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BETTER HOMES AND GARDENS:
THE LIFE AND DEATH OF THE EARLY VALDIVIA COMMUNITY

by

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ABSTRACT

The early Valdivia communities of southwestern Ecuador represent a case in the development of the New World Early Formative Period. The precocious appearance of ceramics draws attention away from the context of Valdivia I and II culture from circa 3500 B.C. to circa 2300 B.C. (radiocarbon years). The settlement pattern and system for Valdivia demonstrate a preference for well-watered farmlands of the river floodplains. The interaction between the availability of these lands and the colonizing peoples of Valdivia I determined the economic and social life at the settlement of Real Alto in the Chanduy Valley.

The Valdivia I community at Real Alto is described on the basis of current data. The associated ceramics are examined for theme according to the iconographic method. This reveals a cognized model of the Valdivia I and II environment - a model dependent upon the economic reality of water and land allocation.

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CHAPTER I

VIEWS AND VENERATIONS ON A VIVACIOUS VALDIVIA

Valdivia was first presented as a unique or special case in New World archaeology (Estrada 1956; Meggers, Evans and Estrada 1965). It is not. Valdivia is simply one manifestation of a process of cultural development. This process involved the establishment and expansion of Formative Period fully-efficient agricultural communities of northwestern South America. This way of life or adaptation was oriented to the great river systems of the moist tropics and it began in the millenia before 3000 B.C. (Lathrap 1974).

In 1951 Bushnell illustrated several Valdivia sherds (Bushnell 1951). These came from a cemetery site near the modern day town of La Libertad on the Santa Elena Peninsula of Ecuador's Pacific coast. The cemetery was of post-Conquest affiliation. Their disturbed provenience led Bushnell to cautiously ascribe them to the historic period. Thus, since their first finding by an archaeologist, Valdivia ceramics were problematical in their temporal assignation. This problem, however, was to worsen.

The work of several Ecuadorian archaeologists in the 1950's and 1960's greatly contributed to the development of a problem oriented approach to the prehistory of coastal Ecuador. In a valley just north of Bushnell's La Libertad finds Emilio Estrada Ycaza (1956) located the site of Valdivia, G-31 and christened the ancient culture "Valdi-

via". Estrada's claim of a Formative age for Valdivia brought worldwide attention. At San Pablo, a village between Valdivia and La Libertad, sherds similar to Estrada's Valdivia assemblage were found and this site was excavated by Zevallos and Holm (1960).

Estrada was joined by Meggers and Evans in the investigation of Valdivia at G-31 and at other sites along the coast. Their work culminated in the publishing of The Early Formative Period of Coastal Ecuador (Meggers, Evans and Estrada 1965). They argued that Valdivia pottery was the earliest in the Americas and suggested that it was introduced to a society of shellfish gatherers and fishermen by Jomon fishermen of Neolithic Japan. The ensuing dispute drew and continues to draw attention (see, for example, Meggers and Evans 1977; McEwan and Dickson 1978). It is now an old problem which died many deaths but continues to rise like a Phoenix in the minds of a few individuals. It has distracted research from the study of the processes of internal development and social and economic expansion in Formative Ecuador. These are matters of equal or greater importance.

Zevallos (1966-1971) was the first to suggest that the economic base of Valdivia society was maize agriculture. He disputed the contention of Meggers, Evans and Estrada that Valdivia was solely maritime oriented. Zevallos recovered, from the excavations at San Pablo (see Zevallos and Holm 1960), a carbonized corn kernel embedded in what is now known to be Valdivia V-VI pottery (2000-1700 B.C.). He further advanced his case by identifying modelled and incised decoration on these same Valdivia ceramics (Zevallos 1966-1971) as being depictions

of maize. He went on to suggest that a maize deity was portrayed by the Valdivians on their pottery.

Zevallos' work, then, departed from Meggers, Evans and Estrada (1965) in that it placed primary emphasis on economic and social factors in explaining life during Valdivia times. This further allowed a shift towards investigating the possibility of an inland, agricultural orientation for Valdivia and opposed the coastal bias developed through the extensive archaeological investigations on the Ecuadorian Pacific coast.

Lathrap (1970:67) echoed Zevallos' sentiments while pointing out "the strong possibility that the economic basis of Valdivia was mainly agricultural." Meanwhile, additional Valdivia sites were found inland. In fact, the earliest Valdivia sites which are now dated lie in regions oriented towards inland resources (Lathrap, Marcos and Zeidler 1977; Norton 1977). More specifically, they are associated with the alluvial floodplains of the Pacific coastal lowland which have greater potential for agriculture than the littoral environments.

The Problem

I am concerned here not with the origin of Valdivia but rather the parameters of settlement and social and economic life for the early Valdivia community. By early Valdivia community I mean phases I and II in the eight part seriation proposed by Hill (1972-1974) for Valdivia ceramics. Phases I and II represent the initial appearance of Valdivia and pottery in southwestern Ecuador. I estimate that Valdivia I lasted

from approximately 3300 B.C. (radiocarbon years) to 2700 B.C., Valdivia II from circa 2700 B.C. to circa 2300 B.C. (For a more detailed discussion of the complexities of dating Valdivia see Chapter II.)

