

TABLE 9. Cont.

Attribute	Site	NON-QUARTZ			QUARTZ		
		N	Mean	Std Dev.	N	Mean	Std Dev.
Breadth (cm)	SH/1	58	0.74	.190	0		
	BOB/1	121	0.73	.174	76	0.71	.165
	MR/1	33	0.74	.194	4	0.70	.216
	M/1	27	0.75	.148	1	0.80	
	YC/1	43	0.74	.183	4	0.68	.050
	BL/1	32	0.73	.309	7	0.71	.090
	WR/1	49	0.86	.206	0		
	LM/1	69	0.75	.235	0		
Thickness (cm)	SH/1	58	0.31	.148	0		
	BOB/1	121	0.37	.127	76	0.38	.106
	MR/1	33	0.33	.110	4	0.35	.058
	M/1	27	0.39	.138	1	0.50	
	YC/1	43	0.40	.176	4	0.45	.058
	BL/1	32	0.36	.084	7	0.37	.095
	WR/1	49	0.46	.141	0		
	LM/1	69	0.47	.215	0		
Weight (gm)	SH/1	58	0.68	.548	0		
	BOB/1	121	0.65	.508	76	0.48	.271
	MR/1	33	0.45	.200	4	0.28	.150
	M/1	27	0.66	.560	1	0.80	
	YC/1	43	0.70	.543	4	0.58	.096
	BL/1	32	0.42	.282	7	0.30	.129
	WR/1	49	0.71	.430	0		
	LM/1	69	0.81	.610	0		
Chord Angle (°)	SH/1	58	36.4	10.3	0		
	BOB/1	121	44.3	11.5	76	43.6	11.6
	MR/1	33	49.5	13.1	4	64.0	8.8
	M/1	27	39.7	7.3	1	50.0	
	YC/1	43	39.9	12.1	4	48.0	10.7
	BL/1	32	45.8	10.8	7	43.3	11.9
	WR/1	49	45.3	11.1	0		
	LM/1	69	58.3	10.1	0		
L/B Ratio	SH/1	58	3.5	0.9	0		
	BOB/1	121	3.0	0.8	76	2.3	0.5
	MR/1	33	2.9	0.8	4	2.0	0.5
	M/1	27	3.1	0.7	1	2.5	
	YC/1	43	2.8	0.8	4	2.5	0.6
	BL/1	32	2.8	0.7	7	2.1	0.4
	WR/1	49	3.3	0.9	0		
	LM/1	69	4.3	3.1	0		

## DISCUSSION AND CONCLUSIONS

A number of problems and anomalies in the evidence from the Hunter region require further elucidation. In this section the most important of these will be discussed and some tentative conclusions reached. These may be supported, modified, or disproved when further work is undertaken in the area, particularly in the estuarine parts of the river valley.

Firstly, then, the comparative lateness of the basal dates of all the occupation sites excavated in the Hunter Valley itself and its immediate tributaries: these are remarkably consistent, particularly if the amended date for BL/1 is accepted. Since all the sites excavated were rock shelters (no open sites having been discovered), it could be argued that the rock overhangs of the region have only existed for the 2-3000 years they have been occupied. However, this seems most unlikely, since rock shelters in the country bordering the Hunter Valley (e.g. Bobadeen, Macdonald River, Capertee, Noola) have certainly been occupied for periods varying from 5000 to 10,000 years. It is scarcely conceivable that all the Hunter shelters should differ so markedly in their life-span from neighbouring overhangs in similar conglomerate sandstones and similar situations. In the light of present evidence, therefore, it has to be assumed that Aboriginal occupation of the upper and middle valley itself did not commence until about 3000 BP.

One possible reason for this has already been mentioned: that there was a late survival in the lower Hunter Valley of the formerly extensive rainforest, which still exists in a number of pockets in the central coast region, and that this provided an effective barrier to occupation of the middle Hunter from the coast.

An alternative hypothesis, which would accord with Bowdler's (1977) model for Aboriginal occupation of the Australian continent, is that the occupants of the continental shelf, moved back by the rising of the sea levels until about 6500 BP, were still so sparse that there was no pressure upon them to leave the coastal and estuarine zones to whose ecology they were perfectly adapted. The dating of occupation sites on the north coast (McBryde, 1965, 1966, 1974) and south of Sydney (Megaw, 1968, 1974), as well as the Macdonald River site (MR/1), would seem to fit this pattern. A burial and occupation site at Swansea Heads, excavated by Dyal but not yet published, has a basal date of 7500 BP (L. K. Dyal, pers. comm. 1978). The other aspect of Bowdler's model, that when Aboriginal coastal groups were eventually forced to move inland, they did so initially up the major river systems, would also seem to be endorsed by the Hunter evidence, if one assumes that occupation of the inland slopes of the Divide was made by groups moving eastward from the Darling-Murray river systems.

In the light of present evidence it would seem that the existing central coastline of New South Wales was not reached until between 8000 and 5000 BP by groups moving back from the continental shelf, whereas the western slopes of the Divide had already been occupied from inland at least as early as 10,000 BP. It is possible that the Divide itself and the rugged country to the eastward were left as a sort of no-man's land until tentative contact between the two waves of occupation was established, possibly at about the time of the start of the Bondaian. The south coast of New South Wales (and presumably the Victorian coast also) had been reached even earlier, by 20,000 BP at the latest (Lampert, 1971). Stockton's Blue Mountains sites (Stockton & Holland, 1974), some of which appear to date back as far as 20,000 BP, may seem anomalous in this model. However, Ann Ross (1976) in her reconstruction of the ethnographic picture in the Sydney-Blue Mountains area found a similar situation to that indicated here for the Hunter Valley; that is, the coastal and estuarine people had little or no contact with the groups inland on the Hawkesbury system and in the mountains. It is possible, therefore, that there was

penetration into the area of the Divide from the Darling-Murray system in a period much earlier than the coastal occupation by people moved back from the continental shelf by the post-Pleistocene rise in sea-level. Alternatively it may be found that the Blue Mountains dates are not supported when further archaeological work is carried out in the area.

