ANTIQUITY, XLV, 1970 PLATES VIII–IX

Archaeology in Sulawesi, Indonesia

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Dr D. J. Mulvaney was recently appointed to the newly established Chair of Prehistory at the School of General Studies in the Australian National University at Canberra. The research described in this article was carried out while he was a Senior Fellow in Prehistory in the Research School of Pacific Studies in the same university, and it was done in collaboration with R. P. Soejono who is the senior prehistorian in the National Archaeological Institute of Indonesia, Djakarta, and who has himself carried out fieldwork in many areas in Indonesia. The work reported on here records the finding and dating of backed blade industries associated with pottery in the Celebes.

Alfred Russel Wallace visited southern Celebes in 1856–7. Captivated by its unique natural history, particularly its colourful butterflies, he concentrated upon collecting in the rugged limestone mountains around Bantimurung waterfall, east of Maros. Observing that the high, precipitous, cliffs were heavily vegetated, Wallace (1890, 181) wrote words of archaeological allurement—'their surfaces are very irregular, broken into holes and fissures, with ledges overhanging the mouths of gloomy caverns'. He also made an incidental comment (1890, 165) of relevance a century later to Australian archaeologists, when he noted that his Makassarese servant had voyaged to the north Australian coast on several occasions to collect trepang (bêche-de-mer).

The joint Australian-Indonesian archaeological expedition to Sulawesi Selatan (formerly southern Celebes) in July–August 1969, was prompted partly by the need to investigate possible contacts between that region and Australia in both prehistoric and historic times. Its aims were to visit sites excavated by earlier archaeologists and attempt their further investigation, in order to obtain stratified artifactual and faunal collections and radiocarbon samples wherewith to date them, to assess the archaeological potential of the region for later fieldwork, and to contact the Sulawesi administration, local officials and other people interested in encouraging research. We excavated four sites on a reasonably large scale, put test trenches into some others, and returned with large excavated collections and useful carbon samples; expedition members lectured and interviewed widely. The Indonesian team visited the Soppeng region, in order to survey megalithic remains there. It also discovered and recorded further painted art sites in the Maros area. While in Makassar, Soejono discussed with authorities the establishment of a local branch of the National Archaeological Institute of Indonesia.

That this exercise in international archaeological co-operation was successful is due to the assistance of our supporting institutions and to the efforts of our two teams—Basuki and Teguh Asmar from the National Archaeological Institute of Indonesia, and Ian and Emily Glover and Campbell Macknight from the Department of Prehistory, the Australian National University. Yet, we could have achieved little without the advice of Dr H. R. van Heekeren, and the active co-operation of the Sulawesi administration, and other Sulawesi friends; our debt to their interest is deep.*

* We must single out for particular mention the interest and assistance of the following persons in Sulawesi: His Excellency, Gubernur Colonel Ahmad