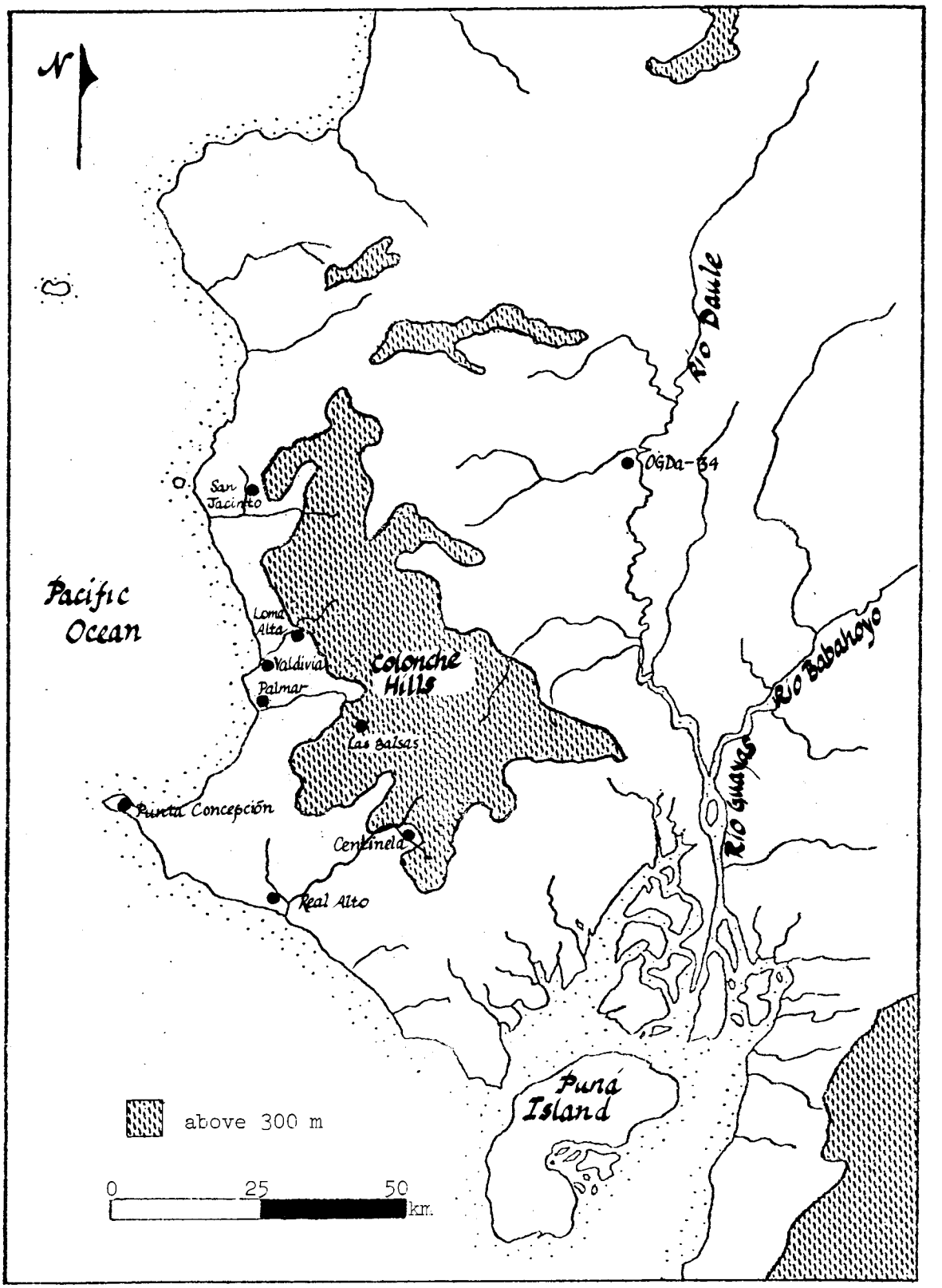
The early Valdivia community was ostensibly a fully self-sufficient agricultural system. Only a few Valdivia I settlements have been discovered. These shall be examined partly and the Valdivia I occupation at Real Alto shall be more thoroughly described.

An Introduction to Valdivia I Sites

The early Valdivia site of Loma Alta which lies ten kilometers up the Río Valdivia from G-31 was discovered and excavated by Norton (1971, 1977). The radiocarbon dates (see Chapter II) place its Valdivia occupancy several hundred years prior to that further downstream on the coast at Valdivia itself (G-31). The paucity of food remains from littoral species at Loma Alta reflects a definite inland adaptive strategy rather than a maritime one.

Loma Alta's settlement was restricted to Valdivia I and II. During this time, deposits built up to depths of one to over two meters. The site is on a low, flattened hill adjacent to the Río Valdivia just as the more rugged terrain of the Colonche hills is approached. Norton excavated three trenches in the midden. The more spectacular discovery was the location of groups of cairns. Underlying these cairns were whole Valdivia I vessels.

Norton (1971) suggests that Loma Alta and Las Balsas, which lies twenty-five kilometers southeast of Loma Alta and is also a Valdivia



Map 1: Early Valdivia sites of southwestern Ecuador

I site, are more typical of early Valdivia than G-31. In fact, the first Valdivia occupation at G-31 did not start until Valdivia II times. Norton also points out that the Loma Alta midden is representative of a sedentary occupation by an inland adapted people. These people, he believes, exploited the hunting territory of the Colonche hills of Ecuador's western lowland and the river systems (Norton 1971:3-4) which were also used as farmland.

A site (OGSE-42) on the Santa Elena Peninsula was occupied only during Valdivia I (Lanning 1967:16). Punta Concepción lies on the sea coast of the Peninsula near the modern village of Santa Rosa. It consists of eroded mounds (Hill 1972-1974:2) which are badly disturbed and produced Valdivia I sherds mixed with .22 cartridges, bottle caps and other modern artifacts (Norton 1977:6).

Punta Concepción, situated close to the Pacific Ocean with no nearby agricultural land, is best interpreted as a special activity station. Norton and Lanning (personal communication to Norton 1977:5) both feel that it was probably a specialized shellfish gathering site which was visited by villagers from inland farming settlements.

The site of Centinela, which has been partly excavated by Zevallos, bears evidence of a continuous I through VIII Valdivia occupation. Centinela (OGCh-19) lies well inland, twenty-five kilometers up a tributary of the Río Zapotal of the Chanduy Valley. Its placement on a low hill rising above the Río de Azúcar floodplain is reminiscent of Loma Alta. Also, like Loma Alta, it is located at a point where the Colonche hills begin to rise steeply before descending again towards the Guayas Basin.

