141

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EARLY FARMING COMMUNITIES AND SHORT-RANGE TRANSHUMANCE IN THE COTTIAN ALPS (CHISONE VALLEY, TURIN) IN THE LATE THIRD MILLENNIUM BC

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ABSTRACT

This paper reports the results of excavations on the Copper Age occupation of the Balm' Chanto rock shelter and its wider implications for our knowlepdge of prehistoric settlement in the Piedmontese Alps. Previous interpretations have regarded the Alps as geographic areas to be crossed in the search for metal ores, rather than as an environment providing wide agricultural and pastoral resources. The results of the Balm' Chanto excavations support the inference of the utilisation of a broad spectrum of resources, supported by extensive land-use and localised pastoralism.

INTRODUCTION

Field survey in the Pinerolese, a mountainous region of about 1200 sq. km., some 40 km. west of Turin, was carried out independently by the Museo di Arte Preistorica (Pinerolo) from 1978. Then, after 1980, it was carried out with the Soprintendenza Archeologica del Piemonte, the Dipartimento di Scienze Antropologiche e Archeologiche of Turin University, and the Institute of Archaeology of London University. This led to the discovery of several archaeological sites, mainly located on slopes or ridges, and to a preliminary understanding of the prehistoric human environment of the area (Figure 1).

Two sites have been excavated so far: Balm'Chanto rock shelter, at an altitude of 1450 m., which produced evidence of Copper Age occupation, and Roc del Col, at 2080 m., belonging to the Middle-Late Bronze Age. This paper will discuss the site of Balm'Chanto and its palaeoeconomical and palaeoecological implications. The site of Roc del Col, rather exceptional for its topographical and ecological location, will be the subject of a future study (Nisbet in prep.).

The data obtained by fieldwork indicated that the Chisone valley played an important role in the contact between the Alpine economies of the French and Italian sides through the Mongeneve Pass, at least from the second half of the third millennium bc. It certainly had little colonisation of the upper slopes as pastures, as well as in the search for mineral ores, before 2000 bc. Finally, it has been shown that many sites of the first millennium bc are located on top of the hills near the mouth of the valleys and that some of them were the first to feel the impact of Roman civilisaton. However, no locational analysis is possible at the moment, and the correlation between eological aspects and prehistoric settlements is still limited by the small number of fully investigated sites, in spite of several indications of rock carvings, which make this area one of the best known of the Western Alps in the studies of prehistoric ideology.

EXCAVATION AT BALM'CHANTO 1981-1982

The Chisone Valley is carved into the Dora-Val Maira crystalline massif of the Cottian Alps. It is characterised by a mixed fluvial and glacial morphology and a marked alpine shape. Stretching over a length of about 50 km, it gives an easy access to the French side of the Alps from the Western Po Plain through the Mongeneve Pass (1854 m.). The average altitude of the whole basin is 1730 m, covering a

surface of 586 sq. km. Some 20% of the area consists of rocky, barren land, streams and unstable soils, useless for agriculture and grazing (Capello 1950) (Figure 1).

The middle of the valley, between 1100 m. and 900 m., is formed by Palaeozoic mica-schist and fine texture gneisses, with short fans on the northern side. Its slopes, with high mountains like Mt. Orsiera (2878 m.), Mt. Rocciavre (2278 m.) and Mt. Cristalliera (2801 m.) are well exposed and are moderately steep. They are covered by deciduous woodland up to 1500 m., and above by Larix woodland to the upper tree line (around 2000 m.). Good pastures are developed at higher altitude, on Alpine Sod Podzols, Iron Podzols and Brown Earths.

On the western slope of Mt. Orsiera, along a narrow rocky belt near the hamlet of Seleiraut (Villaretto, commune of Roure), at an elevation of 1430 and 1490 m., a large rock shelter opens (14 m. long, 3 m. wide) formed along a diaclase in granite micaschist. This shelter is locally called Balm'Chanto, and is well known by the shepherds, who used it until two decades ago as an occasional sheep-fold in spite of its unfavourable microclimate. In fact, the rock shelter faces NW, and consequently the sun shines on it during the summer only for a few hours late in the afternoon. The snow can cover the neighbouring areas for up to five months a year. Consequently, at this altitude the vegetative period lasts from April to September, but nowadays pastures are fully grazed by the livestock only from the beginning of July to the end of August.

Excavation of the site began in 1981 on behalf of the Soprintendenza Archeologica del Piemonte, and with assistance from the local Centro Studi e Museo di Arte Preistorica di Pinerolo (Biagi and Nisbet 1983). The excavation reached a depth of 270 cm. in the central part of the area (Figure 2). The sediment is mostly formed by boulders collapsed from the roof vault, many of which are up to about 1 m3 in volume.

Amongst the blocks there are sherds, stone and bone implements which can be attributed to a single cultural period, the late local Copper Age. A few metal objects at the top of the section may indicate a short period of use during the final Bronze or Iron Age.

At least four cultural layers have been recognised in the profile. They have been differentiated by the presence of charcoals scattered on the surface or belonging to hearths, the association and the position of sherds and by the texture and the colour of the silt.