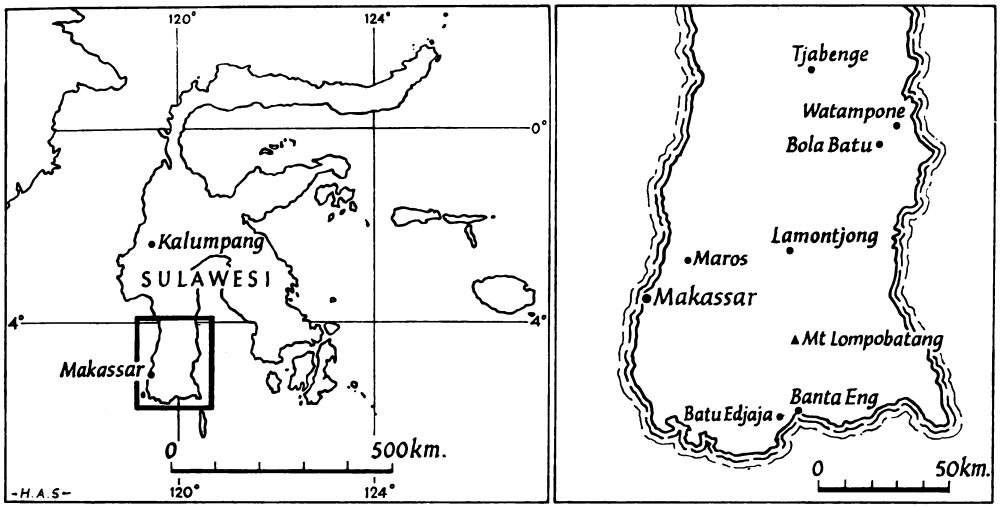

Fig. 1. Map of Sulawesi, with main localities mentioned in text

This promising archaeological region was first probed by the itinerant Swiss naturalists, Fritz and Paul Sarasin, in their 1902–3 visit (FIG. 1). Near Lamontjong, in the limestone mountains east of Maros, they excavated four cave deposits. A lavish publication followed (1905), and as their finds were deposited in the Basel Museum they have been the subject of later study (Bandi, 1951, 153). Although they did not realize their significance, the Sarasins (1905, pl. 1) published photographs of two geometric microliths and another backed, pointed blade, possibly the first microlithic tools to be published east of India. At about the same time, however, on the sand-dunes of Bondi Beach, near Sydney, Etheridge and Whitelegge (1907, 238–9) recognized microlithic backed blades (later known as Bondi points) and compared them with Indian specimens. However, no Australian-Indonesian parallels were inferred until F. D. McCarthy (1940), Curator of Anthropology at the Australian Museum, Sydney, visited southern Celebes in 1937.

At the time of the Sarasin expedition, some of the caves were occupied by Toala peoples, whom they assumed incorrectly to be the remnants of an hunter-gatherer society and probably the direct descendants of stone age people. Thus the term, Toalian, became applied to their excavated cultural material. It was extended in later years to include all these stone industries of Sulawesi Selatan, which were assumed to date from post-Pleistocene times until after the advent of metal technology.

The next stage in prehistoric research belongs to the gargantuan Van Stein Callenfels, who at periods between 1933 and 1937, turned his attention to this region.* His extensive fieldwork ranged from BantaEng on the south coast to Kalumpang on the Karama river in Toradjaland, but his results were largely unpublished, plans and sections are unavailable, and some archaeological collections have been lost. Later workers are dependent upon a printed summary of a lecture which Callenfels (1938) delivered at the conclusion of his fieldwork, and upon a posthumously edited paper (Callenfels, 1951).

Callenfels dug the Panganreang Tudea shelter, near BantaEng, in 1937. Its sequence,

Lamo; Andi Abubakar Punagi; Andi Iskandar; Bupati H. Mohammed Kasjim, Maros; Bupati Solthan, BantaEng; Abdurrahim.

* See Editorial, p. 2, for more information on this very remarkable character. *Ed.*

as mentioned by Callenfels (1938) and elaborated by van Heekeren (1949, 93–4; 1957, 91–4). has become the classic Toalian site. He also dug the entire interior deposit in the adjacent Batu Edjaja cave. Not only were the results of this excavation unpublished, but the finds have been lost. To judge from fleeting comments by Callenfels (1938) and an undocumented photograph of five incised and stamped potsherds in his biography (Swanenburg, 1951, pl. 28 and p. 258), this site was of crucial significance for its ceramic evidence. The motifs and techniques had affinity with the surface collections made around Kalumpang.

Possibly following the time-honoured European archaeological formula, at Panganreang Tudea Callenfels envisaged three archeological stages. These are illustrated by van Heekeren (1957, fig. 17). The earliest stage Callenfels termed Proto-Toalian (van Heekeren-Lower Toalian), said to be characterized by tanged or shouldered projectile points. The Toalian (Middle Toalian) was essentially a blade industry, including points, backed blades and geometric microliths. In the Upper Toalian, new elements appeared, particularly serrated, hollow-based stone points and bipointed bone tools. As in other Toalian assemblages, potsherds were present, and although Callenfels accepted this as evidence for their cultural association, van Heekeren (1949, 93) interpreted them as intrusive and insignificant items, extraneous to that culture.