Las Balsas (Norton 1971), mentioned earlier, is a Valdivia I site which lies far inland in the Río Jovita Valley. The site of Palmar, near the mouth of the Río Jovita, was recognized as early Valdivia by Meggers, Evans and Estrada (1965) on the basis of the occurrence of time diagnostic stone figurines.

Other Valdivia I sites are known through recent survey in southern Manabí Province (i.e. San Jacinto) and through the activity of huaqueros, pot hunters. The most promising area of all is recently receiving more attention (Raymond 1979). The Guayas Basin is a large river valley formed by the Ríos Daule and Babahoyo. Precipitation increases as one moves east into this area from the Santa Elena Peninsula (Momsen 1968:92). The consequent lusher vegetation and the greater sediment deposition rates by the rivers of the Guayas Basin have probably caused archaeological sites to be under represented in proportion to the coastal environment.

One site, OGDa-34, on the Río Daule produced a radiocarbon date of 2575±75 B.C. (Raymond 1979:5). Several features were found deep in the river bank and Raymond (1979:5) interprets these as a living floor and associated post holes. The pottery, which lacks decoration, is within the range of Valdivia I and II vessel forms (see Chapter VI). Considering the odds against retrieval of Early Formative sites in this environment, Raymond (1979:6) feels that there were probably many more early Valdivia settlements in the Guayas Basin. This area, according to Lathrap (Lathrap, Collier and Chandra 1975), was the population center during Valdivia.

Real Alto and the Chanduy Valley

My view from the coast is based on several seasons of excavation at the site of Real Alto and survey of the surrounding countryside. Jorge Marcos discovered the Valdivia site of Real Alto (OGCh-12) in 1971. This site, situated along the floodplain of the Chanduy Valley, lies near the town of El Real, one and a half kilometers from the sea, or four and a half kilometers up the Río Verde. The Ríos Verde and Zapotal and their tributaries are components of the Chanduy Valley. This river system, although dry for the most part of the year today, is most important in understanding the economy of Real Alto (Chapter V) and the colonization process responsible for its establishment (Chapter IV).

Although the Ríos Verde and Zapotal are without water today for much of the time, this was not so in the past. Even today the stumps of mangrove trees (Rhizocarpa sp.) are found in the Chanduy estuary just below the convergence of the two rivers. These relicts of a mangrove swamp only grow when there is a readily available supply of freshwater in conjunction with salt water from the ocean. The large amount of mangrove specific Anadara tuburculosa clam shells found at Real Alto further indicates that rivers flowed more regularly in the past (see also Sarma 1974). Damming upstream for agricultural purposes, cyclical patterns of increased and decreased pluviality, burning, grazing and activity by charcoal makers have all contributed to increased dessication of the natural environment. Yet, still, the floodplain remains the focus of present day farming.

The river system is the single most important zone for comprehending aboriginal subsistence and settlement. Subsidiary zones were the Pacific Ocean, the mangrove swamp and the beaches. In these areas aquatic fauna were gathered or fished. Catfish, shellfish and even whales were exploited by the Valdivia I and II inhabitants of Real Alto.

Another zone is the savanna grassland. These grasslands are dependent upon rainfall, moisture from the garúa fogs of July, August and September, burning and grazing. The latter two work today towards keeping thorn forest and other arboreal elements from establishing themselves in the area. Prehistorically, the savanna must have provided pasturage for white-tailed deer. The almost exclusive reliance upon this species of deer as the hunted terrestrial fauna during the Valdivia occupation at Real Alto (Byrd 1976:figures 13 and 14) attests to the importance of the savanna in the dry-land hunting system. Fields of corn on the floodplain would also have attracted deer to an area where they could be easily taken: "As more farm land was opened up there was an increase in the number of Virginia deer, a creature perfectly adapted to the corn fields" (Lathrap, Marcos and Zeidler 1977: 12).

Real Alto is propitiously situated in a position for exploiting the three major zones: i.e., (1) the river; (2) the ocean, shoreline and mangrove swamp; and (3) the savanna. It lies on the highest point in the immediate vicinity overlooking the Rio Verde and the surrounding savanna. Its four to five kilometer distance from the Pacific Ocean

at the Chanduy estuary places this zone within the catchment area identified by Vita-Finzi and Higgs (1970) for Neolithic settlements.

Archaeological Work at Real Alto

The discovery of Real Alto led to surface sampling and, in 1974, a full-scale excavation under the direction of Lathrap and Marcos. The excavations aimed at finding the economic basis and social plan of a Valdivia settlement. No such research plan had yet been undertaken at a Valdivia site. The plan of a Valdivia house was unknown after more than fifteen years of counting Valdivia pot sherds.

Real Alto was first mapped and several ridges were identified as presumably being the remains of accumulated debris from Valdivia domiciles. In the first year of excavation (1974-1975) three trenches were made to cut through the deep (up to one meter in thickness) but seemingly unstratified midden. This, as Flannery (1976:68-72) points out, is one of the few ways of tackling a New World Formative site with a long period of occupation. The rebuilding of houses, construction of mounds, storage pits, burial pits and other features preclude the rigid use of uniform excavation levels and checkerboard archaeology.

The first trench, A, cut through several Valdivia houses. The second, B, was designed to explore the architectural detail of two mounds overlooking a depression on the site. This revealed an inner plaza between mounds. The latter feature had at one time been of ceremonial importance (Lathrap, Marcos and Zeidler 1977; Marcos, Lathrap and Zeidler 1976). One other trench, C, was excavated at the northern

portion of the site. These three trenches plus shovel scraping of the surface enabled a comprehensive view of Real Alto during its long history of occupation spanning the time from about 3300 B.C. to later than 1500 B.C. (uncorrected radiocarbon dates).

Valdivia houses changed in constructional form over the years. During Valdivia I they were small and oval shaped (Chapter V). Real Alto began its ascendancy as a regional ceremonial center during Valdivia II times (2750±300 B.C.; ISGS-452). House size also changed during this interval. The residence of the middle Valdivia community "is comparable to the malocas of the Upper Amazon which house lineage groups, several families related through the male line. A population of 30 people for the house does not seem excessive" (Lathrap, Collier and Chandra 1975:43). The houses were ordered in rows bordering the central plaza with ceremonial houses on the mounds. Real Alto grew so that by Valdivia III the "population of this planned, permanent town. . . can be bracketed between 1500 and 3000" (Lathrap, Collier and Chandra 1975:43).

