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GREEN GULLY REVISITED: THE LATER EXCAVATIONS

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Abstract

Excavations are described which were conducted subsequent to the removal of the burial. Trenches were located at different localities in order to provide exposed sections at all levels of the Keilor sediments. The stone artifacts recovered were not numerous, but they were comparable from all trenches. Included in the analysis were some tools from Wright's excavation trench (GGW). Trimmed implements in the Keilor Terrace were made on flakes and are typologically classifiable as scrapers. Unexpectedly for an industry of 8,000 years and older, it also included fabricators. The overlying terrace sediments (GGJ) included a microlithic backed blade industry and unifacially flaked pebble tools. These results conform with those made on sites of similar antiquity elsewhere in Australia.

Introduction

The excavations described here were a continuation of the September salvage operation. They served a dual function, for in addition to adding to the cultural material from the site, they were intended to expose sections for geomorphological study. The areas chosen for excavation reflect this duality and while some trenches were archaeologically unproductive, they assisted materially in the geological assessment of the site (Fig. 1).

Excavations extended over almost 5 weeks in November-December 1965, and February 1966. The author supervised part of the first excavation and the whole of the latter; R. J. Lampert directed the remaining period. Unfortunately, the weather which had hampered the September operations, deteriorated beyond expectations. Torrential rain forced suspension of activities on several occasions during December; even in February, 150 points of rain fell on one day. Stratigraphic observation and the collection of charcoal samples for radiocarbon dating was difficult under these circumstances, and the expected volume of excavated material was greatly reduced.

Attention was first directed to an area about 75 ft NE. of the burial site, in order to salvage any evidence before it was quarried away, and to clarify the stratigraphic situation in an area where the quarrying operations had uncovered numerous traces of oxidized sediments and charcoal. The intervening deposit between the burial site and this area having been already substantially removed, it was impossible to correlate the two areas simply by inspection. The presence of a disconformity here was recognized before the excavation began, although its extent and significance in the depositional sequence was a matter for investigation. The importance of this excavation (trenches A and AA) was that it demonstrated that there existed an intermediate zone of erosion and redeposition, separating two bodies of terrace sediment. The upper sediments represented a post-Keilor terrace depositional phase (termed GGJ by Bowler in his contribution to this *Memoir*), while undisturbed Keilor terrace sediments lay below this sloping intermediate zone.

The archaeological finds in the trenches from this intermediate zone therefore lost some of their stratigraphic value, because of the possibility of their mixed origin. It was possible that they had derived through erosion from the earlier terrace

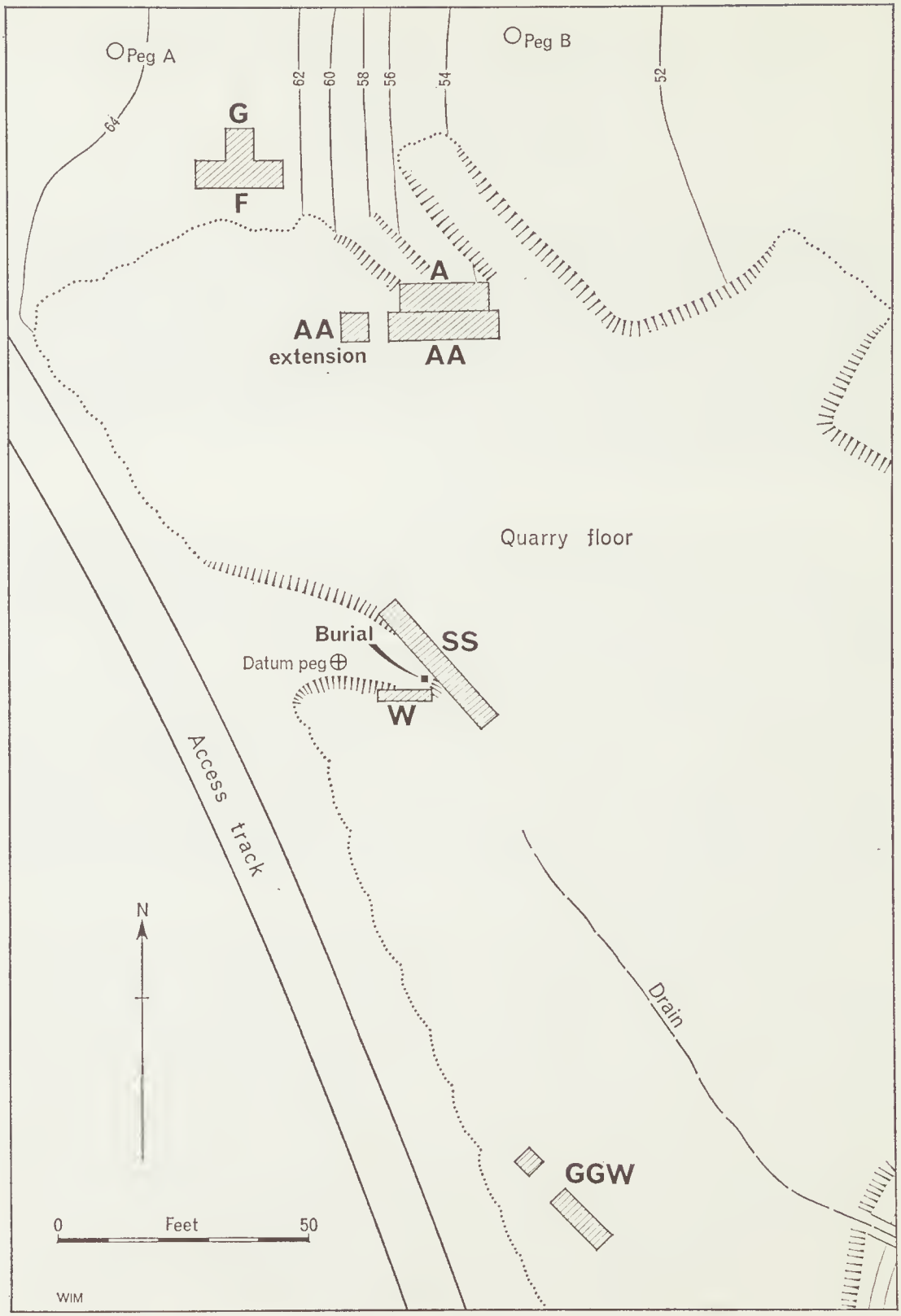


Fig. 1—Plan of site, adapted from Bowler's Fig. 4, showing location of excavated trenches.

or that they related to phases of occupation on surfaces of later GGJ times. However, the determination of the depositional sequence in this area made it possible for R. J. Lampert to select for excavation an adjacent area of undisturbed Keilor sediments, away from the intermediate zone (trenches F, G). His deepest excavation reached R.L. 54 ft.

During February, attention was re-focused on the burial site (SS). R. V. S. Wright's party, in addition to excavating an area of Keilor sediments S. of this site (GGW), had cleared a vertical section immediately NE. of the burial area—by then a rather forlorn residual promontory in the soil pit resulting from the quarrying of the surrounding deposit. The task of extending this vertical face for close study was continued by Mulvaney and a 4 ft wide trench was excavated along the base of the promontory, in a SE. direction. This trench (SS) reached a reduced level of 44 ft (14 ft below the burial) and extended over 16 ft from it. A smaller trench (W) was also excavated along the W. edge of the burial area, to a depth of R.L. 51 ft 6 in. By these means, cross sections through the deposit became available for inspection; the zone of burning adjacent to, and below the burial was exposed on three sides (Fig. 2, pls. 4-6).