Immediately before the Second World War there was much further archaeological activity in Sulawesi, when the total of excavated deposits reached at least sixteen, and several painted art sites were recorded. This research has been ably summarized by van Heekeren (1949, 1950, 1957) and subsequent workers are indebted to him for collating the data, some of which were unpublished, and for presenting it systematically. Like all pioneering surveys, however, some of his interpretations are likely to require revision as research progresses. He returned to Indonesia after the War and excavated in Sulawesi, until the outbreak of civil disorders in 1950 abruptly terminated his fieldwork. He resumed research on a presumed Pleistocene occupation site at Tjabenge recently.

In 1968, he assisted our plans considerably by escorting Soejono on a field survey of recorded sites. In 1969, however, the pattern of Sulawesi prehistory remained that which he presented in his basic study, *The Stone Age of Indonesia* (1957), in which he assembled the data up to 1950. We believed that our entry into the field was best begun by examining some of the key sites upon which his prehistory was based, to assess their stratigraphic basis and to collect carbon-14 samples.

Australian interest in Toalian assemblages dates from the 1937 visit of F. D. McCarthy, who worked with Dutch archaeologists in the Watampone area. In an important paper, McCarthy (1940) drew attention to apparent parallels between Indonesian and Australian stone and bone implement types. The impact of McCarthy's visit upon Callenfels was apparently sufficiently dramatic to cause a change in his field aims (inferred from Callenfels, 1938, 581; Swanenburg, 1951, 261). McCarthy came to Indonesia from his excavations at Lapstone Creek, New South Wales, where backed blades and geometric microliths were recovered. Evidently, the Dutch workers had no comprehension of the magnitude of the distribution of these types, and McCarthy's evidence came as a revelation. Indeed, Dutch workers adopted Australian typological nomenclature as appropriate to their supposed analogues, and these labels have persisted.

In a critical review of the Australian scene, Mulvaney (1961, 79–81) concluded that this practice was premature, as it prejudged the implicit diffusionist assumptions which 'only systematic excavation' in northern Australia and Indonesia could clarify. Mulvaney records his personal satisfaction, therefore, that he participated in this first Indonesian venture, designed as he had then urged, to 'probe this possible connexion between Indonesia and Australia'.

The project was relevant also to the research interests of the other Australian expedition members. Glover (1969) is completing fieldwork research into Timorese prehistory. (It must be noted, though, that evidence for cultural connexions between Timor and Australia

is lacking in his material.) Macknight (1969) has investigated the archaeological and anthropological ramifications, during recent centuries, of trepanging activities by Makassar-based praus in Australian coastal waters. However, these late contacts are irrelevant to the diffusion of the stone tools characteristic of the 'Toalian' assemblages. Yet those Australian archaeologists who had worked on this subject experienced a memorable confrontation in Makassar. There they talked with a man who, in 1906–7, had sailed on the last prau which collected trepang in Australia.

It is necessary to state succinctly the possible prehistoric cultural parallels between Sulawesi and Australia. Both regions possess rich and varied backed blade industries, with forms including geometric microliths, asymmetrical pointed blades and obliquely truncated points, produced by either steep unidirectional, or bi-directional, blunting retouch. Some Toalian sites contained unifacially trimmed leaf-shaped points, while other points possessed finely serrated or deeply indented edges. Superficially, they suggested comparison, respectively, with Australian *pirri* points and Kimberley points (cf. McCarthy, 1940, 39–40). Both regions were characterized by rich worked-bone industries, including single and bi-pointed bones; following Australian practice, the Sulawesi bipoints were termed *muduk* (McCarthy, 1940, 35).