The lowermost layer (layer 10) is documented only in the central part of the deposit, on a surface of about 10 m^2. It contained hundreds of sherds which can all be related to the same shape, that is, the rounded-rim jar with restricted neck and horizontal plain cordons. In association with this common pottery is found a particular greenstone technology, mainly consisting of polished arrowheads of triangular or ogival shape, flat and thin (never more than 3 mm), normally polished on both surfaces. In addition, there are some small greenstone axes and adzes, polished only at the cutting edge. This occupation layer contained a large storage pit. It produced carbonized grains of bread-wheat (Triticum aestivo-compactum) and naked barley (Hordeum vulgare ssp. nudum). A single impression on pottery of barley is not connected with the statigraphic sequence. The same layer also yielded many faunal

remains, mainly ovicaprids and cattle, but also pig, red deer and bear are represented.

A second occupation layer (layer 9a) has been excavated from a smaller area (about 2 m^2) in the centre of the rock shelter against the western wall. It was characterized by a concentration of charred wood and sherds, many of the latter with horizontal plain cordons. It has not been possible to establish the spatial relationship between this layer and layer 10 underneath, owing to the presence of large slabs which disrupt the stratigraphy.

The third occupation layer (layer 6) is composed of two different units, in the central part of the deposit. These are thick and black caused by the presence of a large quantity of charcoal. There are two stone structures made by small slabs which have a black lower surface. These are interpreted as being part of a hearth or, considering their dimensions, a small oven. The pottery here is less frequent. The commonest shape is again the jar with horizontal plain cordons. Some vessels have decorations which were already present in smaller quantities in the lower layers. Particularly important was the sherd of a bowl having vertical cylindrical lugs and sherds with cane, stab and drag and oblique impressions and also with hatched triangles. Of special interest are chisels and awls carved from bone; polished greenstone arrowheads and small axes of the same kind already found in the lower layers; greenstone polishers with large, rounded furrows. This layer has been radiocarbon dated (charcoal) to the end of the third millennium bc (Bln 2838: 4010 ± 60 bp (2060 bc): Quitta pers. comm. 1983).

A fourth occupation layer has been found near the surface of the deposit, in the central area and towards the southern end of the rock shelter (layer 2a, 2b and 2c). Though discontinuous, these two units seem to be related to the same phase of occupation. This layer covers large blocks which markedly separate this floor from layer 6. The archaeological material is similar to that from the lower lying floors. However, two bronze rings and beads with cylindrical piercing, one of which is a faience bead, might suggest that the site was settled also during the final Bronze or Iron Ages. This later occupation could have caused the disturbance of the uppermost part of the layer 2.

THE ENVIRONMENT

The deposit itself does not offer clear palaeoclimatic evidence. Calcite deposition on stones and sherds of the lowest occupation layer (10) could be related to a short period of increased moisture inside the shelter, but the fine fraction of the sediment of the whole deposit originated from the local decay of the bed rock.

It seems probable that the origin of the deposit can be explained in terms of mechanical weathering aided by the presence of thin layers of soft minerals such as micas in the bed rock. However, the absence of frost-shattered rock fragments, the large dimensions of the boulders in the deposit, the lack of evidence of water action on the sediment and the considerable thickness of layers with Copper Age material of a similar shape can be explained only in terms of a strong tectonic activity occurring in that area at the end of the third millennium bc. This caused the collapse of the largest

boulders covering at least the lowest inhabitation floors. Recently Carraro and Forno (1981) have drawn attention to a large post-Wurmian paleo-landslide a few kilometres upstream of Fenestrelle in the Chisone Valley, 10 km. west of Balm'Chanto. This must have been caused by the activation of recent tectonic features (particularly the Cenischia-Nice fault system), even though there is so far no reason to relate the Balm'Chanto and Fenestrelle episodes to the same period.

A series of soil and vegetation environments had been identified from Villaretto (c. 1000 m.) to Lago La Manica (2365 m.) at Val Chisone (Macphail 1983; Cruise and Scaife, in Biagi and Nisbet in prep.). Balm'Chato lies in a sub-Alpine terraced zone (c. 1473-1550 m.) which contains elements of terraced soils with land use and vegetation types of old pastures, contemporary and recent small scale arable, and old pasture invaded by Larix woodland. Present day soils in the area around Balm'Chant are predominantly acid (pH 5.1-5.5) brown soils with gleys and flush bogs restricted to sites of impeded drainage and streams. The brown soils in the immediate vicinity of Balm'Chanto are composed of loamy sandy A and Bw (Cambic B) horizons characterised by high biological activity, but have a very narrow (1-2 cms.) slightly leached superficial Ah/Ea horizon. These features were attributed by vegetation studies to very recent Larix invasion of brown soils developed under pasture.

Micromorphological studies (Biagi and Nisbet in prep.) of terraced brown soils from nearby Ors and Malze (c. 1550 m.) and Seleiraut (c. 1500 m.), indicate some soils have been long used for small scale cultivation, while others apparently have always been used for pasture. In the latter case, there is increasing evidence to suggest that brown soil upper horizons (A and Bw horizons) dominated by faunal excrements have developed over a podzol subsoil (Bs horizon). Duchaufour (1958, 1977) has suggested that brown soils developed at altitudes where podzols are the climax soil and occur through the replacement of Larix and other conifers by pasture, with Nitogen-fixing Leguminosae encouraging earthworm working and subsequent brown soil formation. The pollen data (below) may indicate the ameliorating effect on the soils of an increasing pasture vegetation at a similar time to the occupation of Balm'Chanto. This possible example of early anthropogenic activity causing soil amelioration and successful exploitation right up to the present is unique when compared with prehistoric man's activities elsewhere in Europe which produced large scale soil deterioration and land abandonment (Dimbleby 1962; Scaife and Macphail 1983; Macphail in press).