At the same time, a test pit 5 ft × 4 ft (later stepped to smaller dimensions) was dug through the lower Keilor terrace sediments. This pit (AA extension, W. of AA), began at R.L. 45 ft and reached R.L. 31 ft 9 in., at which depth the underlying pebble bed was beginning to appear.

It must be emphasized, that although these various excavations were dispersed and each was small in area, their location was determined chiefly by their possible contribution towards assisting the geomorphological reconstruction of the site. They succeeded in this by providing vertical sections through over 30 feet of the sediments, almost 20 feet of which was located at the burial site itself. The archaeological results must be considered partly as incidental to this object.

The sediments were removed in horizontal spits, usually of about three inches in thickness. Many spits proved sterile, and the total number of trimmed artifacts was small. But, when it is remembered that this was an open floodplain, and not a congenial situation to judge from contemporary attempts to camp there, it becomes more a matter for comment that so much occupation occurred there, than that the evidence for it was so meagre.

Burial Site Trenches (SS and W)

Fig. 2* and plates 4-6 present the evidence of the stratigraphy on three sides of the burial site. The details of the burial have been discussed by Casey and Darragh elsewhere in this *Memoir*. It is necessary here to indicate in which ways these later excavations amplified our knowledge of the site.

The band of calcium carbonate, which encrusted artifacts and faunal remains, extended from about R.L. 58 ft 3 in. to approximately R.L. 51 ft. Apart from the sporadic occurrence of stone flakes and implements, the most positive evidence for human occupation on surfaces of the Keilor sediments in this area, consisted of two features which perhaps may be interpreted as hearths. Significantly, they occurred at about the same depth in the deposit, although on opposite sides of the burial area. A confined area of reddened sediments and charcoal was exposed in the NE. trench SS, at R.L. 57 ft (spit 15). Within a few inches, and at the same level, lay some broken fragments of bone, a marsupial vertebra and one small quartzite flake. (It was possible to collect only a very small carbon sample for possible age estimation). Directly underlying this feature, at R.L. 56 ft 5 in, were

*Fig. 2—Sections through burial site looking NE. and NW. Composite result of the initial excavation and subsequent work. This is the same as Casey and Darragh's Fig. 3, which see.

five tiny flakes of quartzite, so close together that they and their carbonate matrix fitted into a matchbox.

In trench W, 10 ft SW. from this feature, and at approximately R.L. 56 ft 9 in., lay a group of weathered basalt pebbles, from 3 to 6 inches across; two of them were cleanly fractured pieces. There were nine stones in all, arranged in circular fashion, while another stone lay five inches above them (Pl. 5). Although no traces of reddened earth and only a few flakes of charcoal were visible within the group, such a concentration cannot be explained as a natural feature, and the possibility that it was a hearth must be considered. One bone was found at the same level, seven inches away. Less than two feet S., and also on the same level, there was another small basalt pebble. At the time of the burial excavation, two similar pebbles were recovered at R.L. 56 ft 8 in., little more than a foot away, during excavation of the S. face of the site. Casey and Darragh observed that at a depth of approximately 56 ft 5 in., a slight scatter of 'flakes, charcoal and granules of burnt earth' occurred along the whole of this face.

The difference in levels between all these features is so slight, that a distinct occupational surface on the Keilor sediments at this time is indicated. It should be possible to date this occupation, because in addition to the carbon sample mentioned above, samples were collected in W trench at about this level, and a further sample AG, was taken on the S. face at R.L. 56 ft 5 in. Unfortunately, all of them are small samples.

Excavations revealed further details concerning the intense burning below the grave by facilitating close inspection of the oxidized sediments in section. There can be no doubt that the burning occurred *in situ* as the surrounding deposit was undisturbed. To judge from appearances (Pls. 3b, 4, Fig. 2), the fuel consisted of tree roots in their position of growth. On the E. face of trench W, there was burning from about R.L. 58 ft 3 in. to below R.L. 56 ft 6 in. In this case, the root had grown between the 'hearth' referred to above, and the isolated stone at the same level. There was no sign of disturbance in the sediments on either side of the oxidized area. On the opposite face of trench W, where the quarrying operations had lowered the surface level to almost R.L. 56 ft, a root-like feature extended from there to below R.L. 53 ft (Pl. 4). During the course of the excavation, it was established that these were continuous features, as they could be followed across the trench. They therefore belonged to the same tree. This evidence is discussed by Bowler in his contribution.

The larger trench (SS) on the SE. side of the promontory, sectioned the remnant of the extensive burning discussed in the report on the burial excavation. It extended to R.L. 52 ft 7 in. Over the last two feet, the burnt sediment was less than six inches in width. For a few inches below this, there were faint traces of burning.

The excavation therefore established that extensive burning had occurred at depths from above R.L. 58 ft down to R.L. 52 ft, and laterally along at least 10 ft at the end of the burial promontory. Because of the initial removal of soil by quarrying, the full vertical distribution of the oxidized sediments, described by Casey and Darragh, is difficult to determine; it cannot be proved that they extended up to the burial. On the other hand, the burnt area sectioned in trench W definitely extended down from about that level. Horizontally, this feature was less than two feet from the grave.

Artifacts from Burial Site

In order to present the stone finds as a useful sample, and because of their proximity and the apparent horizontal nature of the sedimentation, those from the initial burial excavation and trenches SS and W were combined. In Table I all stone finds are tabulated according to relative depth, and the type of raw ma-

terial is indicated. The typology of classifiable artifacts is listed below, although the types and their significance are discussed in a later section.

Trench SS, spit 20, produced the oldest trimmed implement excavated at Green Gully. It is a thick, steeply retouched flake with a rounded end (Fig. 3d.), found at R.L. 55 ft 4 in. A quartzite flake (SS, spit 48) possessing sharp edges and recovered at R.L. 47 ft 8 in., was the earliest excavated flake, positively struck by human agency. It is relevant here to note that the oldest excavated stone came from another area of the quarry, in trench AA (square 8, spit 27). This was a pyramidal chunk of a coarse-grained quartzite pebble (60 × 55 × 43 mm), found at R.L. 40 ft 6 in., but its fracture is best attributed to natural agency. While its base is cleanly fractured, it lacks any traces of percussion or trimming. It should be observed however, that the stone is foreign to the deposit, that its sharp edges preclude the possibility of stream transport subsequent to breakage, and that its companion piece was not found in the vicinity. It must be inferred, in consequence, that the stone was carried to the site, but by means unknown. The date of 17,300 ± 300 B.P. (V-73) was obtained for charcoal from R.L. 42 ft 6 in.

Difficulties in Presentation of Evidence

The numbers of artifacts recovered are relatively few, and the area and volume of excavated material varied, because of the exigencies of the excavation. It is therefore impossible to compare the density of human occupation per unit area or volume. In any case, the area sampled was so small, that no statistically significant artifact collection resulted. The sediments were generally horizontally bedded. Even so, it is possibly misleading to correlate finds at comparable depths from adjacent trenches. The accompanying tables are therefore presented subject to these limitations. The method followed disregards the density of finds, per unit volume, while the numerical count gives equal weight to a trimmed implement, a large flake or a small flake.