The later Valdivia settlement at Real Alto underwent a transformation. There was an on-site population reduction and several satellite communities evolved. These were oriented to the river floodplains. Five such hamlets can be identified within the close vicinity of Real Alto. Lathrap, Marcos and Zeidler (1977:11-12) interpret this as reflecting "the division of Valdivia into a hierarchy of communities, with a distinction between rural hamlets and a central ceremonial center manned by full time specialists in religion."

The late Valdivia occupation was followed by Machalilla. This phase is still poorly understood. Community structuring remains uninvestigated. The smaller and squarish Machalilla houses are still awaiting systematic excavation.

There is now a picture of a dynamic social system which evolved through several forms of community ordering since its beginning. A more detailed analysis of life during the Early Formative at Real Alto can be garnered from various sources. These include: Lathrap, Collier and Chandra (1975); Marcos, Lathrap and Zeidler (1976); Lathrap, Marcos and Zeidler (1977); and Marcos (1978).

Of more immediate concern to the understanding of the early Valdivia community is the excavation of the trench, C, in the northern portion of the site. Early in 1975, excavations at Real Alto were expanded into this northern section in order to investigate the settlement structure there. The Machalilla occupation at Real Alto composes the upper levels here. This is intermixed with late Valdivia debris and underlain by Valdivia II materials. The midden in this area is approximately one meter thick. The lowest cultural level above sterile is a ten cm thick non-random distribution of shell. It represents the earliest occupation at Real Alto. Several features were isolated. Post holes delineating the earliest houses at the site were noted. The cultural affiliation was not clear and the first interpretation saw Real Alto originally populated:

> ". . . by a small, mobile group of people who practiced a fishing-gathering economy. Their remains, the earliest remains encountered at the site, indicate a culture unrelated to Valdivia. The early inhabitants were probably an itinerant group who spent the whole year along the shore. The shallow midden they left behind consists almost entirely of shells of clam-like mollusks from the mangrove swamp in the Chanduy estuary. They built flimsy houses with frames of small, flexible poles. . . Significantly, a small amount of pottery is associated with this early period. The few fragments recovered are of a thin, hard sandy ware, lacking any kind of incised decoration. The vessel shapes and the mode of manufacture are completely outside the range of the later, more developed Valdivia ceramic tradition" (Lathrap, Marcos and Zeidler 1977:7).

How to Make Farmers Out of Simple Fisher-Folk

I returned in 1977 explicitly to look at the remains of the itinerant group of fisher-folk in order to delineate the differences between them and the farmers of Valdivia. Instead of doing this, however, I found the basal component of Trench C to consist not only of shells of clam-like mollusks, but also deer bone, fish bone, Valdivia I ceramics and figurines, early Valdivia houses with well defined entrance ways and carbonized seeds of the bean Canavalia. The latter, I am informed by L. Kaplan (personal communication to D. Pearsall), are probably of the domesticated species C. plagiosperma.

Three months of excavation and a meager 56 cubic meters of midden give just a small picture of the early Valdivia (I) community. These 1977 excavations revealed one whole house floor and parts of two others. These can be added to the houses unearthed in 1975 which pertain to the same period of settlement. The total house count rests at seven.

This is really a meaningless figure since it does not tell enough about the layout of the village. Some guesses can be made but more work is required. This can and will be accomplished at Real Alto and Loma Alta when these two sites are re-excavated.

The following chapters are my interpretations of what was happening within and between early Valdivia communities of the Ecuadorian coast. It is hardly the last word. In fact, it is barely a beginning. If anyone is disturbed by the precocity of the Valdivia I dating for Real Alto, I make no apologies. I suggest rather a focus of attention on the development of the farming community and the relationship of the village to its environment both ideologically and ecologically. This is my attempt to grasp the meaning of the life and death of the early Valdivia community.

CHAPTER II

TROUBLES WITH TIME

The greatest bugaboo to an understanding of Valdivia life systems is the continuous bickering about chronology. Those who sympathize with this notion would be wise to ignore this chapter. I hope that, having written the following, I will be spared having to re-read these incantations on radiocarbon dating and placement. Those who would like something better to read would do well to ponder the last paragraph of Flannery's 1973 article. In the case that you don't happen to have that year's version of the Annual Review of Anthropology I will provide the pertinent passage:

> ". . . To search for the 'first domestic plant' is to search for an event; it is poor strategy, it encourages bitter rivalry rather than cooperation, and it is probably fruitless. We should search instead for the processes by which agriculture began. To do that we need settlement pattern data; well-excavated living floors with the plants left in situ; and samples of 100 specimens with a mean, standard deviation, and a range of variation. We need to maintain our enthusiasm, but to temper it with skepticism, not only for our own efforts but for those of the scientists in other disciplines with whom we collaborate" (Flannery 1973:308).

Equipped with these words of wisdom I invite you to skip the rest of this chapter or to plunge forward and God be with you. All dates are given in uncorrected radiocarbon years B.C.

A Chronology for the Valdivia Occupation in Southwestern Ecuador

The origins of Valdivia and the dating for that phase remain prob-

lematical. The question of timing is important not just for organizational purposes. Valdivia represents one of the earliest dated cultures of the New World Formative. As such, its evolutionary development may have been of paramount importance in the growth of efficient agricultural communities in the Americas.