One characteristic stone implement, involving an amalgam of blunting retouch and serration techniques, was a small hollow-based point, which Dutch archaeologists plausibly, but without proof, called an arrow head. It has no parallels in Australia, and Callenfels (1938, 583) and van Heekeren (1957, 86) both invoked Japanese and other northern influences for its genesis, at an assumed late stage in Toalian prehistory.

Diffusionist and evolutionary hypotheses are therefore implicit, with the inbuilt preconceptions that nothing significant developed locally and that as far as Australian contacts were concerned, traffic was one-way: Australia absorbed traits but exported nothing in return (cf. Heine-Geldern, 1945, 159). This conclusion is notwithstanding the somewhat contradictory acceptance of Australian terminology.

In the ceramics field also, Sulawesi was envisaged as a staging post in the spread of culture. Heine-Geldern (1945, 158) stressed the relevance of the undated Kalumpang decorated pottery collections. They possessed double importance—'connexions with the mainland of Asia and with Japan and as a sample of the parent culture from which East Polynesian culture originated'.

In recent years, Pacific prehistorians have suggested many stylistic parallels between this pottery and prehistoric Asian and Melanesian traditions. In his important studies, Solheim (1959, 1964) included Kalumpang ware within his Sa-huỳnh-Kalanay ceramic tradition, while Golson (n.d.) has surveyed the Melanesian evidence.

Over the past six years, the Department of Prehistory of the Australian National University has concluded a series of research projects on both the prehistory and protohistory of the 'top end' of the Northern Territory, thereby bridging many gaps in the Australian evidence (summaries in Mulvaney, 1969). That Department is also engaged upon a comprehensive archaeological and ethnographic investigation of Melanesian pottery traditions and technology (cf. Golson, n.d.). Further, Glover (1969) has excavated pottery in eastern Timor, dated to between 2,500 and 3,500 years ago, whose impressed decoration is reminiscent of the Kalumpang pottery. Sulawesi is therefore relevant to many issues raised by fieldwork stretching in time from Pleistocene hunters to 19th-century trepangers.

However, Sulawesi holds further attractions. The results of the meticulous analysis by Hooijer (1950) of excavated faunal collections demonstrate that a sustained programme of stratigraphic excavation in limestone caves could produce basic data on animal population and other ecological changes. Similarly, the conditions for the preservation of fossil human bone appear excellent. The island is on the Australian side of Wallace's Line, but west of Weber's Line of faunal balance, which makes it attractive as a field situation.

Events of crucial social and economic significance to the human population of southeast Asia and Australia are being shown to have occurred much earlier than hitherto expected, and Sulawesi could contribute many clues. Ground stone axes of Pleistocene age are now known in northern Australia (White, C., 1967) and New Guinea (White, J. P., 1967). Golson (n.d.) has argued, with supporting data, that those archaeologists who remove their blinkers of preconception may find a comparable antiquity for the grinding of stone axe blades within island southeast Asia.

The spread of domesticated animal species has been documented with surprisingly early dates. Dog (dingo) appeared in southern Australia 8,000 years ago (Mulvaney, 1969, 65). Pig arrived in the New Guinea Highlands (Bulmer, 1966; White, J. P., 1967) and the Timorese uplands (Glover, 1969) some 4,500 to 5,500 years ago. Pottery manufacture was introduced into Timor during this same period (Glover, 1969, 111). The discovery that agriculture has been established in central New Guinea for over 2,000 years (Golson *et al.*, 1967), is a further indication of the changing basis of settlement patterns. All of these developments could have left their mark in Sulawesi, a likely link in the transmission of culture and the movements of people. We neither anticipated instant archaeology in Sulawesi, nor answers to all these problems. However, we recovered sufficient evidence to assist the appreciation of previous research and to justify a future sustained field project.