The second matter which this survey aimed to elucidate was the prehistoric relationship between the people of the estuarine and freshwater reaches of the Hunter River system. The only ethnographic hint that we have about contact between the coast and the middle Hunter is Threlkeld's remark (1974:42) that the coastal Aborigines in the Newcastle area traded *Xanthorrhoea* stems (for spearshafts) with the inland people in exchange for possum-fur belts. However, even this contact may not have been via the Hunter Valley itself, but by traditional tracks along the tops of the scarps to the south, where the cover is light sclerophyll and movement is comparatively easy. This solitary reference to trade between the coast and inland does not, therefore, automatically invalidate the suggestion that the valley was blocked by impenetrable rainforest until quite recently. In any case, the river itself would probably have been navigable.

So far as the archaeological record is concerned, the material used for flaking in the two areas differs completely, the middle Hunter tools being almost entirely manufactured from local red to yellow cherts and quartzites, whereas the estuarine and coastal industries employed Merewether (or "Nobby's") white to grey chert almost exclusively. This applies both to the small-tool component and to the heavy core and flake artifacts found in surface collections in both areas. A similar dichotomy may also be present in the differences between the backed blades from the coastal surface collections and the inland excavated material, as detected in the computer analysis of Bondi points. However, the variation in size and weight between Dyall's sand-dune collections and the backed blades excavated in the middle Hunter sites could also be explained as a factor either of mechanical sorting in the shifting dune environment or of unintentional selection on the part of the collector. Nevertheless, the Williamtown collections were total collections made during a considerable number of visits and the material was deliberately taken from a surface with a compacted layer immediately underlying it. The Swansea material was not collected under quite such tightly-controlled conditions (Dyall, pers. comm. 1978).

The absence of the large core and flake component from all excavated Hunter sites argues for this having predated the microlithic complex in the middle Hunter and adjoining areas. The time-span and sequence of tool types in the Hunter estuary cannot be elucidated in the absence of an excavated sequence from the Hunter mouth.

From the sparse ethnographic record it would seem that the contacts of the estuarine Aborigines were strongly oriented to north and south, the Awabagal having frequent intercourse with the Gaddhang, who in turn extended to the northern fringes of Port Stephens, where they were in contact with the Birbai of the Manning estuary. Regarding the contacts between the Wonarua and their neighbours to the west and south, rather more may be said. Enright informed McCarthy (pers. comm., see McCarthy and Davidson, 1943: 228) that the Wonarua were a "horde" of the inland Gamilaroi. Presumably this information originated from Gaddhang remnants, since Enright's contacts were mainly confined to the coastal groups (and it is doubtful whether any Wonarua had survived into his period). Even so, the information is of some significance, since it indicates that the Wonarua were oriented more to the inland than the coast. The contacts, both friendly and hostile, between the Wonarua and the Gamilaroi via the lower reaches of the Goulburn were described in Part I of this survey, where it was suggested that Gamilaroi raiding into the middle Hunter may have been a historic relic of Wonarua intrusion up the

valley from the coast. In the light of the fresh evidence presented here, it seems more likely that the Wonarua may have been descendants of a group which hived off from the Gamilaroi and moved into the upper valley from the west only a few thousand years ago. The fact that the Gamilaroi raiding appears to have been mainly to obtain wives could be taken to support this theory.

Contacts between the Wonarua and the Darginung to the south, along the Boree Track, seem to have been mainly for joint ceremonials and trade; this is reflected in the rock art of the region between the Hunter and the Hawkesbury and also in the presence of Hunter Valley cherts and quartzites in the tools and waste excavated at MR/1 on the Macdonald River. The apparent intensification of occupation in sites at both ends of the Boree Track about 2000 BP has already been mentioned. This may be a product of the late occupation of the Hunter Valley. If, as the survey seems to imply, Aboriginal occupation of the valley began only about 3000 years BP, then contact between the Wonarua and the Darginung may not have been established until towards the end of the third millennium BP, but may then have grown rapidly. The apparent presence of Hunter Valley cherts at MR/1 from at least 5000 BP would seem at first sight to imply trade between the Hunter and the Hawkesbury. However, in view of the consistency of the dating of the Hunter-Wollombi sites at c.3000 BP, it seems more likely that the Hawkesbury Valley people were periodically visiting the then unoccupied middle Hunter via the Wollombi and Milbrodale routes in order to obtain the raw material for themselves. It is just possible that the anomalous Milbrodale paintings are a relic of this period, since they are at precisely the point where several natural routes from the Hawkesbury emerge into the Hunter Valley itself. After occupation of the middle Hunter by the ancestors of the Wonarua about 3000 BP, probably the material was obtained by exchange in the vicinity of Wollombi.

The presence of Merewether chert also in the MR/1 deposits over a time span of more than 5000 years would seem to imply that it was obtained via the Hawkesbury River and Broken Bay from the Awabagal, rather than via the middle Hunter. The presence of black cherts, possibly from the Wagonga beds of the south coast, must have resulted from intercourse between the Darginung and the people of the Port Jackson region. The Darginung, in fact, appear to have been the middlemen in a far-reaching network of distribution of lithic raw materials and it may be assumed that they were also distributors of other more perishable goods which have vanished from the archaeological record. The Darginung territory contains some of the most outstanding rock art in the whole central coast region, so it may also be that they were catalysts in the spread of myth, ritual, and visual art. The cave paintings in the Wonarua area, on the other hand (with the sole exception of the Milbrodale site), are closely allied to those on the western side of the Divide, which is a further argument for their having been a sub-group of the Gamilaroi.

The picture that emerges from all of this is of a clear division between the coastal and inland tribes in the Hunter Valley. Whether the causes of this were geographical or historical cannot yet be stated definitely. However, the situation does appear to conform to Bowdler's model and it begins to seem as though the east coast may have been the last region to have been occupied in the gradual spread of the Aboriginal colonists from the north-west to the south-east of the Australian continent.

Although some of the dates from the east coast appear to be earlier than what is currently taken to be the climax of the post-Pleistocene marine transgression (i.e. about 6500 BP), the occupation sites so dated may well have been intermittently visited by groups from the continental shelf. Such visits may have been to exploit particular food zones or to obtain particular types of stone or other raw material for implement-making. Nevertheless, the fact that all dates obtained so far from the existing coastline show a

distinct cline from south to north would seem to indicate a similar differential in the time of occupation of the continental shelf.