Classifiable Implements in Table 1

Spit 1: a broken chert blade, with delicate retouch at its distal end (8 × 7 × 4 mm), best described as a micro-scraper.

Spit 2: the only basalt tool in the collection merits comment, although it can only be classified as miscellaneous. It is a large pebble fragment, 97 × 70 × 31 mm, with some evidence of retouch along one margin.

Spit 3: a quartz piece with one end crushed, or bruised; possibly a flake 'fabricator'.

Spit 7: a small chert piece (Fig. 3a), best described as a 'fabricator' of 'punch' type (*McCarthy et al.* 1946: 34). The identification necessarily remains conjectural, as it is the only example of this sub-type found in the excavations; whereas the type should be bruised on both extremities, only one end is bruised.

Spit 11: a concave scraper (Fig. 3c), and two sizeable fragments of two other broken scrapers.

Spit 13: Two scrapers with pronounced concavities and noses (Fig. 3e, f).

Spit 16: part of a stubby scraper with abrupt retouch at its rounded end; the specimen is probably half of the original tool.

Spit 19: a concave scraper, now broken (Fig. 3b).

Spit 20: a thick, abruptly trimmed scraper (Fig. 3d).

Trenches F-G

These trenches were laid out on the shoulder of a partly bulldozed slope (Pl. 3, Fig. 1). The surface of the terrace (in F, squares 1-4) was undisturbed at

TABLE 1

Stone Artifacts (Burial Site, SS & W Trenches)

Depth R.L.	Spit	A	B	C	D	E	Material							
		Classifiable Implements	Misc. Retouch Implements	Utilised Flakes	Cores	Flakes etc.	"Chert"		Quartzite		Quartz		Igneous	
							A-D	E	A-D	E	A-D	E	A-D	E
63'-61'8	1	1	3	2	8	94	10	55	4	38		1		
61'2	2		1			1						1	1	
60'8	3			1		16		1		2	1	13		
60'6	4													
60'	5													
59'9	6					3				2				1
59'6	7	1				3		1		2				1
59'3	8	8155 ± 130	1			5			1	5				
59'	9					9				9				
58'9	10	8990 ± 150				4				4				
58'6	11	2	1			3			3	2				1
58'	12				4	5			4	5				
57'9	13	2		1		10			3	5		5		
57'6	14			1		5			1	2		3		
57'2	15		1			5			1	1		4		
56'9	16	2	1			17			2	16	1	1		
56'2	17			2		13			1	4	1	7		2
55'8	18					1						1		
55'5	19	1							1					
55'3	20	1	1			3			2	2		1		
55'	21					2				2				
54'10	22													
54'7	23													
54'5	24													
54'2	25					1						1		
53'11	26					4				3		1		
52'5	32		1						1					
51'11	33													
51'7	34					1				1				
51'3	35													
51'	36					1						1		
50'9	37					1								1
47'8	48					1				1				

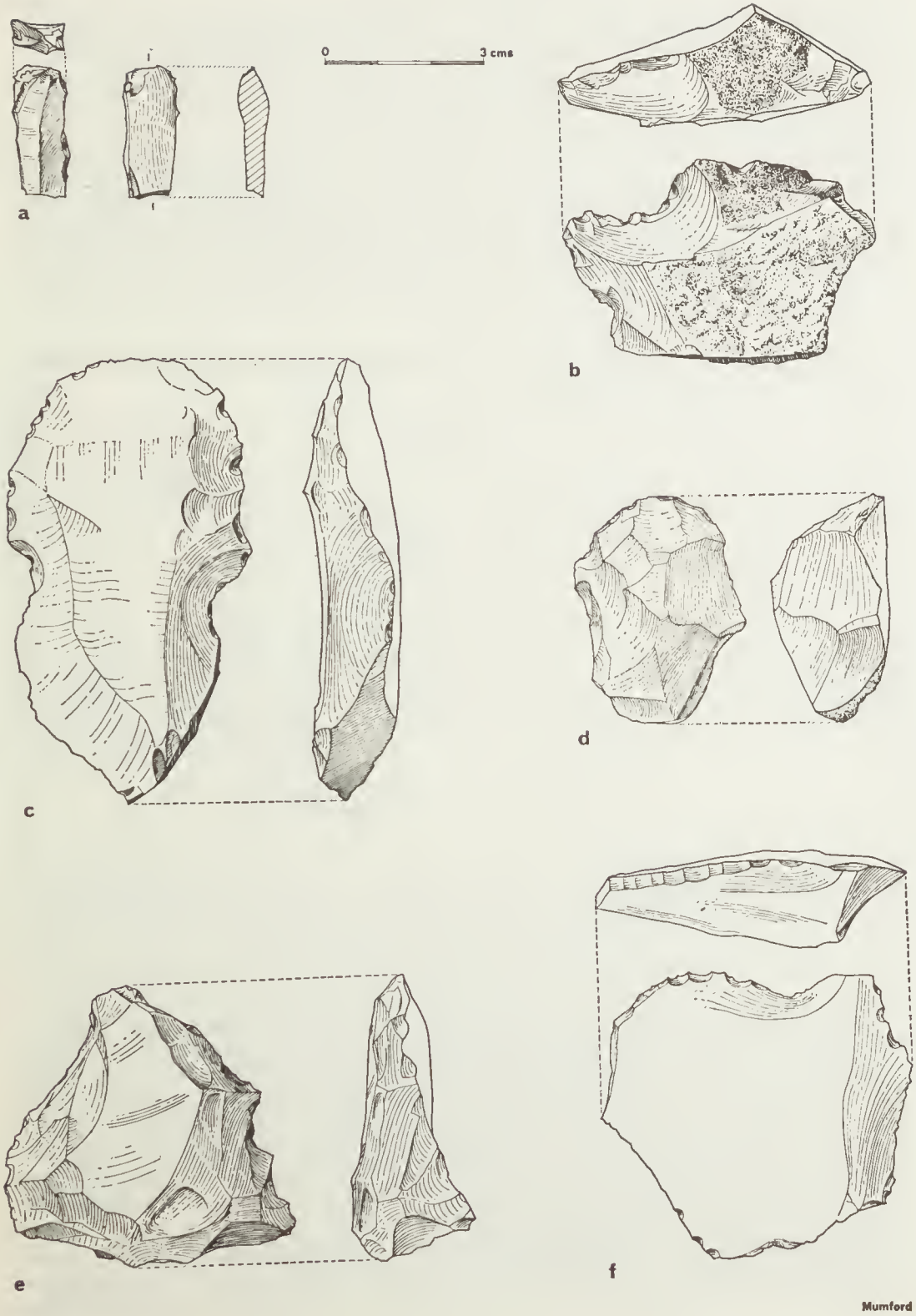


Fig. 3—Selected artifacts from burial area.