Four pollen samples (Scaife 1983) from layers 3 (cut 133), 10 (cut 144, two samples) and 16 (cut 162) (i.e. a few centimeters below the lowest horizon excavated in 1982) showed the strong presence of hazel (Corylus), being certainly the dominant woodland element growing near the shelter (Figure 3). Other taxa are indicated by pollen of oak (Quercus), elm (Ulmus) and lime (Tilia), which suggest the existence in the lower part of the slope of a deciduous woodland. There is also evidence of coniferous woodland, with pollen of pine (Pinus), fir (Abies) and spruce (Picea) forming a higher altitudinal vegetation belt. A rather similar woodland cover, but much later in date, probably belonging to the first millennium bc, has been described by Charrier (1967) at the

Sestrieres Pass (2010 m) at the western end of the valley, some 15 km. from Balm'Chanto. It is suggested therefore that the site of the shelter occupied an ecotonal position at the time of its Chalcolithic occupation.

Consequently we have no reason to suggest important environmental changes in the middle Chisone valley during the Final Sub-boreal. The archaeological evidence from many sites in the French, Swiss and Italian Alps during the third millennium bc (Biagi and Nisbet forthcoming) attests to early colonisation in the Alps. This contrasts with some morphological evidence and pollen analytical work showing a climatic deterioration identified in the Swiss Alps as the Priora phase dated between 3250 and 2050 bc (Zoller 1960). Recently Beug (1982) has stressed the importance of local aspects in considering pollen diagrams relating to the Priora phase in the Swiss Alps. Therefore it seems that at the end of the third millennium bc, this part of the Alps was favourable to the first human settlement which can also be seen as a response to stable climatic conditions.

ECONOMY

Preliminary identifications of faunal remains (Riedel pers. comm. 1984) show the predominance of domesticated species such as sheep/goat, cattle and pig, but part of the assemblage also indicates that hunting was widely practised in the surrounding area (red deer, chamois, possibly ibex and bear). This pattern of mixed economy can be seen more as an adaptation to specific environmental conditions than as a survival of the neolithic life of the Po Plain (Barker 1983). In fact, the importance of hunting at Balm'Chanto is not completely consistent with the faunal data published by Chaix (1976) for the Valais and for the Midi, where domesticated animals are in many sites close to 100% of the whole population. However, the presence of cattle and ovicaprids places the site in the Mediterranean area of domestication more than the central European one, as pointed out by Chaix (1977) in his summary on early domestication in the Western Alps.

The lowest living floor studied to date (layer 10) contains charred remains of cultivated plants as well as a number of carbonized hazel shells. Free threshing hexaploid wheat, Triticum aestivo-compactum, seems to be the commonest crop, but 6-row naked barley (Hordeum vulgare var. hexastichum) was grown as well (this latter species with a high morphological variability).

Barley is a cool-season crop which can grow at the upper limits of cultivation (yet today its cultivation has practically disappeared in Chisone valley; sometimes it is grown as fodder). It is sown early in the summer because it ripens in three months and at these altitudes (between 1000 and 2000 m) can be harvested in August.

It is not impossible that both crops were grown near the shelter, as also the bread wheat has vernalization mechanisms, which makes it hardy enough to withstand winter frost. It must be noted that pollen analysis showed the presence of cereal pollen in the layers 6 and 16, although poor pollen preservation did not allow taxonomic separation to the genus level.

The prehistoric utilization of the environment surrounding the rock shelter has been emphasized by petrographic analyses of the greenstone artefacts found in the deposit (Mannoni 1983). The commonest rocks are a kind of jadeitic pyroxenite and chloritoschist, which are locally frequent. These rocks are easily found in the morainic debris scattered along the upper part of the slope in the proximity of Balm'Chanto. In the deposit of the shelter there are many examples of the whole sequence of polishing from raw untouched greenstone to the final smoothed arrow-heads.

Few examples of allochthonous raw material can be found in the deposit. These comprise a few flint blades and one steatite bead, the latter being common in Western Alps rocks (Piedmont and Lombardy).

THE FIND ASSEMBLAGES

Most of the finds consist of sherds. There are few flint tools and many polished greenstone, bone and antler artefacts. The pottery can be subdivided into two main groups. First, average dimension pots, often with a rim slightly outstanding and a conical body, decorated on the neck and the shoulder by smooth horizontal cordons frequently coupled (Figure 4, P4-P7). All these vessels are without handles and represent the most frequent pottery found in the site. A second group includes sherds of pots decorated by dots and cane impressions directly below the rim, or by short oblique incisions below the rim. A small bowl decorated with opposite hatched triangles can be referred to this group (Figure 4, P2). Particular mention must be drawn to a large sherd of a pot decorated with horizontal scratched panels with vertically perforated lugs (Figure 4, P8).

The flint tools are very rare. They comprise a tanged arrow-head with flat bifacial retouch; two end scrapers with simple retouch, one of which shows wear traces along the right side and a point (Figure 5, F1) with bilateral backed retouch with strong use marks at the distal edge. The greenstone artefacts include some polished arrow-heads of which some are double pointed. No other Italian site is known to have produced artefacts like these. The deposit also gave a polished stone spindle whorl.