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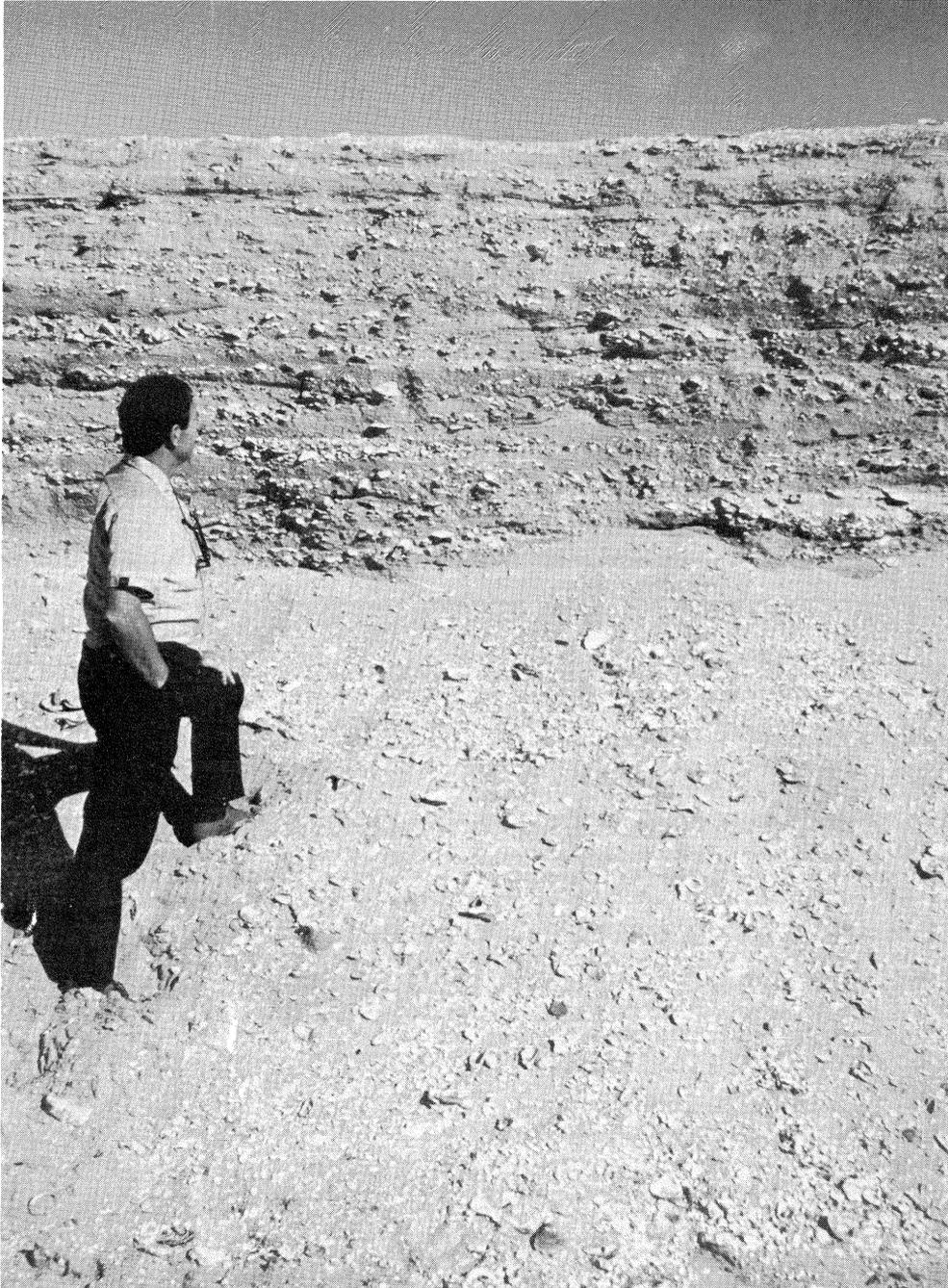


Fig. 5. Shell heap on Ash Island, Hunter estuary. When this photograph was taken on 12/3/70 this last remnant of a formerly huge mass of shells was in process of being bulldozed.