Our expedition was limited by both time and funds, and we concentrated much excavation into the period. We sieved the excavated deposits and retained all stone tools and waste, bone remains, and samples of shell. At the time of writing, the finds are in transit by sea, the Indonesian authorities having generously permitted their temporary removal to Australia for study. Some of the most interesting finds were selected during field washing for air freight to Australia together with some of the carbon-14 samples. Observations made here are based solely on the preliminary analysis of this selected material. Carbon-14 age estimations were made in the ANU laboratory, with the co-operation of H. A. Polach.

We worked in two areas of potential significance, going first to the BantaEng area, where we tested several sites. Our chief concern was Panganreang Tudea, but we reckoned without the energetic Callenfels, who had dug the shelter from end to end. Although stone tools eroding from the spoil heaps indicated that he did not retain everything, it was pointless to excavate there, and therefore also impossible to collect carbon-14 samples.

A few hundred metres away, on the side of the same basaltic peak, was Batu Edjaja Cave. Our trenching inside the cave was problematical, because we re-excavated Callenfels's trench refill (incidentally collecting some fine decorated potsherds which evidently he missed). In front of the cave, however, we escaped from his control, and excavated almost a metre of apparently undisturbed deposit, which also contained some charcoal.

We recovered a good sample of incised and impressed decorated pottery (PL. VIII*a*) which, from the earlier hints, we had suspected would resemble the Kalumpang style. Indeed, their affiliation cannot be doubted, and we hope to provide the first carbon-14 dating for this ceramic tradition. It is evident, also, that there are many differences of emphasis. At our site, curvilinear scrolls, compass-drawn designs, triangles, and other geometric motifs are common; usually the interior of a motif is infilled with numerous punctuations. These motifs occur at Kalumpang, but so also do half-circle impressions arranged as running scrolls, and squared incised designs.

Some slab-built vessels at our site are exceptionally thick and heavy, and a square-faced type (PL. VIII*b*) appears to be without parallel at Kalumpang. It is interesting that Solheim (1959, pl. Vb) published an example from Tres Reyes, Marinduque, Philippines, which is similar in both shape and decorative device. Batu Edjaja therefore may be added to Solheim's list of sites in the Kalanay ceramic tradition, although it should be remembered that stylistic similarities may conceal technological differences, and such a superficial

attribution requires substantiation. The first C14 estimation from charcoal around 75 cm. below the surface, associated with pottery, gave an age of AD 910 ± 20 (ANN-392).

Only ten metres south of the large cave was a small shelter, Batu Edjaja 2. It proved to be shallow and disturbed, which is unfortunate, as it contained ten classic geometric microliths and sherds from two ornamented pots. They were decorated, respectively, with stamped circles and wavy line impressions left by the edge of an arca bivalve shell. Both motifs are listed by Solheim (1959, 183) as characteristic Sa-huỳnh-Kalanay complex designs. Inferences concerning associations are inhibited, however, by the discovery of three coins at different levels in the 40-cm. thick deposit. The deepest and youngest was dated 1816, and the topmost and oldest was stamped 179?6. Not surprisingly, a basal charcoal sample proved to be 'modern' (ANU-393).

Although microliths were present, they were absent at the adjacent main site, where other backed blade forms, chiefly obliquely trimmed points, were found. This pattern of differential distribution both in typology and sequence between sites was an outstanding feature of our field season. At another site, Leang Burung, there were even major typological differences between trenches within the cave. Some differences between implements from neighbouring sites are so marked, that comparable differences in Australia might occur only between major regions. It is obviously rash under these circumstances to erect any single site as the type sequence. These reservations also apply to the pottery, for decorated sherds were rare at all sites except Batu Edjaja, and the motifs varied from site to site.

The second area in which we worked was in the limestone country east of Maros, where van Heekeren (1950) and other workers did much fieldwork. Unfortunately, almost all sites visited had been dug previously by other archaeologists, by dealers in Chinese trade porcelain in search of pre-Islamic burials, by the local peasants who remove cave deposits to enrich their paddy fields, and by others who used the rock itself for industrial purposes.