R.L. 62 ft, but it dropped sharply at the E. end of the excavation (F, 9-12) where the upper soil had been removed, and the topmost spit corresponded with spit 6 at the W. end. Excavation was organized on a three foot grid. In this area, the top of the calcium carbonate zone was approximately R.L. 61 ft, and all the recognizable artifacts came from within it (e.g. Fig. 6). A further trench, E, was abandoned because of shortage of time and evident disturbance.

It is unfortunate that so much of the soil in this area had already been removed (it was all removed subsequently), so that excavations were limited. There was clear evidence for the intensive occupation of this open site during Spit 4 times (R.L. 60 ft). Whereas all spits excavated below this level produced only sparse material, this spit contained a definite occupational floor. The plan of this floor in trench F, is shown in Fig. 4. Table 2 gives the distribution of stone artifacts in the area, while Table 3 lists all these finds.

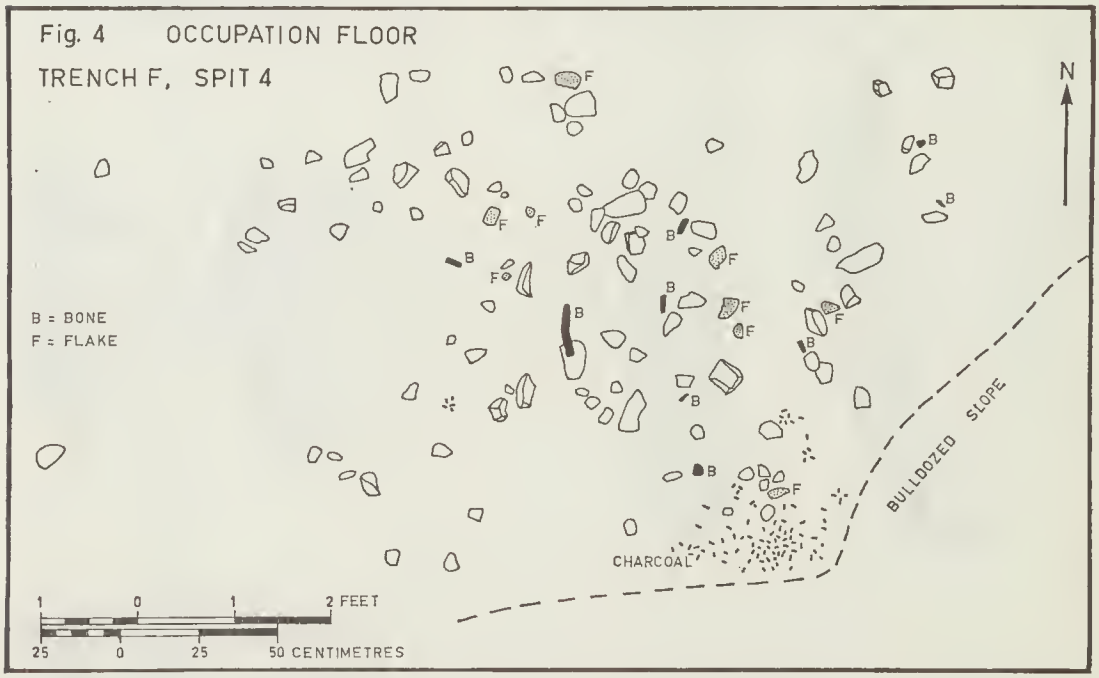


Fig. 4—Plan of 'occupation floor', Trench F, spit 4.

Most of the stone and faunal evidence recovered in the series of excavations here described came from Spit 4. In addition, weathered basalt pebbles, and numerous broken pieces of basalt from 3 to 5 inches across, were uncovered. Their numbers, together with their association with charcoal and burnt earth, renders it probable that some were deliberately placed as 'hearths'. The angular shape of many fractured pieces, also presumably resulted from human activity. It is relevant to mention the probable hearth arrangement in trench W, and the five fractured pieces from above the burial, described by Casey and Darragh, from about R.L. 58 ft. These had been broken from a single basalt rock.

Charcoal from the occupational horizon in Trench F, square 8 Spit 4 was submitted for radiocarbon dating. Its age was 8535 ± 180 B.P. (V-81), which is consistent with the dating from the burial area for a similar flake tool assemblage.

TABLE 2

Distribution of stone artifacts in Trenches F-G, Spit 4

		G7	G5 2 (9)	N	
		G8 7 (30)	G6 1 (18)		
F3 (7)	F1 4 (17)	F7 7 (29)	F5 5 (26)	F11 Deposit at	F9 Removed Spit 4
F4 (1)	F2 2 (30)	F8 6 (29)	F6 2 (23)	F12 Removed	F10

Each square is 3 ft. wide. Square numbers are indicated in the top left. The number in the centre refers to trimmed or utilized artifacts, while those in brackets are flakes, fragments, etc. All classifiable implements were varieties of scrapers, made on flakes. They are discussed in a later section and some are illustrated in Fig. 6.

Evidence from Other Areas

1. *Trenches A and AA*

During the course of these adjoining excavations, it became evident that this was an area where the Keilor terrace had been eroded, and it was here overlain by terrace GGJ. Bowler describes these later sediments in his contribution to this *Memoir*, and he describes the sloping zone of contact between the terraces, with its numerous patches of charcoal and oxidized sediment (Bowler, Fig. 7).

A number of stone finds was made in this intermediate or contact zone. Unfortunately there is a possibility that either they were deposited on the sloping surface at that time, or they were eroded from the earlier Keilor terrace and accumulated on that surface. Whatever their origin, their chronological status therefore remains dubious. This is unfortunate, as it applies to the only two retouched artifacts found in trench AA—respectively quartz (AA15, spit 26) and quartzite (AA10, spit 10) scrapers. Other finds were made higher in terrace GGJ, which consequently must belong to the period of deposition of that terrace. The most important find in GGJ (A9, spit 6), was a unifacially flaked hornfels pebble (Fig. 5c) measuring 147 × 58 × 39 mm. Flakes had been struck from one end, extending over almost half its area. Including the 3 classifiable implements mentioned, these excavations recovered 4 utilized flakes, 31 quartzite flakes and 8 quartz flakes or small pebbles.

TABLE 3

Stone Artifacts: F & G Trenches

Depth R.L.	Spit	A	B	C	D	E	Waste Material							
		Classifiable Implements	Misc. Retouch Implements	Utilised Flakes	Cores	Flakes etc.	Fine Grained Quartzite		Quartzite		Quartz		Igneous	
							A-D	E	A-D	E	A-D	E	A-D	E
61'6	1					10				10				
61'	2	1		2	4	26			7	25		1		
60'6	F.3	1	3	1		15	2	1	3	13				1
	G.3	6	2	1		72	1	11	7	61				
60'	Spit 4													
	F.1	2		2		17			4	14				3
	F.2	1		1		30			2	28		1		1
	F.3					7				6				1
	F.4					1				1				
	F.5	2		1	2	24		3	7	18				3
	F.6		1	1		23		3	2	20				
	F.7	3	2		2	28	1	3	6	20				5
	F.8	2	1	3	1	28	4	3	3	22				3
	G.5	1	1			9			2	9				
	G.6			1		17	1	3		14				
	G.8	3		4	1	29	1	10	7	19				
59'6	Spit 5													
	F.5		1			19		1	1	17				1
	G.5	1				9			1	8				1
59'	F.6	1	1	1		1			2	1	1			
58'6	F.7			1		2			1	2				
58'	F.8					1				1				
57'6	F.9													
57'	F.10				1	2			1	2				
56'6	F.11	2				1			2	1				
56'	F.12	1				1			1	1				
55'6	F.13			1		2			1	2				
55'	F.14					3				3				
54'6	F.15													
54'	F.16					2				2				

Only one extraneous object was found *in situ* in the underlying Keilor sediments, sufficiently beneath the zone of contact to possess authentic stratigraphic credentials. This was the fragment of fractured quartzite pebble, discussed previously, from R.L. 40 ft 6 in. (AA, spit 27). The age of charcoal from R.L. 42 ft 6 in. was 17,300 ± 300 B.P. (V-73).