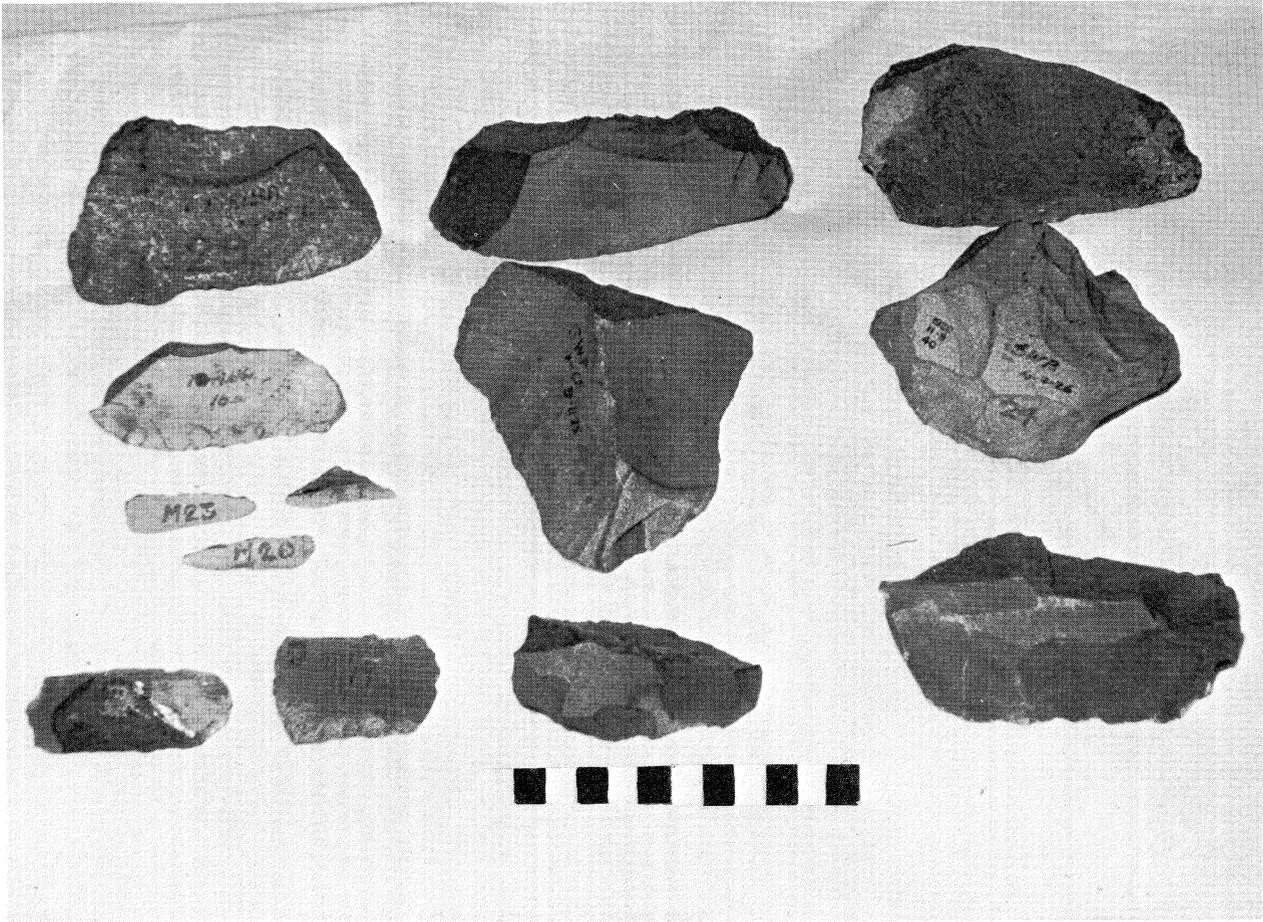


Fig. 6. Artifacts from the Cooksey collection in the Museum of Mankind (British Museum). These are all from Tirrikiba and Mayfield, inner suburbs of Newcastle. (Scale in cm.)



Fig. 7a. Artifacts from the Gwynne collection in the Australian Museum. All come from Tighe's Hill, an inner suburb of Newcastle. Illustrated here are examples of the large tool component. (Scale in cm.)

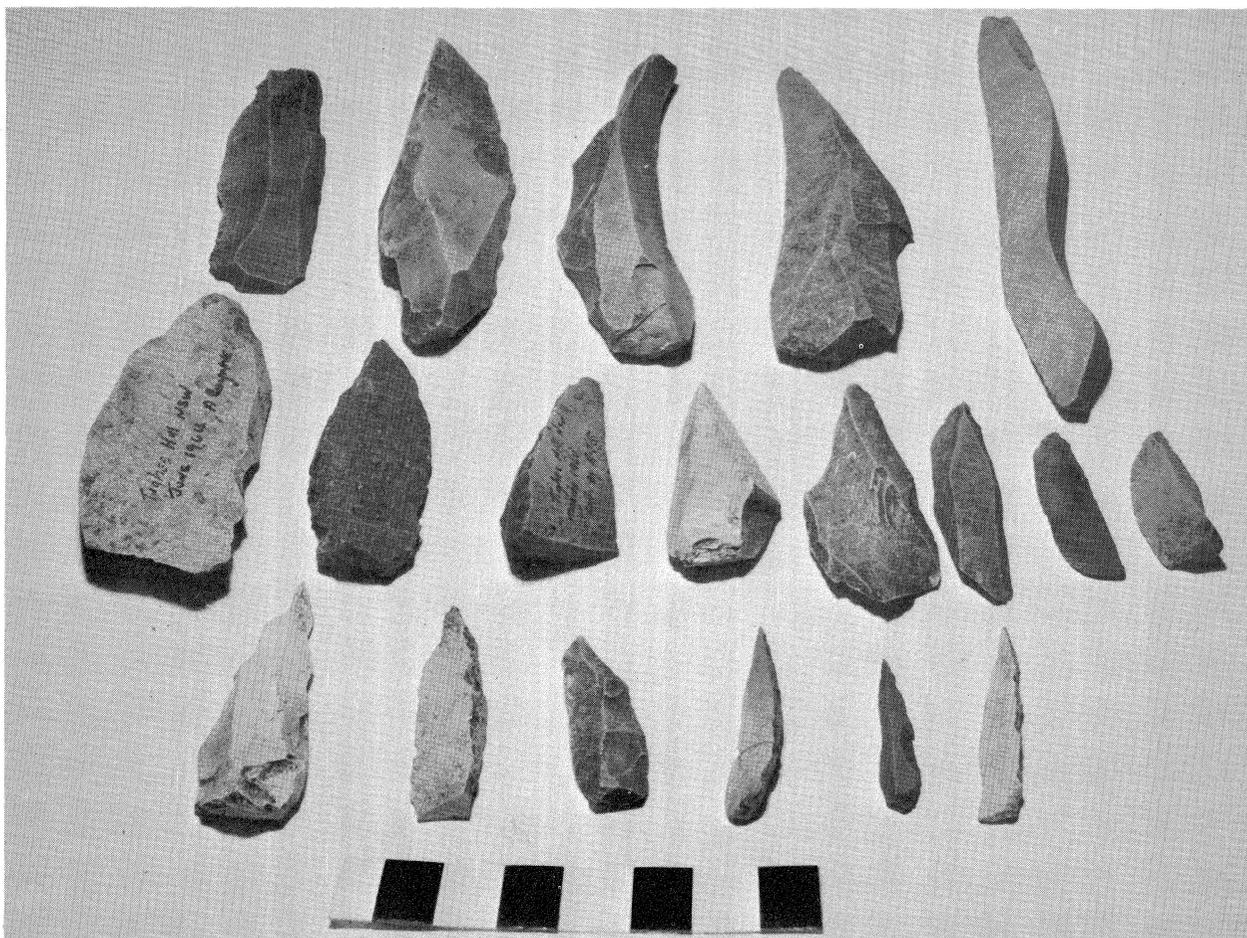


Fig. 7b. Artifacts from the Gwynne collection. These are a representative selection from the small tool component. (Scale in cm.)