Bone and antler tools are represented by perforators, chisels and two probable figurines carved from flakes with a quadrangular shaped edge (Figure 5, B1-B4).

The finds of Balm'Chanto have some parallels in different geographical areas of northern Italy and both French and Swiss alpine regions. Vessels with cordons without handles are known in Liguria in the 'Copper Age' layers at the Arma dello Stefanin and Arma di Nasino. It is well known that the same kind of handled shapes are common to the Early Bronze Age Polada Culture which covers almost all of northern Italy (Barfield 1980).

The second group of pottery gives rise to a different kind of question. Cane decoration, common in the latest phase of Square Mouthed Pottery Culture of Eastern Lombardy, Veneto and Trentino (Bagolini et al. 1979) has been recently found in the lowest layers of Saint-Martin-de-Corleans, Aosta (Mezzena 1981) and has been described in Provence in the Chalcolithic site of Fortin-du-Saut

(Courtin 1978). The bowl with opposed hatched triangles matches Beaker Culture examples and the pot with double vertical lugs has parallels found only in the Po Plain cemeteries of the Remedello tradition.

The flint asemblage from Balm'Chanto is noteworthy for different reasons. The raw material is absent in the Western Italian Alps and in this case is thought to come from the French side. The long bilaterally backed point, probably used for piercing, is very similar to those from Sion, Petit-Chasseur (Switzerland) (Gallay and Spindler 1972, p. 69), as well as the polished stone spindle whorl. The greenstone polished arrow-heads have parallels in alpine Switzerland, where they appear with the beginning of the Cortaillod Culture (Gallay pers. comm. 1983).

Particular attention should be drawn to two so-called small idols (?) carved from bone and antler. These are similar to those found at the Copper Age Grotte de Resplandry (Barge 1982, p. 313) and Grotte de Labeil (Barge 1982, p. 323) in the Herault; at Abri de Font-Juvenal, Conques (Guilaine and Roudil 1976, p. 272) attributed to the late-final Neolithic; and at Grotte des Sarrasins, Seyssinet - Pariset (Isere) (Bocquet 1976a, p. 135) in early Bronze Age layers of Chalcolithic tradition.

The radiocarbon date from layer 6 (Bln 2838: 4010 ± 60 bp (2060 bc)) highlights a local Copper Age culture which as yet has no definite comparisons either in the neighbouring areas, where little work has been carried out on the periods preceding the Bronze Age, or in the whole of northern Italy, where the Copper Age has been the object of specific research only recently.

Clear relationships are shown by the presence of artefacts like the stone spindle whorl or the long flint perforator, similar to those known in Switzerland, besides the polished greenstone arrow-heads which as yet find parallels only in some Neolithic and Chalcolithic sites of the same country. Bone and antler objects, similar to those from settlements of the lower lands of northeastern Italy (Barfield and Bagolini 1976), are chisels, but also include two small 'idols' found in the Copper Age - Early Bronze Age of southern France.

In his recent re-examination of the prehistoric pottery of southern Switzerland, Gallay (1976) described coarse ware in deep forms of the early Bronze Age, I-II phase, and perhaps III phase, of very similar character to those sherds found at Balm'Chanto. This date however seems to be too late for the Balm'Chanto assemblage. In fact the 14C date from Balm'Chanto is close to those known for the Bell Beaker Culture settlements of northern Italy and although the site does not belong to this culture, it is noteworthy that the vessel decorated with opposite hatched triangles is close to the most characteristic forms of the pottery of this culture.

CONCLUSIONS

Functional and economic interpretation of the site of Balm'Chanto presents a number of problems typical of Alpine prehistoric settlements. These problems in particular are evidenced by the isolation of the shelter in our knowledge of the prehistoric Alpine world, and the difficulty of placing it into a specific cultural

environment.

The prehistory of the Piedmontese Alps until the beginning of the first millennium bc is virtually unknown. The lack of well stratified contexts and of analytical work on the material excavated at Vayes in Valsusa (Taramelli 1903); at Aisone in Valle Stura di Demonte (Bagolini and Biagi 1975) and at Grotta dei Saraceni in Val Tanaro (Bertone et al. 1980) hinders the possibility of establishing clear correlations between the earliest neolithic communities of the western Alps. This is in spite of the fact that it seems that the borders of the plain and the valley floors were known to "Impressed Ware" people of the late fifth millennium bc (Vayes) and to the Square Mouthed Pottery communities of the later millennium (Aisone). Recently sherds of the square mouthed vessels have been collected on the Rocca of Cavour, in the plain near Pinerolo some 15 km. south of the Chisone valley (Nisbet and Seglie 1983).

According to Sauter (1976), the settling of the Swiss Alps should be dated to the beginning of the second millennium bc, with the Rhodanian Culture. The reasons for the colonization of the upper slopes are seen mainly as a response to the demand for, and the exploitation of, chalcopyrite ores and only subsequently as an adaptation to a mixed economy based on pastoral agriculture. The French side of the Alps was known to people of the Saone-Rhone culture, during the second half of the third millennium bc (Bocquet 1976b), but most of the evidence of human settlement comes from the outer limestone belt with fertile soils, and the human presence in the mountains is mostly documented by scattered finds:

> 'Les difficultes de circulation a l'interieur des Alpes sont un obstacle a admettre sans reticence une route de montagne; pourtant la recherche de minerais cupriferes alpins et leur commercialisation ont pu commander la creation d'un tel axe.' (Bocquet 1969, p. 147).