In February a test pit (AA extension) was dug three feet W. of trench AA, from the quarry floor (R.L. 44 ft 6 in.) down to R.L. 31 ft 9 in. It measured 8 ×

5 ft at the top, but was subsequently stepped to 4 × 5 ft. Although the trench probed to the base of the Keilor terrace, no artifacts or faunal remains were found. However, there was evidence of burning over the entire floor at about R.L. 42 ft 6 in. and again around R.L. 41 ft 3 in. This consisted of horizons of reddened silt and a few charcoal traces. The coloured material consisted of separate pellets, within an unoxidized matrix. This suggests that the burnt earth must have been redeposited, and as the horizons undulated over a vertical distance of about six inches, the material may have been washed into surface hollows. In any case, there was nothing to positively link the burning with human activities. It may be significant, however, that one burnt horizon lay above the depth (R.L. 40 ft 6 in.) from which came the extraneous quartzite fragment discussed earlier. This was recovered in AA8, no more than 10 ft to the E.

2. *Collection from Upper Terrace, GGJ*

An analysis was made of artifacts collected from the quarry walls, in areas recently uncovered by the quarrying operations. Only those specimens were con-

Fig. 5—Unifacially flaked pebble tools.

sidered whose precise location within terrace GGJ was beyond dispute. The finds are made up as follows:

Classifiable Implements	Misc. Retouch Implements	Cores	Untrimmed Flakes			
			Quartzite	Fine grained quartzite and chert	Quartz	Basalt
7	6	7	37	33	3	7

The implements: 2 unifacially flaked basalt river pebbles (Fig. 5a, b), one trimmed around an entire surface, and the second a proken specimen; 1 geometric microlith crescent; 3 large quartzite scrapers and a more delicate chert piece of 'thumbnail' type. Six of the cores were of cherty material, and bore microlithic blade scars. Backed microlithic blades (Bondi points) have been found on other occasions in this deposit. Both in these collections, and from observation of eroded material lying on the surface of this terrace at various places, the striking features are the emphasis on blade production, and the frequent selection of fine-grained raw material. Measurements made on the small samples of waste flakes available demonstrated that those made from chert and fine-grained quartzite tended to be thinner and narrower than those from quartzite.

3. *Collection of Material Eroded from Keilor Terrace*

Various specimens were exposed by the loader, or eroded by heavy rain from recently uncovered Keilor sediments. The trimmed artifacts obtained in this fashion numbered eight. All of them were scrapers, some possessing concavities or projections. In an attempt to delimit the intensity of human occupation from this scatter of eroded material, the relative levels of their occurrence on the quarry slopes were recorded. Nothing was observed below about R.L. 53 ft 6 in., while the main concentration ceased before R.L. 56 ft. Because so much of the topmost soil had been removed, it is impossible to list the upper limit of stone concentration, but its minimum was R.L. 60 ft.

4. *Melbourne Metropolitan Board of Works Trench*

The location of this water-main trench was a few hundred yards S. of the site. It is discussed elsewhere by Bowler. Our attention was directed to a spot where the Keilor terrace was exposed, above the Arundel terrace. In the face of the trench, and *in situ* in the Keilor terrace was a charcoal concentration containing a few heavily mineralized bone fragments. It was definitely associated with a human industry; 26 quartzite flakes were recovered, several of which possessed bulbs of percussion, together with a fragment of a trimmed quartzite artifact, almost certainly a scraper. Charcoal was collected for C14 estimation, but results are unavailable.

Beneath the Keilor sediments was a pebbly bed of distinctive red colour. It contained a continuous string of burnt earth particles and charcoal scatter, along several feet of the wall. While some of this may have been produced *in situ*, it looked more like a loose accumulation, perhaps at the foot of a slope (much of the oxidized material was in separate, disjointed concentrations). Amongst this mass of stone rubble were pieces of fractured quartzite. The edges of some are sharp and the fractures are clean. On examination, it is apparent that these pieces resemble many other specimens collected in the soil pit from the pebble bed at the base of the Keilor terrace in trench AA. Comparable specimens were also selected

from the mass of stone on the banks of Green Gully creek, where it has exposed the same pebble bed. In the light of tests suggested by J. D. Clark (1961) and Mason (1965), all this material was examined in order to ascertain whether it was fractured by man or nature. The conclusion is that natural circumstances were responsible in every instance. It is proposed, in future, to make this problem the subject of a separate study. A brief summary of the reasons for this conclusion is given here, although it is realized that the sample studied was selectively collected, and that until the evidence is described, this remains an opinion only.

There are few bulbs of percussion or striking platforms, and some of them are in impossible positions for human handling. The angles of primary fracture (on almost any edge selected) approach verticality in reference to the striking platform, a feature which in the studies listed above is attributed normally to natural processes. Even the few specimens which bear superficial resemblance to retouched artifacts, are really only fortuitous. The edges are 'nibbled' or bruised through pressure, and they bear steep, intermittent fractures. In some cases, the differential patination proves that this 'trimming' belongs to different periods in the history of the specimen, and that the end-product is simply the result of many accidental fractures. This is certainly the case with one quartzite piece which bears superficial resemblance to an Acheulian hand axe, for it is evident that at least two distinct occurrences of 'flaking' occurred later than the initial accident which shaped it. Both on 'cores' and 'flakes' many scars are concave and saucer-shaped, i.e. they have lifted out from the mass due to thermal fracture. Unfortunately, the quartzite in question is so coarse-grained that the diagnostic rings of fracture are not present to clinch this argument. In all cases like this, where there is no indication of purposeful trimming or design in a fractured stone, such objects cannot be accepted as artifacts unless they are associated with undoubted specimens which have been artificially fabricated. They *may* be artifacts, and they equally well may *not*.

Raw Material of the Stone Industries

Analysis of the stone implements and waste products, revealed changing preferences or availability of stone supplies. Table 4 presents this in tabular form, although attention is directed to the smallness of the sample in most cases. For comparative purposes, the material is tabulated as for each six inches of depth, and Wright's material from GGW excavation is included. The sporadic occurrence of primary flakes of igneous rock has been excluded; none possess traces of grinding.

The points of significance are the indication that the use of chert is limited to the occupation above R.L. 61 ft, while the fine grained quartzite does not occur much below R.L. 60 ft. (There is one implement in GGW of fine grained quartzite, but it occurs also above R.L. 60 ft). At the same time, the preference for chert in the topmost deposit is marked by an avoidance of quartz. The fact that chert and fine-grained quartzite are common in the later terrace, GGJ may have cultural implications.