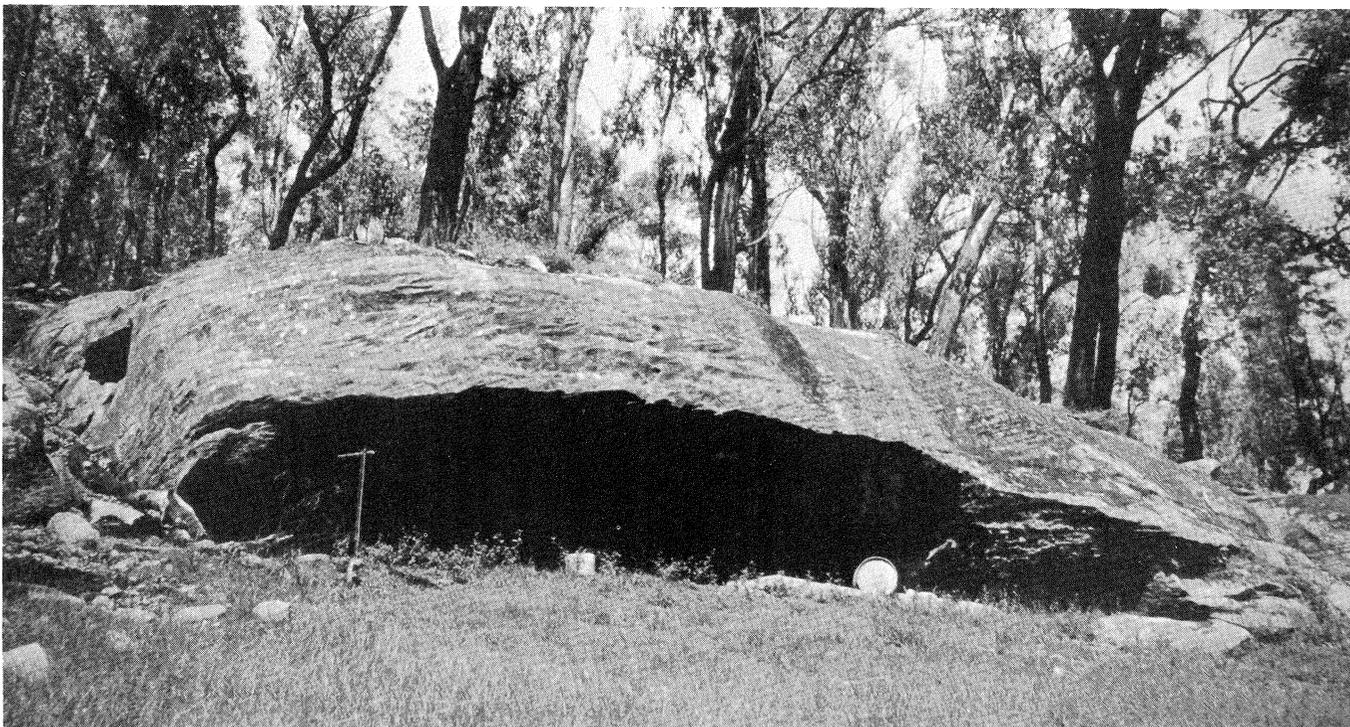


Fig. 8a. Site BL/1: general view of shelter. Big L Creek is about 100 yards down the slope in front of the shelter.

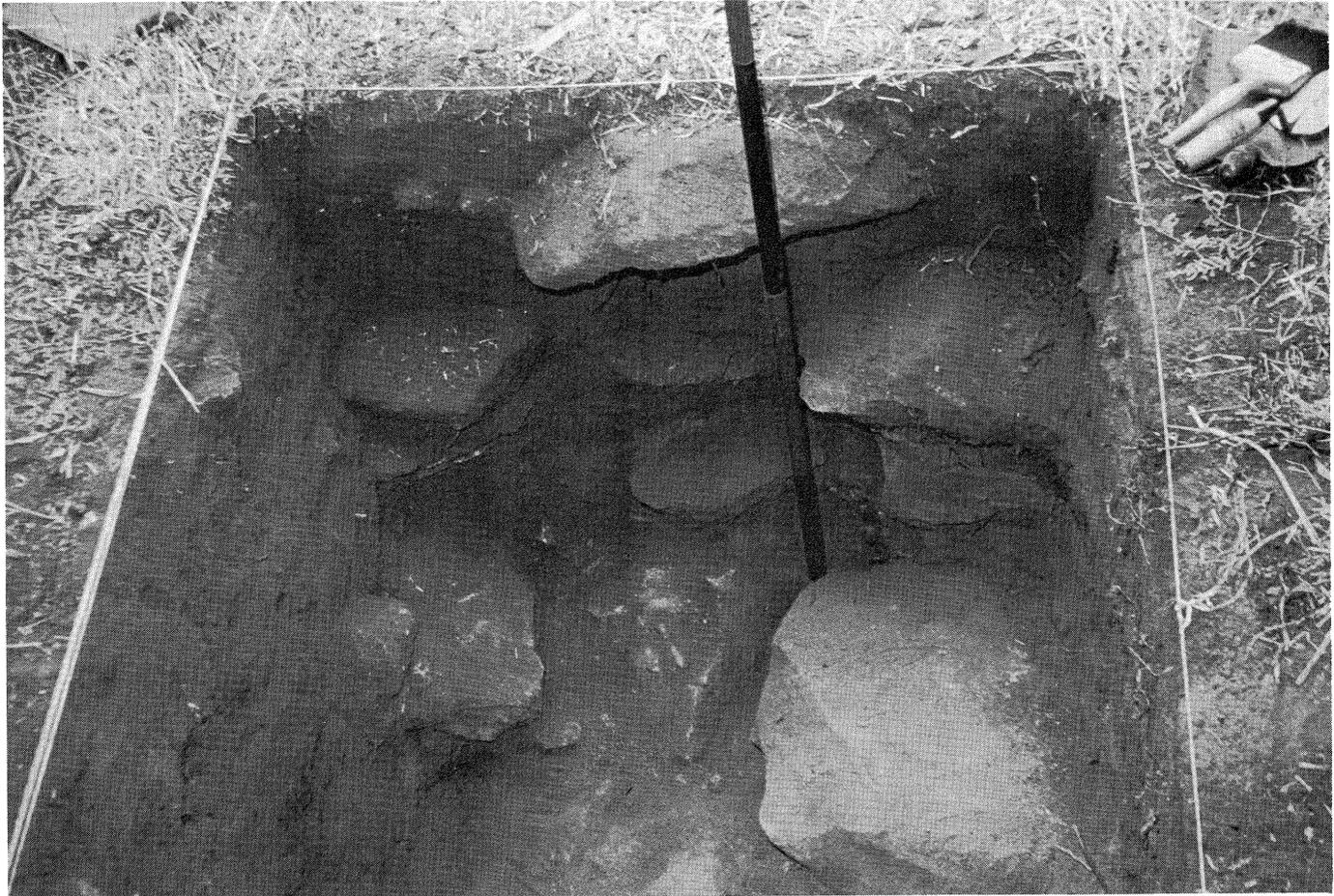


Fig. 8b. Site BL/1 excavation: end of Square A, the only square excavated, at 30 inches depth.  
(Ranging pole in feet.)