The first dates on Valdivia came from G-31. Meggers, Evans and Estrada (1965) presented a typological seriation of the ceramics from that site, dividing the sequence into A, B, C and D. One date of 3200 ±150 B.C. (M-1320) became infamous as pinpointing the beginning of Valdivia A and consequently dating the debarkation of Japanese Neolithic fishermen in Ecuador. Numerous authors have cogently pointed out that this date is clearly out of sequence and not reconcilable with other dates presented by the same authors. Bischof (1973:269) states: "The critics have rejected this special result because it is out of line with the 19 remaining dates represented in the original publication, both stratigraphically and in absolute age." Bischof provides a more suitable and economical interpretation as a result of continued investigation by Viteri, the original foreman in charge of excavation at G-31 (Bischof and Viteri 1972). He posits that the charcoal sample M-1320 "could be re-deposited from early or pre-Valdivia contexts" (Bischof 1973:271).

Bischof and Viteri (1972) demonstrated that underlying the earliest (A) Valdivia occupation at G-31 were two previously undescribed and unrecognized preceramic or aceramic occupations. The lower levels had a few distinctive sherds of a non-Valdivia nature. These were

named San Pedro in deference to a neighboring village. The result of Bischof and Viteri's investigation was a clearer stratigraphic profile and three radiocarbon dates on the "aceramic" level (see Hill 1972-1974:plates II and III): 2545±100 B.C.; 2560±95 B.C.; and 2585±55 B.C. (Bischof 1973:272). Bischof feels that this layer was deposited near the end of the preceramic "possibly correlating with the (pre-Valdivia) Vegas Phase" (Bischof 1973:272). If these dates and cultural correlations are correct, it would mean that the earliest Valdivia settlement at G-31 was after this time and also after the San Pedro levels which lie stratigraphically in between. A guess date of approximately 2400 B.C. for San Pedro is a logical extension of this resolution.

An earlier Valdivia was first recognized by Lanning. He regarded the ceramics from Punta Concepción as distinctive from the sherds reported by Meggers, Evans and Estrada for G-31 (Hill 1972-1974:2). Hill (1972-1974:2-4) used the Punta Concepción assemblage to define a pre-Valdivia A presence. Hill's more refined seriation broke the Valdivia sequence down into eight phases, Valdivia I-VIII. Valdivia I is not represented at G-31 where Valdivia occupation did not begin until sometime during Valdivia II. The dating of Valdivia I at Punta Concepcion appears off by some 500 years. A date of 2510±90 B.C. is seen by Hill (1972-1974:8) as being most clearly associated with Valdivia I. Norton (1977:6) feels, and I totally agree, that because of mixing this date is too recent.

The ceramics from Punta Concepción have exact similarities to those

from Loma Alta (below). The two sites were, at least in part, contemporaneous and the best dates for them would extend back to more than 3000 B.C. on the basis of a number of consistent dates from Loma Alta.

El Encanto on Puná Island is mainly Valdivia II-VIII. Underlying these strata is a preceramic layer dated at 2455±90 B.C. (SI-1311) (Porras 1973:134). A confused stratigraphic picture obscures the relationship of the preceramic and the upper ceramic levels. Also scattered throughout the profile were seven sherds which resemble Bischof and Viteri's (1972) San Pedro sherds (Porras 1973:159). The San Pedro sherds from El Encanto probably were originally deposited in the upper levels of the preceramic debris - above the portion dated at 2455 B.C. and just below the earliest Valdivia (II) levels.

The temporal relationship of the late preceramic, termed Vegas by Lanning (1967:9), to San Pedro and to early Valdivia remains obscure.

New Dates from Real Alto

The results of excavations and a new series of radiocarbon dates for the Valdivia site of Real Alto suggest minor modifications in the Formative Period chronology of coastal Ecuador. Excavations in 1977 focussed on the earliest occupation at Real Alto. Major attention was given to house floors and features where they could be detected. The result was a clear view of at least one complete Valdivia I house, Structure 2-77 (Figure 1; page 126).

The new series of radiocarbon dates (Table 1) pertains to the

Table 1 New radiocarbon dates from Real Alto

lab number	date (in C-14 years)	provenience	material
GX-5266	2545±160 B.C.	N345-7/W65-8; 70-80 cm	charcoal
GX-5267	3545±200 B.C.	N343-5/W65-8; 95-102 cm	charcoal
GX-5268	2950±170 B.C.	N345-7/W65-8; 90-98 cm	charcoal
GX-5269	4245±215 B.C.	N345-7/W65-8; 80-90 cm	charcoal

initial settlement of Real Alto. Three of the dates (GX-5266, 5268 and 5269) come from superimposed strata in one 3 by 2 m unit (North 345-347/West 65-68). The other date (GX-5267) comes from an adjacent unit (North 343-345/West 65-68) and belongs to the level which lies immediately above the sterile zone.

The 1977 excavations of Real Alto's seemingly undifferentiated natural strata was done in an attempt to define house structures, living floors and other features. The radiocarbon dates, then, may be interpreted with respect to distinct architectural features.

Specimen GX-5267 comes from a unit adjacent to Structure 2-77 (see Chapter V for the description of this and other features). It was retrieved after the 95 cm level was carefully brushed to the layer of dense shell concentration in order to detect any intrusions. Only one was noted and that was the house structure itself in the easternmost portion of the unit.

A shell concentration formed a refuse toss zone associated with the house structure (Figures 1 and 2). Valdivia I sherds were recovered from within this zone. A date for the shell refuse area relates to the household occupancy. This radiocarbon assay (GX-5267) for Structure 2-77 lists as 3545±200 B.C. Thus, if the dates and my interpretation of the association are correct, Valdivia I at Real Alto had begun by the middle of the fourth millenium B.C.

It may be possible to dispute the accuracy of this radiocarbon determination. However, there was meticulous care taken to locate intrusive features from above. This removed more recent charcoal from

the sample and thus avoided contamination and an erroneously late date such as at Punta Concepción. When levels contain intrusive material from later occupations, then charcoal may also be mixed and the dating will necessarily be too recent. Of course, the best solution is to use charcoal from a discrete hearth. This is an unrealistic hope since few if any hearths are preserved in Valdivia middens. The only hearths found at G-31 were from below the actual Valdivia occupation.