Our largest excavation was in the impressive Leang Burung cave (PL. IX*a*), from which we estimate two metres depth of deposit had been transported to the paddy fields. The cave is also a quarry for rock, and the floor is badly disturbed and in places is simply a mass of rubble. Even so, it looked too promising a cave to ignore. We dug two trenches, one inside the cave and the other beyond the line of overhang; they were later connected by a small trench.

Trench A, inside the cave, penetrated through massive disturbance to solid occupation deposit. Its greatest depth was 4 m., at which depth huge fallen rocks prevented further excavation (PL. IX*b*). Trench B, lower down the exterior slope, was about two metres deep, and less disturbed. Because of the total removal or disturbance of much of the occupational material, firm conclusions are difficult, particularly before the analysis of all the finds. The following figures are offered only as guide lines, not as figures to be cited.

	Trench A	*Trench B*
Geometric microliths ..	104	4
Other backed blades ..	66	0
Obliquely trimmed points	16	3
Serrated flakes and points	13	25
Hollow-based points ..	13	32
Bone uni-points ..	9	45
Bone bipoints ..	0	2

Only one decorated pot was represented, consisting of two sherds which fitted together, although inconveniently separated in the deposit by over 2 m. horizontally and 70 cm. vertically, and bearing an attractive impressed circle design (FIG. 2). There was a quantity of undecorated pottery throughout most of the deposit. The obvious distributional differences between the two trenches perhaps may be explained chronologically, as Trench B is possibly older than all but the lower part of Trench A. This inference appears to be supported by the first C14 estimations. Charcoal from almost 150 cm. depth in Trench B is dated 1430 ± 600 BC (ANU-390), while a sample from almost 270 cm. in Trench A is aged 850 ± 400 BC (ANU-392).

I. C. Glover excavated in an impressive cave, Ulu Leang 1, some 2 km. north of Leang

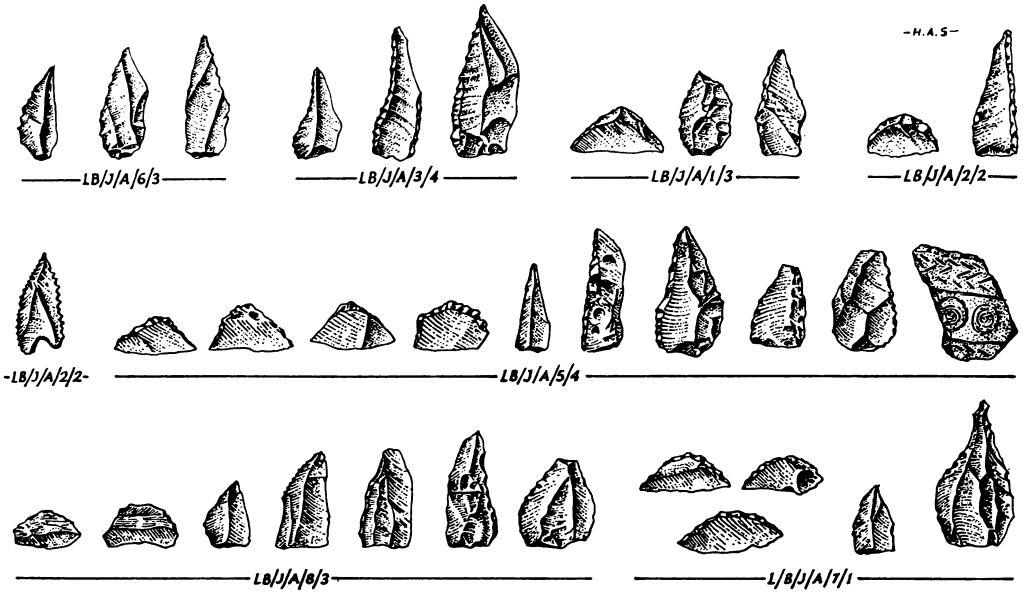

Fig. 2. Excavated backed blades and geometric microliths from Leang Burung, trench A. Centre left: a hollow-based serrated point; centre right: potsherd with impressed decoration (after Basnki)