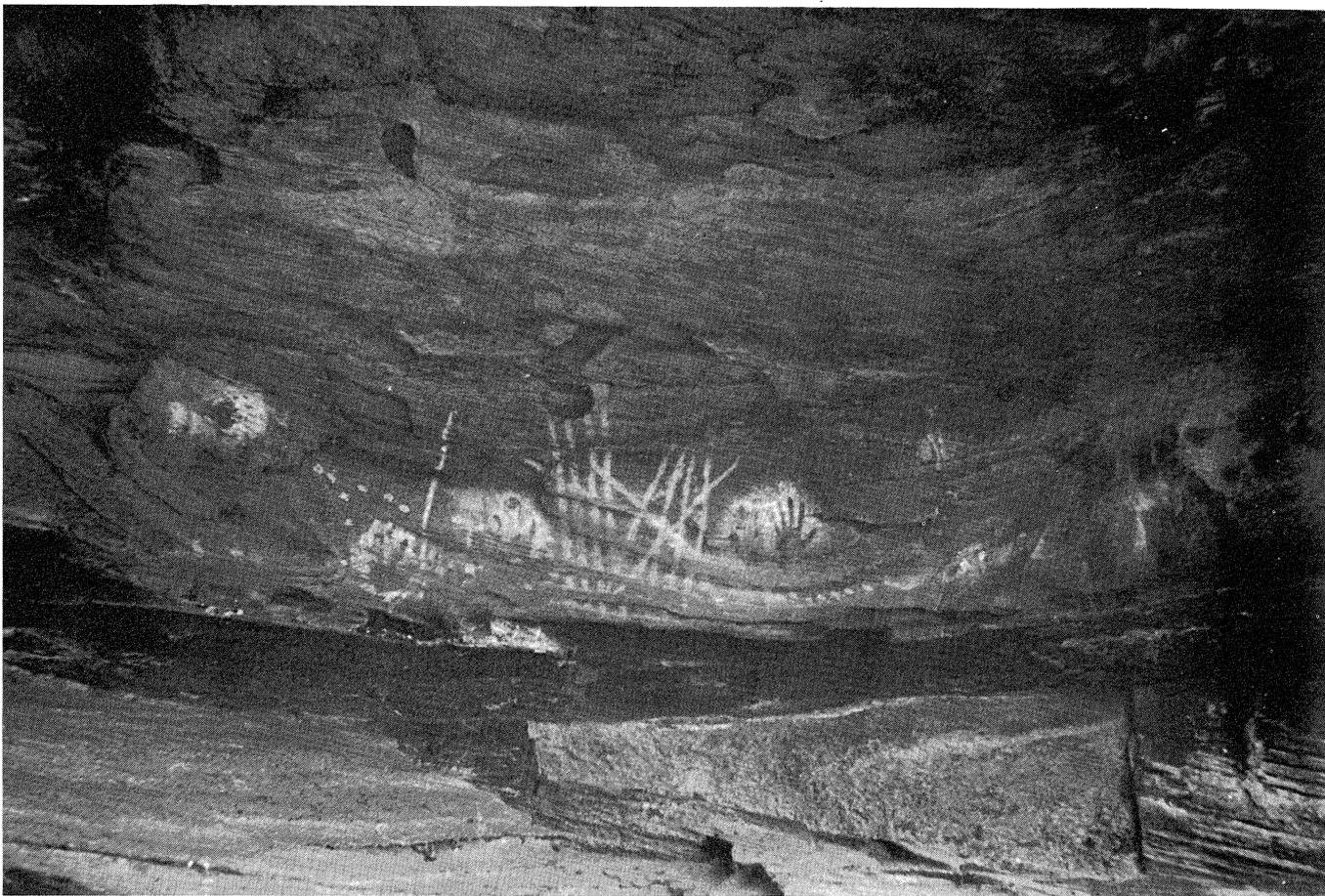


Fig. 9a & b. Site BL/1: paintings. At this site the stencils, radiate signs and tally marks appear to have been carefully placed and superimpositions are rare.



Fig. 10. Site YC/1: general view. Yango Creek is about 200 yards from the shelter across a level valley floor.

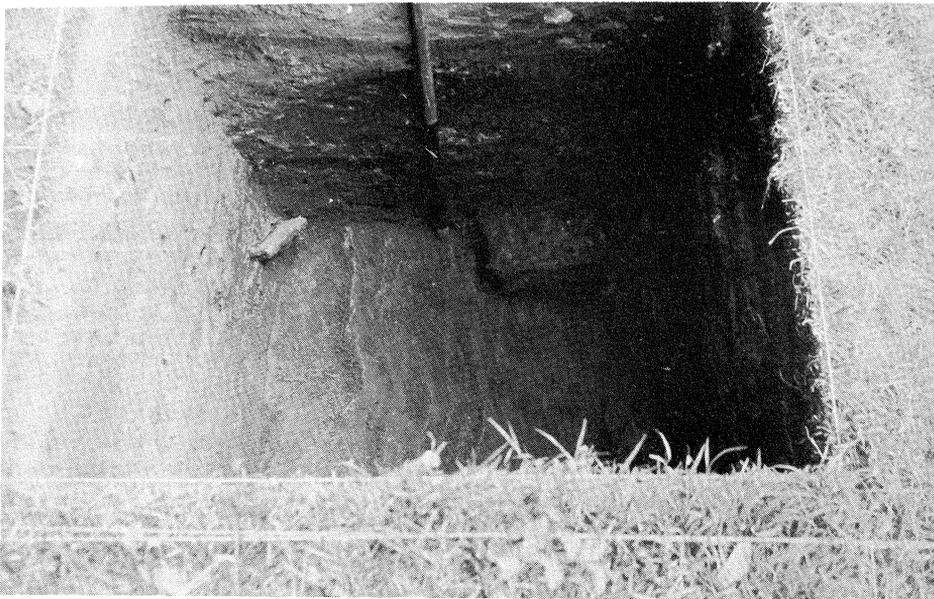


Fig. 11. Site YC/1 excavation: Square DD, level 11. The apparent changes in the soil profile are due to drying out of the section during excavation. (Ranging pole in feet.)