Here again the Alps are seen mainly as geographic areas to be crossed in the search for metal ores, rather than as an environment providing wide agricultural and pastoral resources.

The settling of Balm'Chanto cannot be related only to a halte de chasse for Copper Age hunters or to an occasional shelter for shepherds. Instead, there is evidence of an accurate choice of raw material in the surrounding areas; of its processing inside the shelter; of agricultural and pastoral activities and of a hunting and gathering economy. Represented, therefore, are many integrated aspects of the local economy not necessarily dependent on the village located in the valley floor. It is evident that at Balm'Chanto there is no kind of economic specialization, with life based on a broad-spectrum of resources supported by extensve land-use and a localized pastoralism.

The rock shelter of Balm'Chanto therefore fills a gap in our knowledge of the prehistory of the eastern Alpine chain. Although comparisons with nearby sites are impossible at the moment, it should be emphasised that the specific aspects of this local culture developed in an area possibly having strong movements of population which was probably linked to the exploitation and the utilization of basic raw materials such as the greenstones from Italy and the flint from nearby Savoy.

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LIST OF ILLUSTRATIONS

Figures:

Figure 1. Modern ecological aspects of the Pinerolese:

Thin hatching: upper alpine pasture.
Thick hatching: conifer vegetation belt.
Dotted area: eroded slopes.
Blank: chestnut woodland.
Circles: thick alluvial soils.

and Prehistoric Sites:

Rhomboid: Neolithic.
Square: Copper Age (Balm'Chanto).
Triangle: Bronze Age.
Circle: Iron Age.

Figure 2. The stratigraphic sequence of Balm'Chanto rock shelter.

Figure 3. Balm'Chanto pollen diagram from layer 3 (cut 133), 10 (cut 144) and 16 (cut 162).

Figure 4. Examples of the commonest shapes and decorations of pottery from the Copper Age layers.

Figure 5. Antler (B1 and B2), bone (B3 and B4) and flint (F1) instruments.

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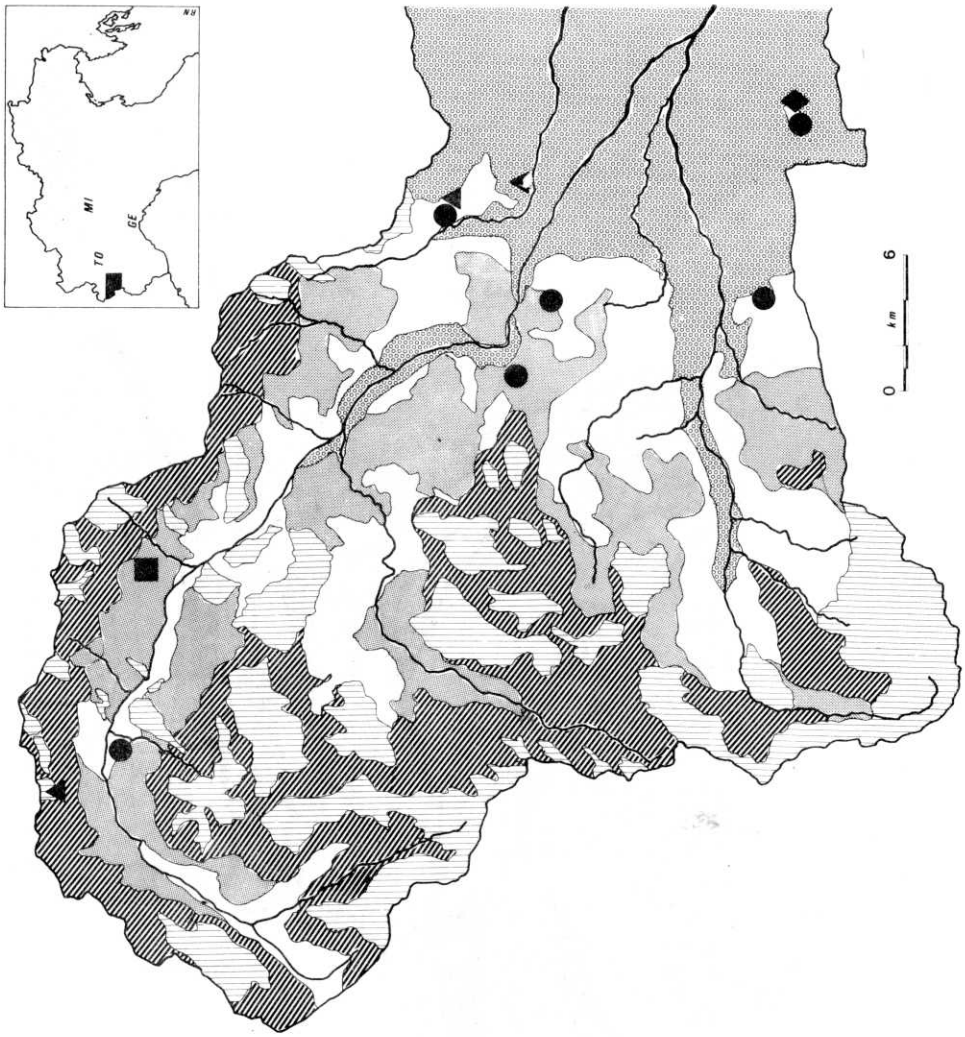