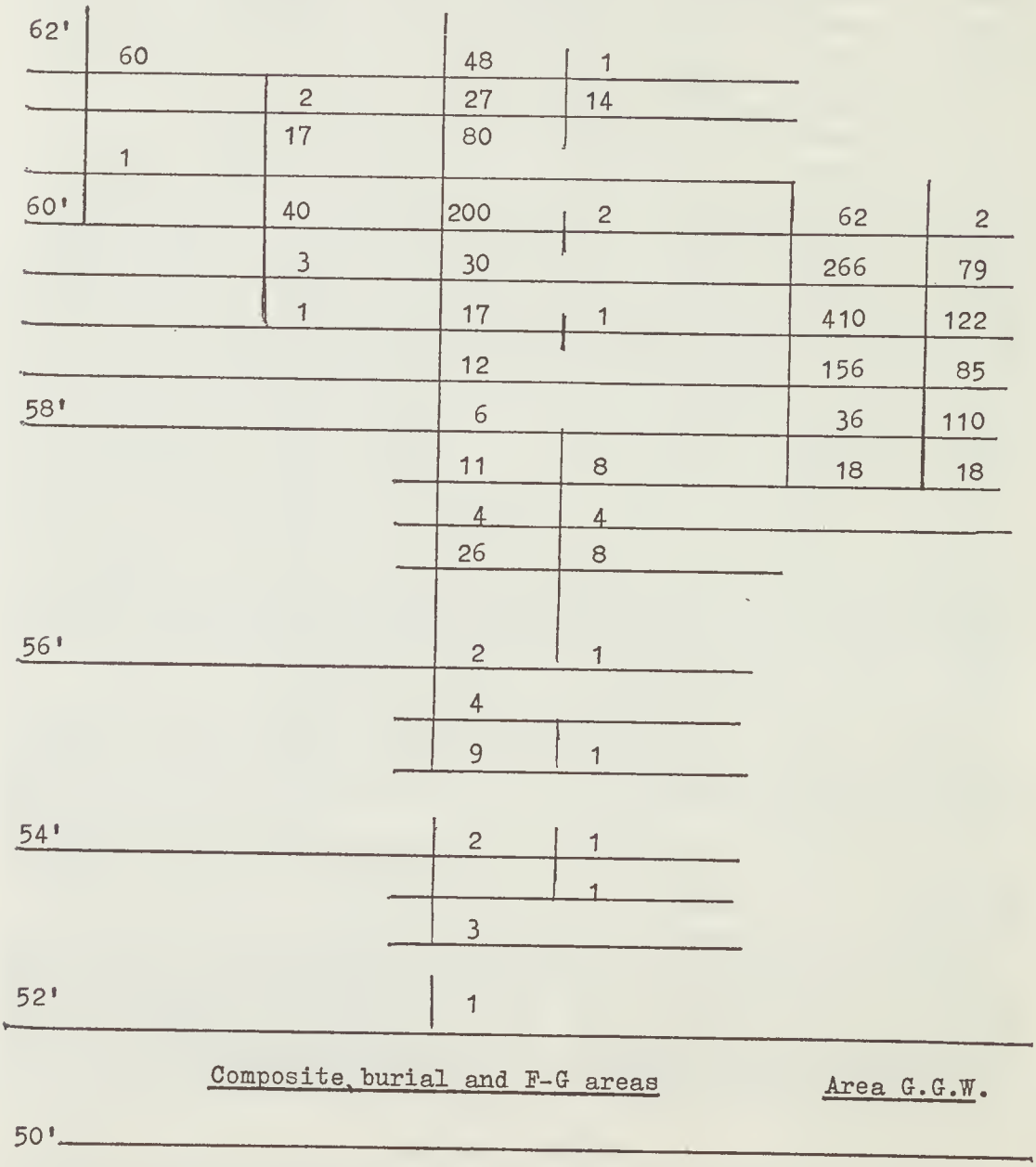
Artifact Typology

1. *Terrace GGJ.* These investigations have recovered three unifacially flaked pebble tools (Fig. 5), and definite evidence for a microlithic backed blade industry in this terrace. As this material has affinities with the cores, flakes and raw material preferences, excavated above R.L. 61 ft (in SS and F-G excavations), it is a reasonable hypothesis that they belong to the same culture and chronological age.

2. *Keilor Terrace.* In Wright's excavation, classifiable tools consisted of scrapers, both large and 'thumbnail' types, and 'fabricators'. Areas SS and F-G pro-

TABLE 4

Distribution of raw material: total numbers according to depth. It is emphasized that, although stratigraphic equivalence between these areas is probable, it has not been established by excavation, as intervening deposits had been removed.



duced 36 diagnostic artifacts below R.L. 61 ft. These consisted of two possible fabricators, and the remainder were scrapers, intact or broken; there were no 'thumbnail' types.

The Scrapers. For purposes of analysis, incomplete specimens were rejected, but Wright's 'large' specimens were amalgamated with the collection. This resulted in a total of 42 for examination. Generally, they were an undisciplined group, few of them conforming readily to the designations 'side', 'end', and so on (Figs. 3, 6).

It was decided to describe some of their characteristics metrically, and the results are illustrated in Fig. 7. Wright's group of 'thumbnail' scrapers was excluded from the analysis, as there were none recovered in these excavations. It is realized that any presentation which lumps together artifacts separated in vertical distance by up to six feet, and in time perhaps by millennia, possesses many pitfalls. It must be stated simply, that the author was aware of this, and could find no significant variation with depth. The sample is a small one, however, and at some levels it is totally inadequate for comparison. The assemblage of scrapers shows definite modes, both in regard to length and width. There is also an interesting correlation between length and width. Of the 31 specimens between 3 and 5 cm length, 26 of them fell between the same dimensions of width; only 4 of 28 examples 3 to 4·5 cm long fell outside the same range in width.

There were two visual observations meriting comment. Eighteen specimens possessed distinct concavities on the working margin, most of them having corresponding projections or 'noses' (e.g. Fig. 3b, c, e, f). These were represented at almost every depth. The other feature was that four specimens had been trimmed reversely. That is, on opposite ends of the flake, alternate faces had been trimmed (e.g. Fig. 6e, e, f).

The Fabricators. Wright has discussed this type in his report, in which he discusses definitions by McCarthy, *et al.* (1946: 34). One of the specimens from SS spit 2 is not a very convincing example. A quartz piece, it measures 23 × 19 mm and is roughly rectangular in shape, but it possesses a bruised or fractured edge on one end only. The second example is possibly one of McCarthy's 'punch'-type fabricators (Fig. 3a). If so, it is the only example excavated at Green Gully. It is made from fine-grained quartzite, and is distinctly splintered on both sides of the distal end. The other end is not fractured, which makes the attribution rather conjectural.