Fig. 12. Site MR/1: general view of shelter before excavation, looking east. The section excavated was in the immediate foreground.

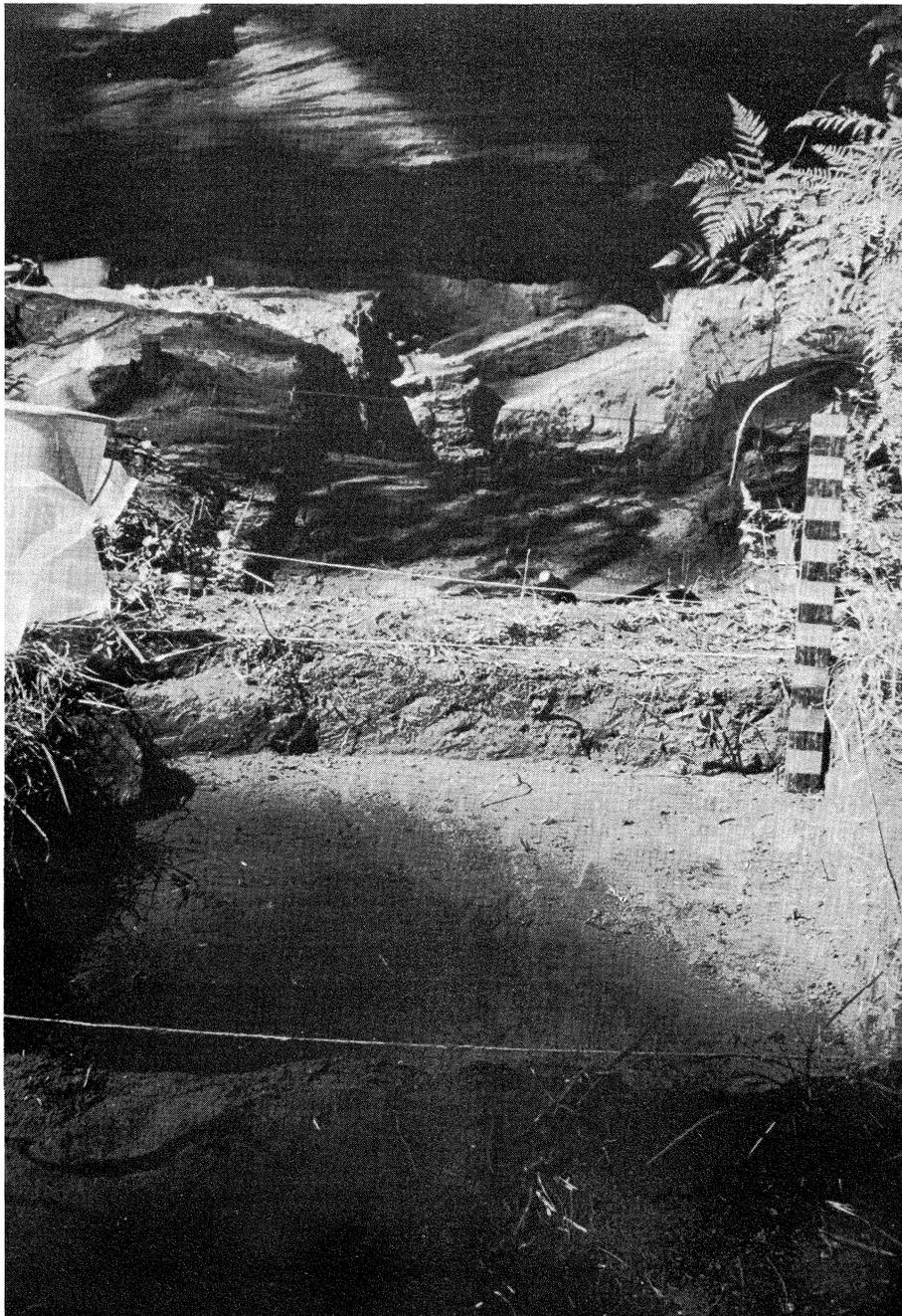


Fig. 13a. Site MR/1 excavation: looking along the datum line towards the back wall of the shelter. Included are Squares B, C, and D. (Scale in inches.)



Fig. 13b. Site MR/1 excavation: looking along the datum line towards the talus slope. Squares shown are AA, BB, and CC. The Macdonald River is about 200 feet below, down a very steep drop.