The ramifications of accepting a 3545±200 B.C. date for Valdivia are clear. Once again, Valdivia can lay claim to the title of the New World's earliest pottery. This is unfortunate from a scientific viewpoint in that it potentially reduces us to arguing over the things Flannery warned us of. I caution against this and implore that our understanding of Valdivia not be predicated on recognizing the first ceramic vessel made. Perhaps 3545±200 B.C. is a bit too old for Valdivia I. Radiocarbon dates are at best probabilistic statements of accuracy within a plus or minus standard deviation. GX-5267 can be regarded in this respect and considered to be too old, too young or rejected completely. The remaining dates for Real Alto make it quite clear that the Valdivia I house, Structure 2-77, was constructed at least before 2950±170 B.C. Therefore, a date between 2950 and 3545 B.C. is almost indisputable.

The three other dates from the 1977 excavations are in stratigraphic sequence from the lowermost levels upwards. I see no problem in accepting them except for one which is clearly out of place. These dates in

stratigraphic order are:

2545±160 B.C.

4245±215 B.C.

2950±170 B.C.

2950±170 B.C. dates the stratum including the upper portion of the shell refuse concentration and the cultural deposits immediately above it. I was unable to locate an actual living floor but the presence of a large amount of charcoal at the 90 cm level suggests a possible occupational surface.

The next date (4245±215 B.C.) is clearly out of sequence and can not be related to a Valdivia occupation nor to the radiocarbon determinations above and below. A radiocarbon date of 2810±120 B.C. (ISGS-468) from a nearby unit which was excavated in 1975 is also from the 80 to 90 cm level and I am convinced that it correctly gives an age for this this level. It is also within this level that the bases of several cairns (85 cm below the surface) of broken manos and metates are found. Since the dates for the Loma Alta cairns fall in this same period, between 3050 and 2600 B.C., these features may be temporally related at both sites. Thus, there are parallels in the ceramic inventories, dating and architectural detail.

The third date of 2545±160 B.C. maintains the consistency of the dating if GX-5269 is deleted and replaced by ISGS-468. The early Valdivia levels at Real Alto which were exposed in 1977 can be dated as in Table 2.

Another series of dates is available for Real Alto. These come

Table 2 Dates on the early Valdivia stratigraphy at Real Alto

depth in cm	date
70	2545±160 B.C.
80	2810±120 B.C.
90	2950±170 B.C.
100	3545±200 B.C.

from the 1975 excavations and date other portions of the site rather than just the earliest settlement. Amazingly few disparities are apparent when all of the dates are correlated by stratigraphic position. The dates from both 1975 and 1977 for Trench C are:

Phase Association	Date	Depth
Valdivia II	2190±190 B.C. (ISGS-467)	70-80 cm b.s.
Valdivia II	2440±75 B.C. (ISGS-466)	70-80 cm b.s.
Valdivia II	2545±160 B.C. (GX-5266)	70-80 cm b.s.
Valdivia I	2810±120 B.C. (ISGS-468)	80-90 cm b.s.
?	4245±215 B.C. (GX-5269)	80-90 cm b.s.
Valdivia I	2950±170 B.C. (GX-5268)	90-98 cm b.s.
Valdivia I	3545±200 B.C. (GX-5267)	95-102 cm b.s.
?	3670±250 B.C. (ISGS-448)	90-100 cm b.s.

Three additional dates are at hand for the dating of the ceremonial mounds dissected by Trench B. They are:

Valdivia III	2160±75 B.C. (ISGS-439)	Ramp to Charnel House Mound
Valdivia III	2315±75 B.C. (ISGS-446)	Top of Charnel House Mound
Valdivia II	2750±300 B.C. (ISGS-452)	Bottom of original Charnel House Mound

One other adjustment needs to be made for the Formative chronology of the Ecuadorian Pacific coast. San Pedro sherds (Figure 3) were isolated during the 1977 excavations at Real Alto. These number five in all and some of them could essentially be from the same vessels illustrated by Bischof and Viteri (1972).

Bischof and Viteri (1972:551) felt that San Pedro pottery at G-31

would extend the ceramic period chronology of coastal Ecuador back to a point in which it would be a contemporary of Puerto Hormiga in Colombia. This, to them, makes it possible that pottery may have indeed been first invented in Ecuador.

The stratigraphic and chronological provenience of the San Pedro sherds found at Real Alto provide a clearer interpretation. The five San Pedro sherds were recovered from four different 2 by 3 m excavation units. In each case they were restricted to between 40-50 cm or 50-60 cm below the surface. None were found elsewhere above or below in the course of the 1977 excavations. At 40 cm below the surface a Valdivia II living floor (Structure 1-77) was identified (Figure 2). The San Pedro sherds were below this floor and well above the Valdivia I house structure (Structure 2-77). Again, it is necessary to consider the fact that San Pedro sherds occur below Valdivia II at G-31 and at El Encanto and that Valdivia I is not represented at either of those two sites.

The dates for the strata which underly and overly San Pedro at G-31 are 2545±100 B.C. (Hv-4840) and 2310±100 B.C. (Hv-4838) respectively (Hill 1972-1974:plate III). The dates from El Encanto and Real Alto corroborate this bracketing. The positioning of San Pedro is secured on both stratigraphical and chronological grounds. San Pedro ceramics are not the earliest in Ecuador.

Summary

The Early Formative chronology of southwestern Ecuador is confusing.

The dating for the first appearance of Valdivia on the coastal lowland of Ecuador is symptomatic of this confusion. Several decades of looking at Valdivia pottery is only beginning to resolve satisfactorily the many problems involved.

New excavations and radiocarbon dates from Real Alto demonstrate that during the last half of the fourth millenium B.C. a Valdivia settlement was founded on the banks of the Río Verde. This settlement began during Valdivia I, as defined by Hill (1972-1974). San Pedro sherds occur at Real Alto after the Valdivia I occupation. They show up clearly below a living floor dated to an interval within Valdivia II.