Cultural Affiliations of Green Gully Prehistory

The Green Gully burial took place at a period when the stone equipment of the inhabitants consisted of a variety of scrapers (both large and small) and fabricators. There is nothing in the meagre evidence at this site to indicate the possession of other stone tools by campers on the Keilor terrace. It is only at the top of those sediments, perhaps at a period related to the deposition of terrace GGJ, that the stone culture changed markedly. At that time, the selection of different raw material, a new technology producing thinner blades and delicately retouched backed tools, characterized a different industrial practice. This was the period, also, of the use of unifacially flaked pebbles (the sumatraliths of earlier writers). This microlithic blade industry, and occasional uniface pebble tools, are associated with the top of the Keilor sediments and the more recent terraces at other localities in the Maribyrnong River valley, including the locus of the Keilor cranium.

Distance renders comparisons unsound, but the sequence, with a scraper assemblage preceding one containing backed blades, recalls the Kenniff Cave pattern, which I tentatively designated non-hafted and hafted (Mulvaney and Joyce 1965). Indeed, the similarity between the scrapers from Green Gully and Kenniff Cave is striking, although it is emphasised that the minute 'thumbnail' scrapers did not occur at Kenniff. Figure 7 presents a summary of the Kenniff evidence for comparison. The Kenniff results are somewhat distorted by the unique character of the latest occupation, which produced extremes in scraper dimensions. However, if the lowest 42 scrapers from Kenniff are examined, they fall even further within the limits of the Green Gully material. As some of the Green Gully evidence must be older than 9,000 years, this result is interesting in view of the Pleistocene antiquity of the Kenniff material. It is relevant, also, that the earlier layers at

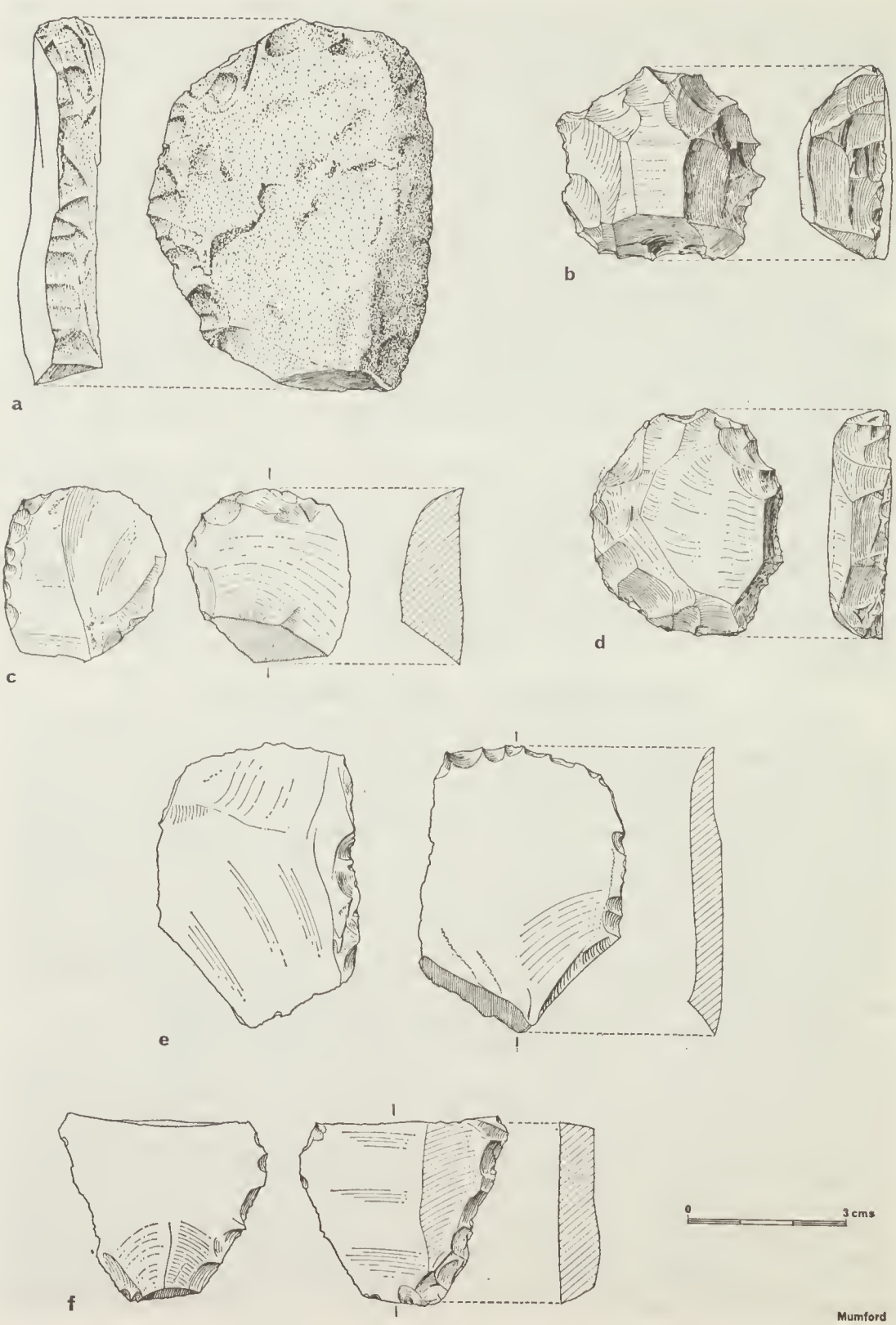
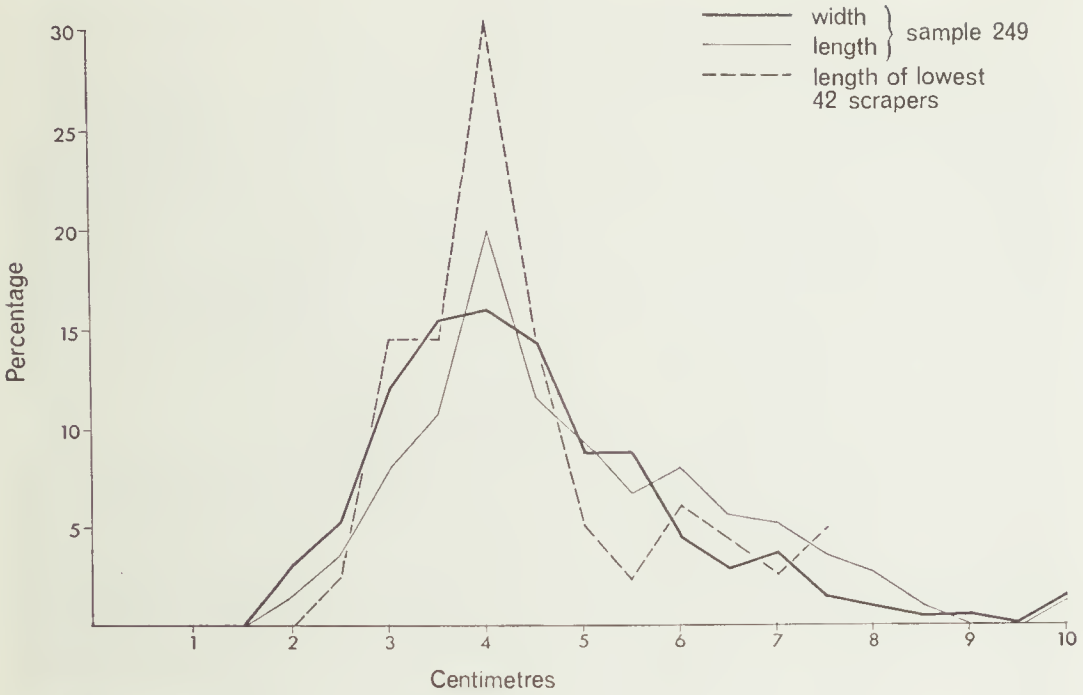


Fig. 6—Selected artifacts from Trenches F and G.