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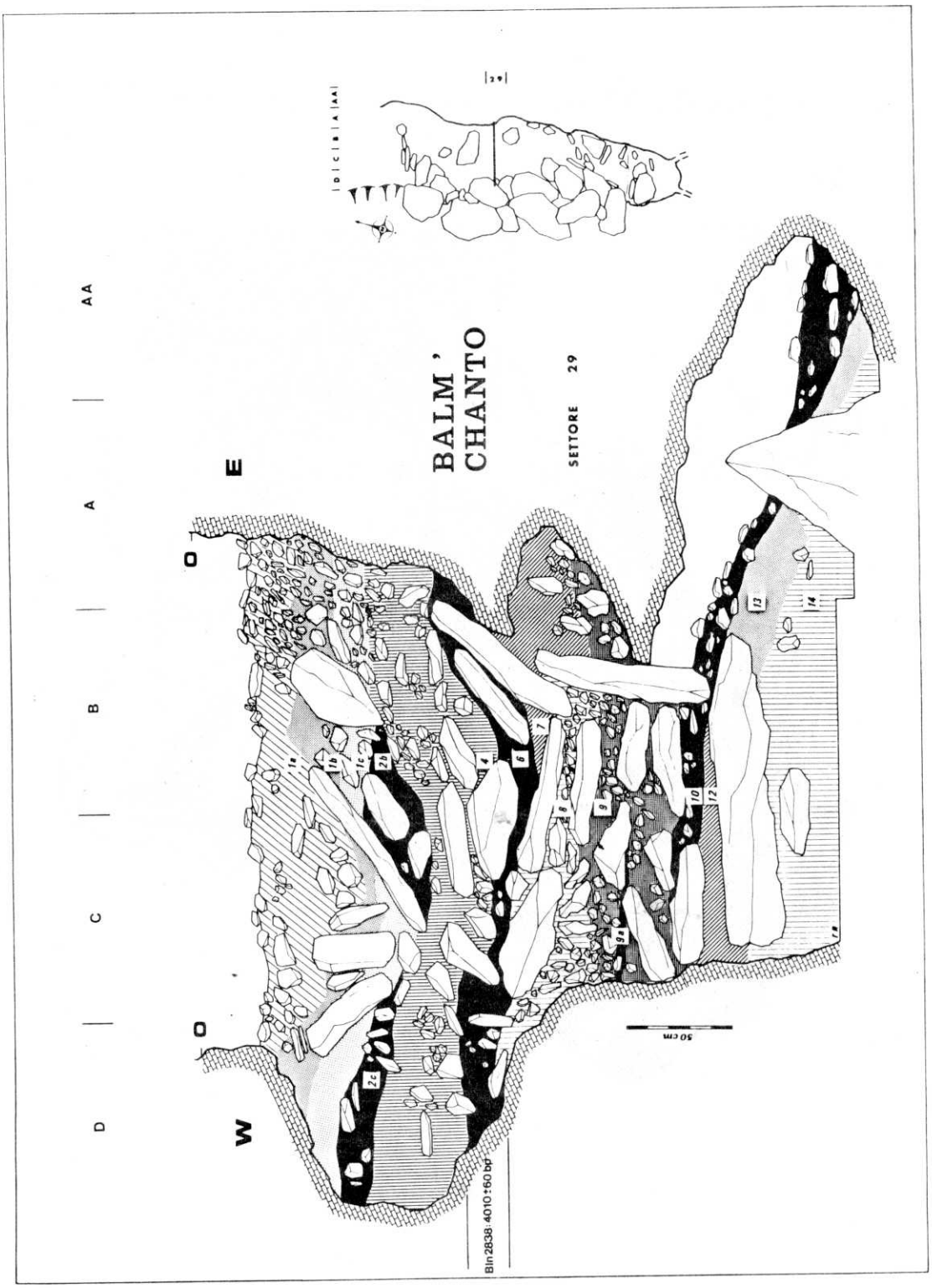