The temporal and cultural associations of sites within the region of southwest Ecuador are best understood when all sites are considered. Interpretations made on the basis of one site alone are incomplete. The transition from the preceramic (Vegas) of the Archaic Period to Valdivia of the Early Formative Period was a process of widespread expansion by agricultural communities. The timing of this transition may appear anomolous when judgements are restricted to the scope of one or two sites. A more regional outlook makes some of these anomolies comprehensible and shows a time of great change.

CHAPTER III

PRELUDE TO VALDIVIA, NOTES ON THE ARCHAIC COMMUNITY

Introduction

There are significant differences between the Archaic and the Formative of Ecuador, some of which can be identified empirically. Traditional classifications assign the distinctions to such standards as the absence or presence of ceramics, hunting and gathering versus agriculture, wandering as opposed to sedentism, and so on, all of which imply some sort of change in economic orientation.

But thoughts on the evolution of the Ecuadorian Archaic community are largely conjectures. Only a small number of these sites is known from survey and excavation. My attempt here, then, to derive a model for the Archaic community of southwestern Ecuador and its environment is also conjectural.

Lathrap (1974:152) makes the most cogent demarcation while addressing the question of cultural cognition in an ecological setting. A society which is part of a particular ecological network is markedly different from one which views land as a resource to be manipulated and adjusted to the standards of the community. The land utilized by a Formative community becomes its property. It is, then, the fixed wealth of an agricultural community. This condition demands constant supervision and a new form of resource allocation. Consequently, the relation of the community to the land changes.

The origin for this vast shift in community-land relations (Lathrap

1974:152) can be sought in the social and economic processes and limitations of Archaic communities. Why and how does a community revolutionize its relationship with the environment? What causes the development of farming communities which put a premium on fertile land resources?

The Archaic Community of Northwestern South America

According to Willey (1971:348) the post-Pleistocene adaptation of northwestern South America was "a lifeway based on shoreline collecting and fishing in a coastal lagoon and mangrove environment". He terms this the Northwest South American Littoral tradition. Willey (1971) views this tradition as a development out of an earlier hunting and collecting adaptation, placing it chronologically between 5000 and 1500 B.C. These dates overlap with the appearance of the first ceramic producing and agricultural communities in this area of South America.

Willey's classification may be useful for purposes of grouping several preceramic sites of northwestern South America into a single cultural entity. It is, however, inaccurate for its stress on the littoral aspect of the Archaic ecosystem. It also ignores the importance of prehistoric economic developments along the interior river systems during the period preceding 3000 B.C. in the tropical lowlands of South America.

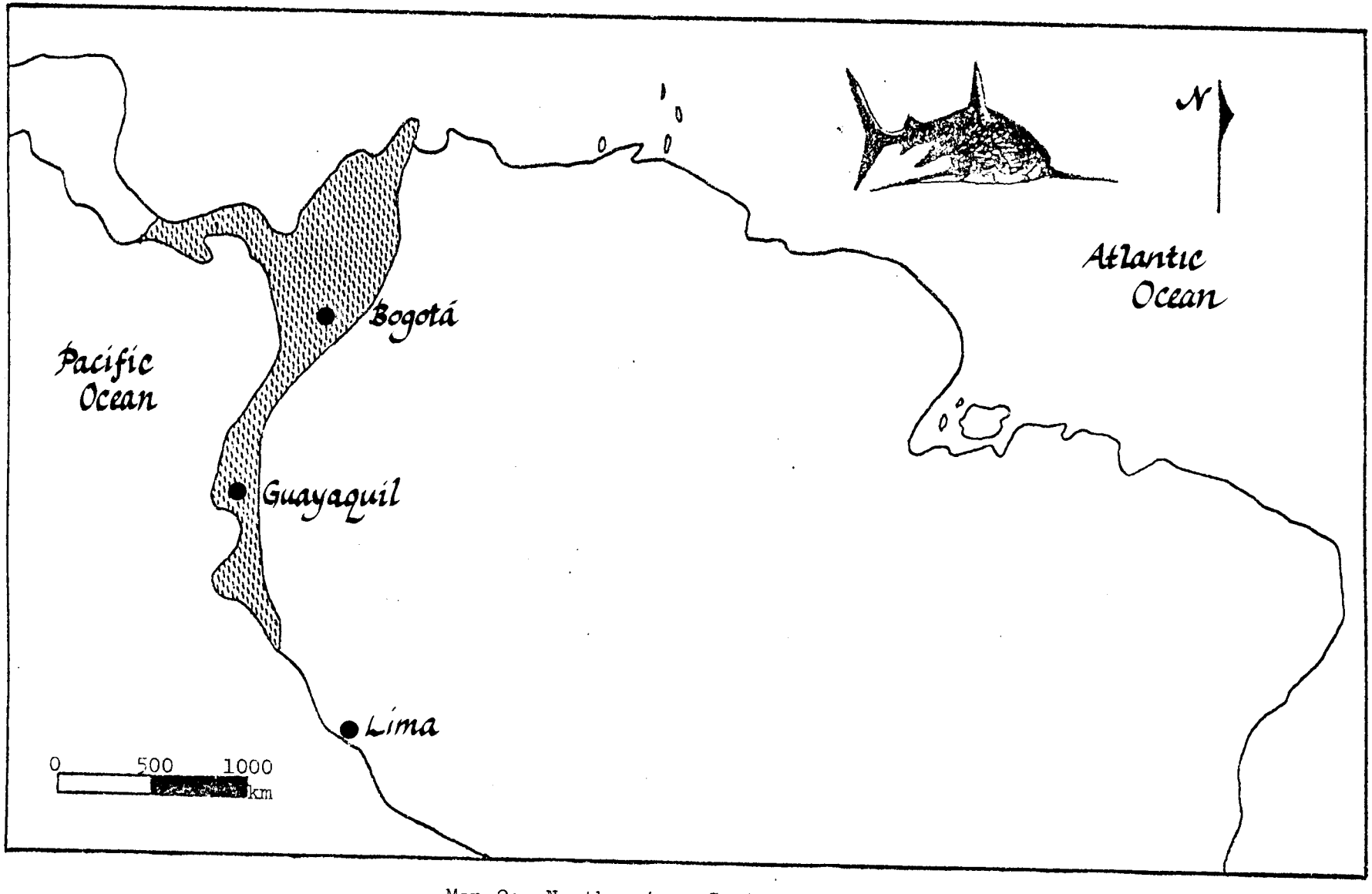
Rouse (1976) and Stothert (1976) believe that some form of cultural homogeneity existed in northwestern South America in the post-