Burung. He recovered a rich deposit of bone and stone, in which plain potsherds occurred throughout most of its depth of well over one metre. A preliminary analysis of the selected finds indicates the presence of only one positively identified geometric microlith, but about seventy specimens of other varieties of backed blade. Hollow-based points number at least twenty-eight, while bone points are common. The significance of Ulu Leang is indicated by the first age estimation for charcoal around 50 cms deep. The age is 3850 ± 400 BC (ANU-394).

We made ceramic collections in two burial caves, Ulu Leang 2 and Ulu Wae, whose shallow deposits were so disturbed that any excavation or carbon collection proved impossible. This pottery may be attributed to the Sa-huỳnh-Kalanay complex, and it is proposed to illustrate it in a forthcoming number of *Asian Perspectives*. Decoration is incised, stamped and applied; some pots were also painted, and some had been pierced for suspension, while others had lugs applied. Some designs resemble those excavated in Timor by Glover (1969) and dated within the time span 710 ± 110 BC (ANU-173) and 1595 ± 120 BC (ANU-172).

The stone, bone, ceramic and faunal collections made on our expedition should illumine many problems, while our radiocarbon samples should provide the first chronology for the region. Superficially, the case for connecting Batu Edjaja pottery with Kalumpang and further afield, is a strong one. Given the dearth of Australian implement parallels in Timor and Australian New Guinea, their number in Sulawesi is noteworthy. Even so, it is premature to leap from morphological comparison to diffusionist inference.

These results make it even more unfortunate that Panganreang Tudea was unavailable for re-excavation. Our own experience leads us to doubt the validity of the alleged sequence, because it seems unduly simplistic and evolutionary in character. On our sites, we cannot infer that hollow-based points or bone tools are late intrusions.

Mulvaney briefly examined the Panganreang

Tudea collection in the Museum Pusat, Djakarta, and this raised problems of interpretation. Layer numbers are so seldom listed on artifacts that a relative sequence cannot be determined. The artifacts appear to have been assembled subjectively into rough typological categories, irrespective of provenance, and many bear the same number.

Without exception, the crucial Proto-Toalian tanged points are best explained as a few fortuitously shaped primary flakes—several out of an assemblage numbering over 5,500 pieces. It is relevant that when Callenfels went to BantaEng in 1937, he knew that Bühler (Sarasin, 1936) had excavated tanged or shouldered points in Timor. It is not surprising that he looked for comparable items.

No site investigated by ourselves produced identifiable tanged points or 'archaic' tools. However, they all contained pottery as an integral element throughout their deposits, while the variations in implement typology and in their stratigraphic occurrence and density, make chaos of the order proposed by Callenfels. At present, the concept of a Toalian culture is misleading, and further field research is necessary to clarify prehistoric settlement patterns in Sulawesi. It is hoped that our respective institutions will continue to co-operate to this end.