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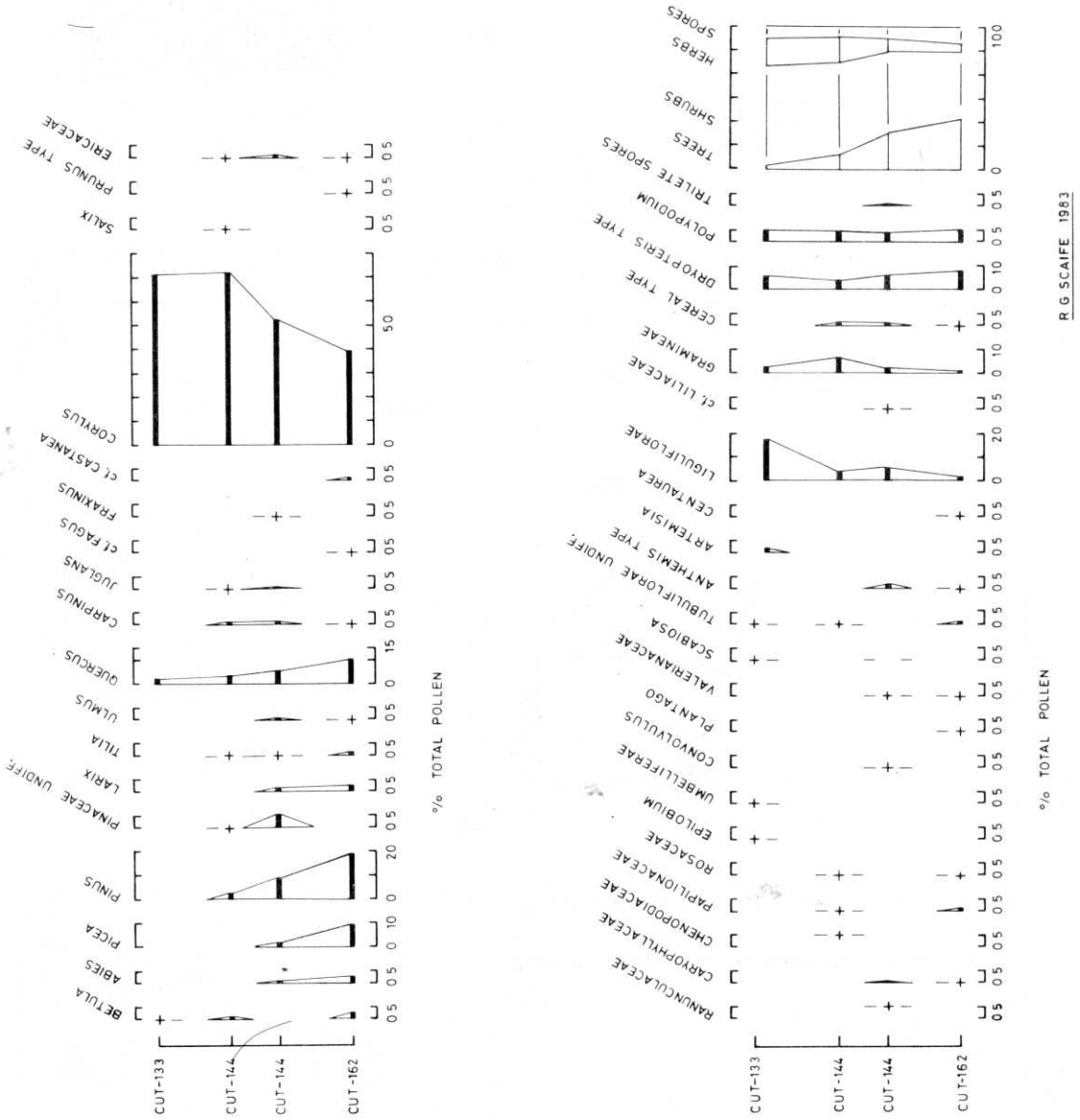

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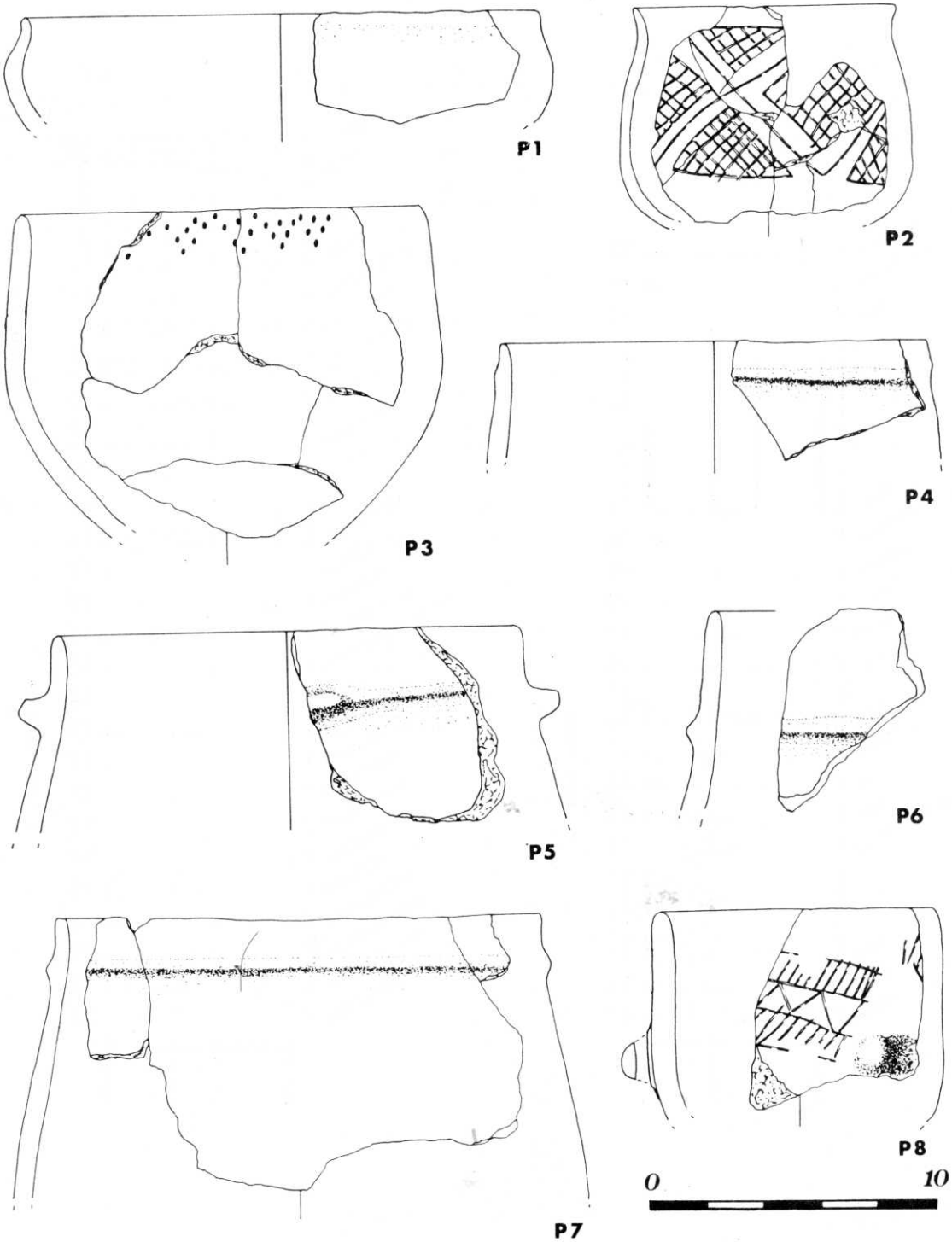