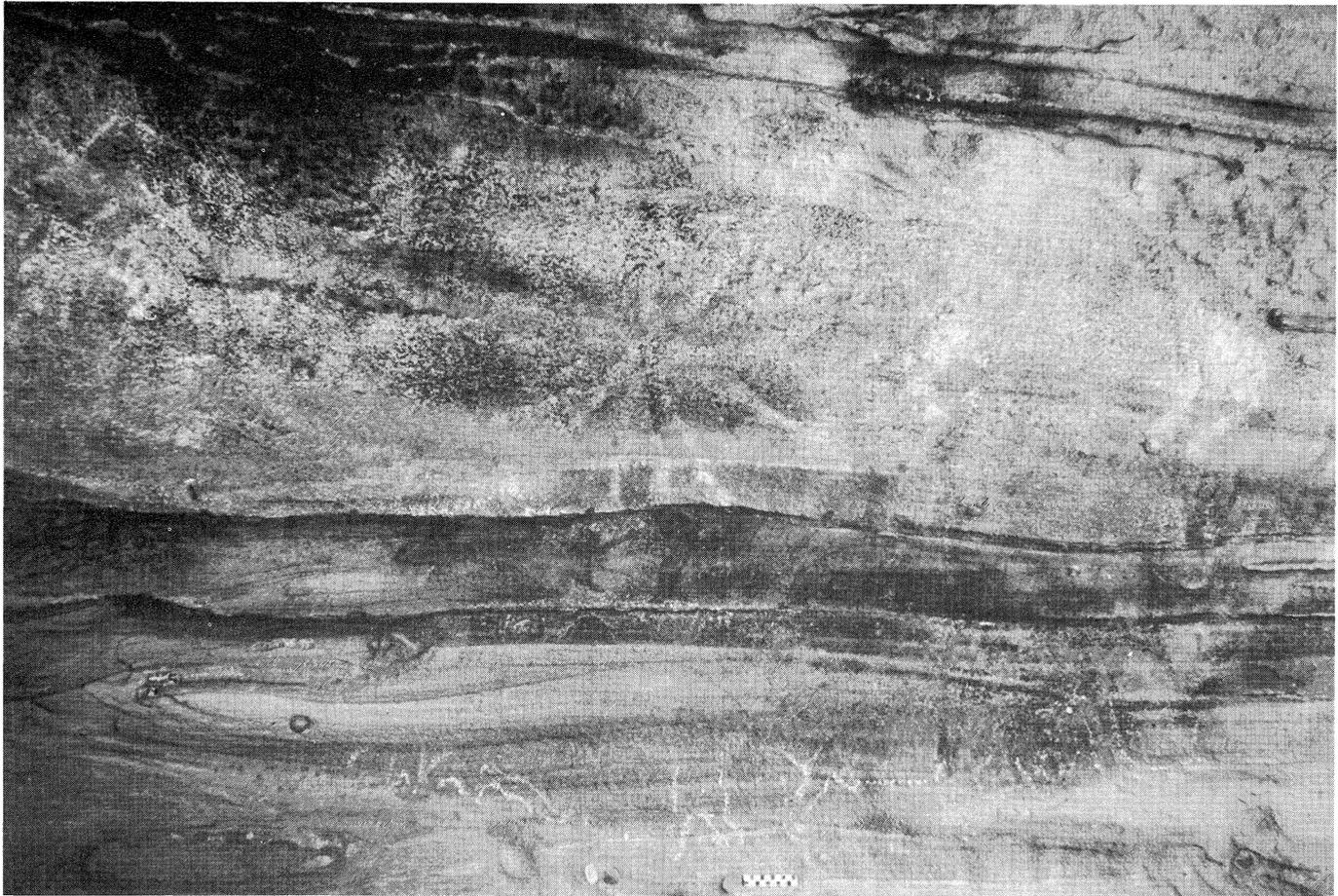


Fig. 14a & b. Site MR/2 paintings: note radiate symbol and small dancing figures in black and white line. (Scale in cm.)

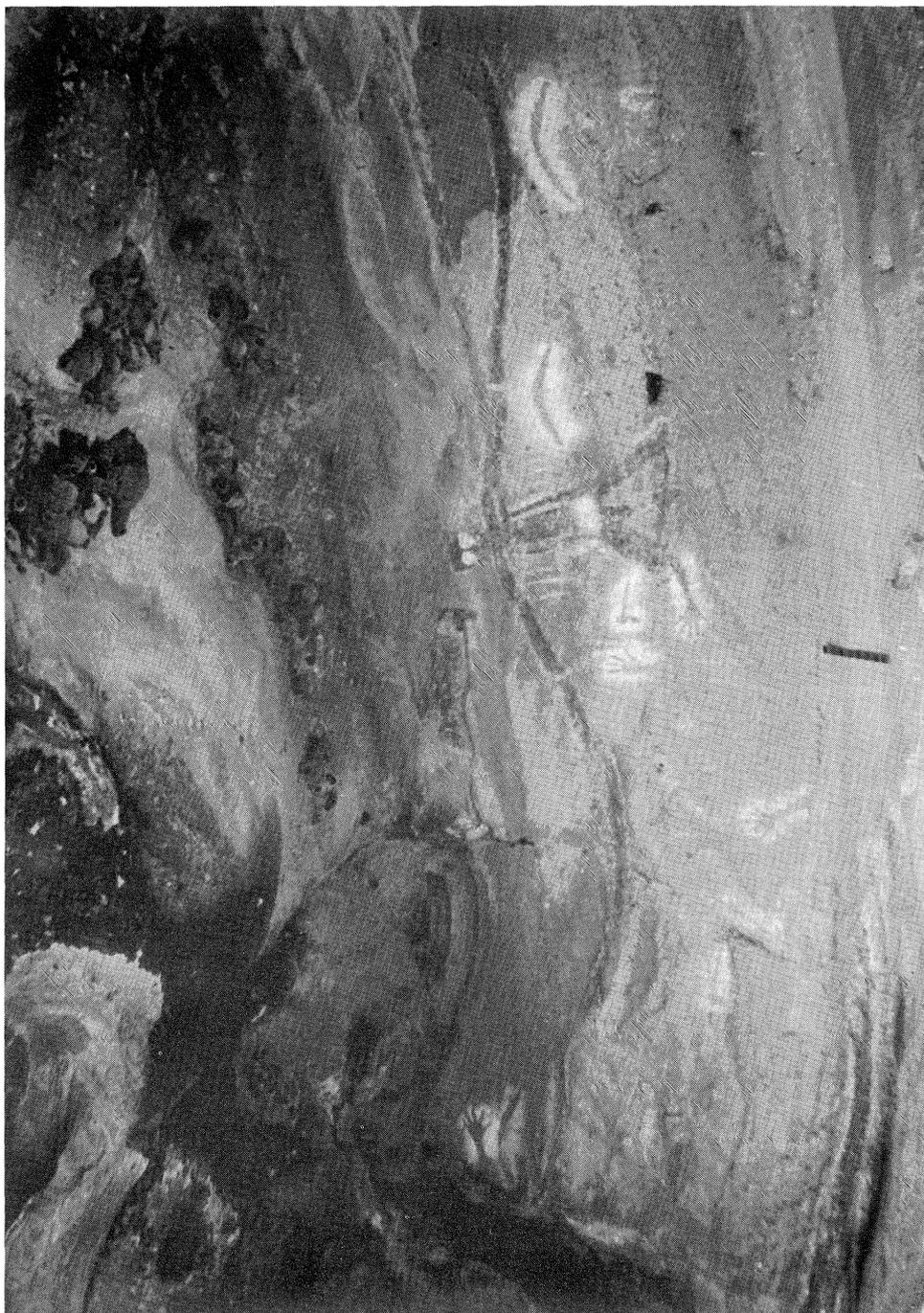




Fig. 15a & b. Milbrodale: paintings. The arms of the "culture hero" extend along the rock face for 18 feet. (Scale in inches.)