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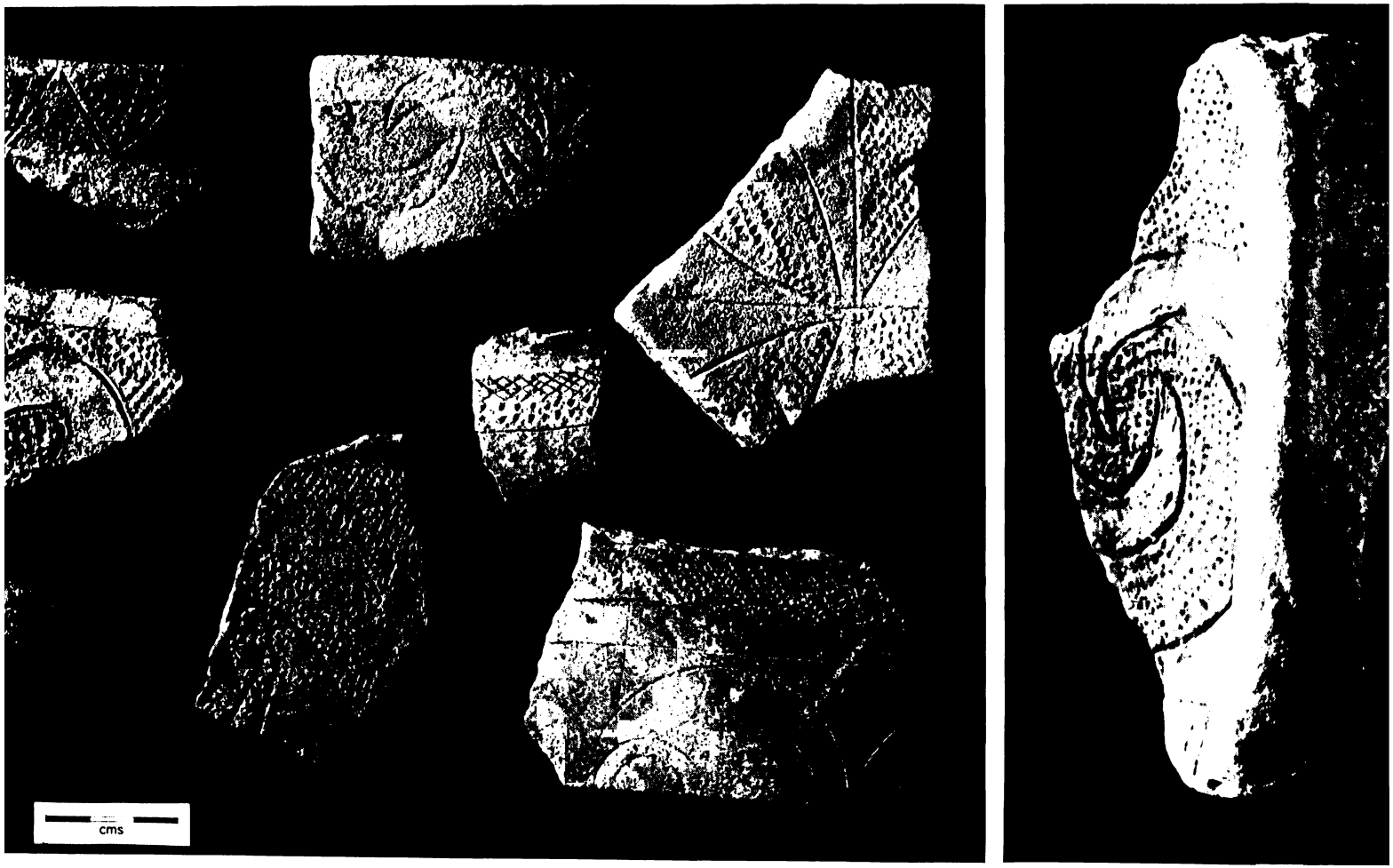

a *b*

PLATE VIII: ARCHAEOLOGY IN SULAWESI, INDONESIA

Pottery excavated at Batu Edjaja Cave (a) Sherds with impressed and incised motifs which resemble the Kalampang style (b) a massive square-faced pot from the same deposit, decorated with similar designs

See pp. 26–33

PLATE IX: ARCHAEOLOGY IN SULAWESI, INDONESIA

b

(*a*) *Leang Burung Cave, looking SW. Trench B is prominent, Trench A runs down the slope for 9 m. from inside the cave.*

(*b*) *the trial trench A at Leang Burung, with maximum depth of 4 m. The upper deposit was disturbed in recent years*

See pp. 26–33