KENNIFF CAVE



GREEN GULLY

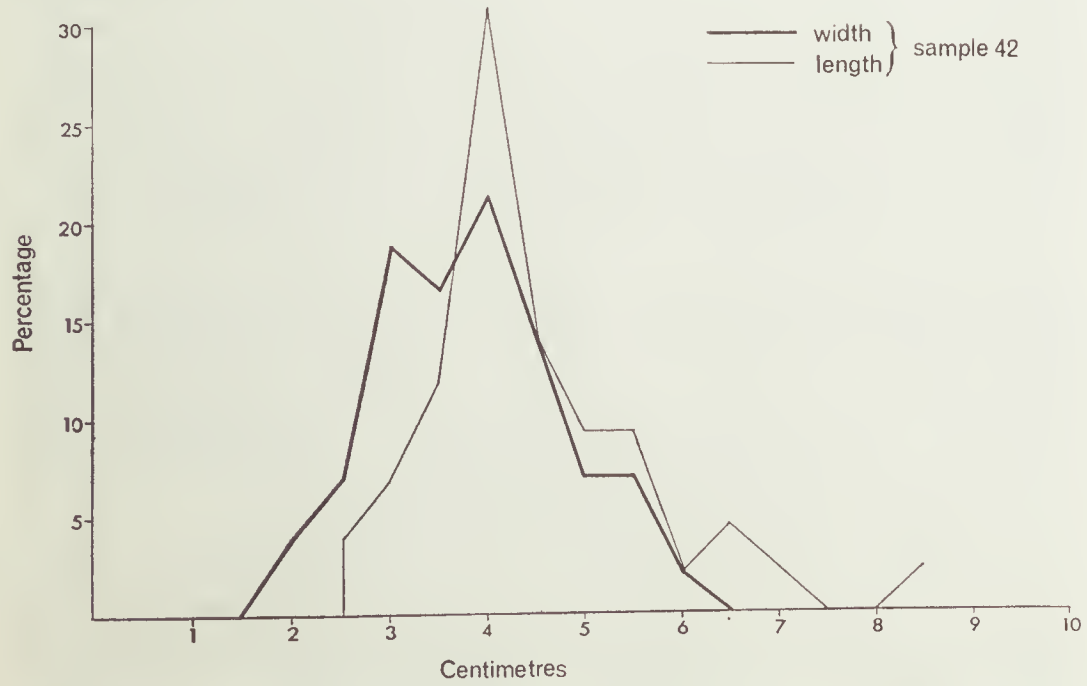


Fig. 7—Metrical record of Green Gully 'scrapers' compared with the evidence from Kenniff Cave.

Kenniff were characterized by an emphasis upon the use of scrapers of concave form.

It may be countered, that the resulting measurements are merely the essentials of 'scraperness', and that rather than cultural determinants, scrapers anywhere would approach similar form. Unfortunately, few comparative treatments have been published, but those which have are varied in result. Dr Isabel McBryde (1966) presented a totally different pattern (smaller) of length and breadth for her 74 scrapers from Seelands. Higgs *et al.* (1960, 219), demonstrated that English stone industries show preferential bias, although this Hurst Fen pattern closely resembles the Kenniff one. On the other hand, Higgs *et al.* (1964, 244) analyzed 117 scrapers from Kokkinopolis, Greece. Although their thickness is comparable to the Green Gully collection, they are longer. One of the interesting features of this English evidence is that it proves that significant variations occur between scrapers made in the same region from identical raw material by different cultures, yet the same culture produced comparable scrapers 150 miles apart. Here is an apparent example of prehistoric fashion affecting typological behaviour.

The discovery of fabricators at Green Gully introduces a new element into the prehistoric technology of the site, and into prehistoric Victorian reckoning. They were not identified at Kenniff Cave, and have been considered a component of the Bondaian, or more recent cultures of the E. seaboard. However, they are fairly ubiquitous in the European and African Palaeolithic, and they may have a respectable antiquity in Australia. At Capertee (McCarthy 1964, table 3), although rare in lower levels, there are four specimens which must be considerably older than 3623 ± 69 B.P. (V-34), and possibly almost as ancient as 7360 ± 125 B.P. (V-18). At Graman, New England, the type may go back 4500 years (McBryde 1966).

The fact that the type appears in some industries and not in others is probably significant. On the other hand, the nature of its significance remains to be determined. Classifiable artifacts normally have been shaped to a predetermined pattern—the trimming precedes their use as tools. The reverse seems to apply to the fabricator. It was not deliberately trimmed, although preference may have been given to a rectangular shaped primary flake. The characteristic bruising and spalling on opposite ends was simply an incidental result of its use. All that can be inferred from such evidence is that the stone may have been deliberately selected (though not necessarily manufactured) because its shape rendered it useful for some function. In the course of its use (and this may have covered a multitude of purposes) it must have been battered and bruised. Is it therefore correct to consider it as a *cultural* indicator, or was it simply technological—a useful working device, which was part of the stock-in-trade of any stone worker? Given the unorthodox method of producing this 'type', it is necessary to be stringent in classifying it. Unless definite bruising is evident on at least two opposed margins, examples should not be classified as fabricators. In other words, similarities may be a function of the principle of limited possibilities, and not a reflection of cultural diffusion. These comments were advanced before Wright's analysis was available; although his arguments are cogent I prefer to let these observations stand.

The evidence from Green Gully is meagre, but interesting and consistent. From what is known of the chronology of backed blade and unifacial pebble industries in Australia, it is to be expected that they post-date 8,000 years. The Kenniff sequence is witness to the longevity of the scraper as a cultural possession. One new element (though not found in the Kenniff excavations) is the 'thumbnail' scraper, and the other is the fabricator. It remains for future excavations in SE. Australia to determine whether this pattern of a flake tool (scraper) industrial

tradition, followed by cultures utilizing pebbles and blades has a wider distribution. The status of the fabricator is a further problem awaiting investigation.

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Explanation of Plates

Plate 3

a (upper) Green Gully soil pit looking N. before the February1966 excavations at the burial site. The burial promontory is on the left centre, trenches A and AA right lower centre, and trenches F and G upper centre. GGW trench was sited outside this view to the left foreground. The trees in the right centre line the Maribyrnong River, and Green Gully runs across the middle distance in front of them.

b (lower) Trench W, looking SW. The burnt root and oxidized sediment on the opposite side of the trench to 2a.

Plate 4

Trench W, looking NE. The pale discolouration on the right centre is oxidized sediment, the presumed burnt tree root. The 'hearth' is appearing in the centre. A small basalt piece lies immediately to the right of the root.

Plate 5

Trench W, 'hearth' arrangement of basalt fragments, fully excavated. It lay at a level earlier than the burial surface.

Plate 6

Looking S. along trench SS. The level of the burial approximates to the ledge, top right.