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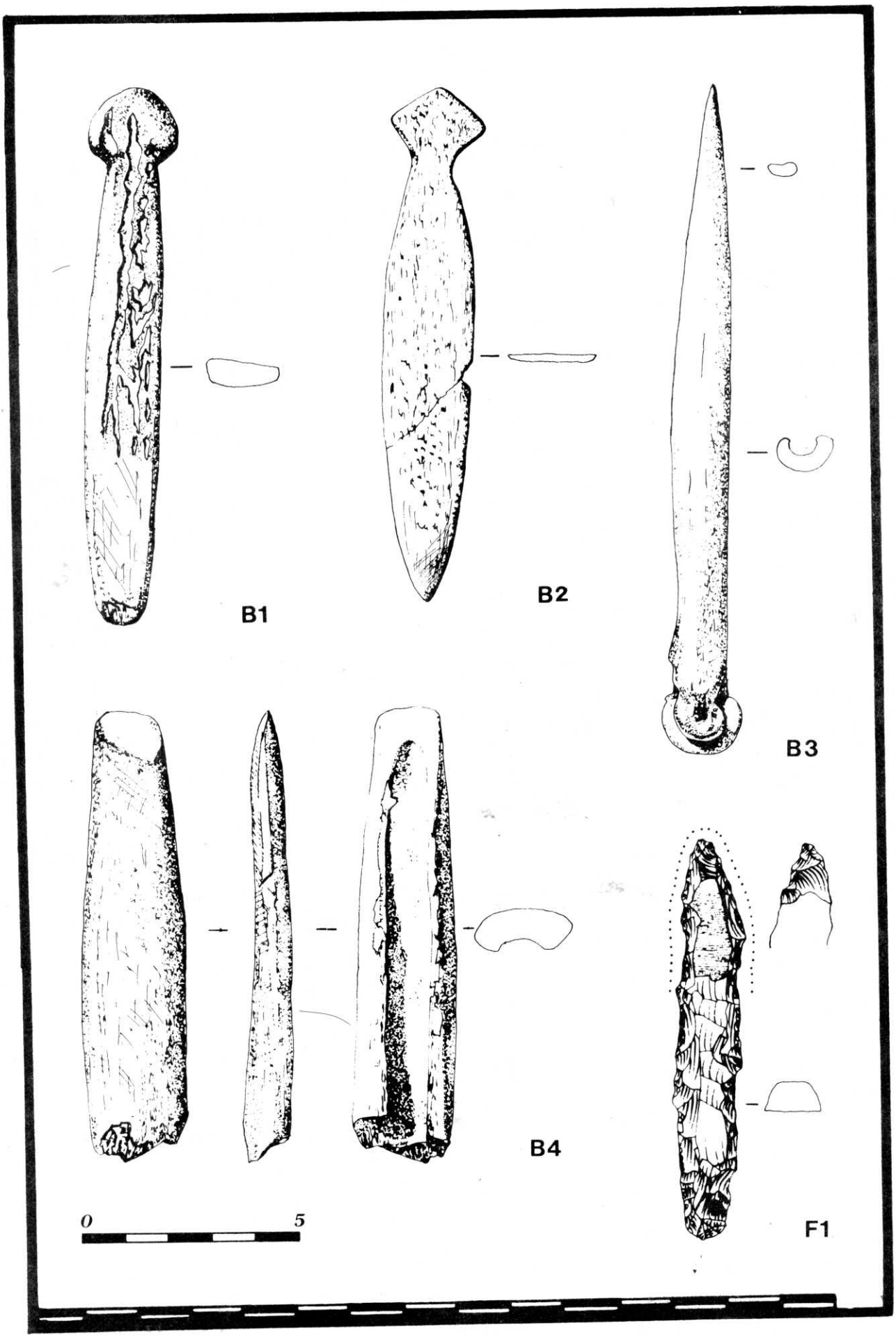

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figure 5