Pleistocene. Stothert's reexamination of the boundaries and the nature of the Northwest South American Littoral tradition de-emphasizes the exclusively littoral aspect of the adaptation and interprets the tradition as having "broad spectrum exploitation patterns" (Stothert 1976: 97). Stothert's northwestern lithic tradition is defined mainly on the grouping of similar forms of technologically simple stonework from early sites in Colombia, Panama, coastal Ecuador and the northern coast of Peru (Maps 2 and 3).

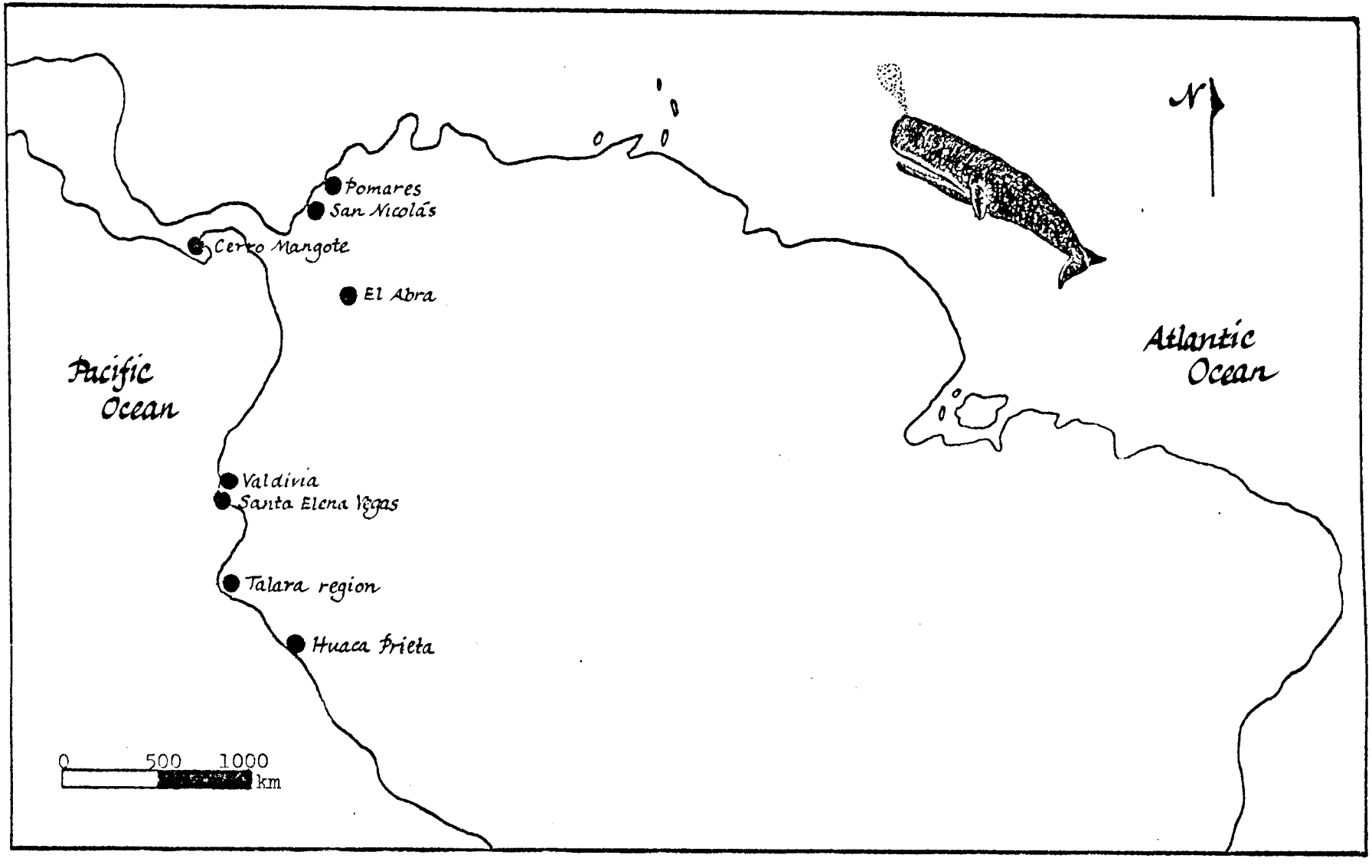
The ancestry of this tradition is traced to the earliest occupations at El Abra rock shelter in Colombia. The excavations by Hurt reveal a preceramic assemblage dating back to 10,450±160 B.C. (Hurt, et al. 1972:1108). Hurt feels that this tradition which he terms the Edge-Trimmed Tool Tradition marks an efficient adaptation to a tropical forest environment (Hurt 1977:292). Stothert (1976:97) includes it within her northwestern lithic tradition.

The lithic tradition also includes Cerro Mangote, Pomares and San Nicolás in Panama and Colombia. The southern boundary of this complex is the Chicama Valley of coastal Perú; Huaca Prieta is dated about 2500 B.C. It is a large preceramic agricultural mound (Bird 1948) which is included in Stothert's scheme solely on the basis of her classification of the lithic technology.

The Siches, Estero and Honda phases of the Talara region of northern Peru are additional members of this southern extension. As such, they are representative of the so-called generalized exploitation pattern of the northwestern South American Archaic.



Map 2: Northwestern South America:
area of the Archaic Complex referred to in the text



Map 3: Northwestern South America: selected Archaic sites

The Siches lithics include the direct percussion manufacture of unifacial artifacts dated to between 6000 and 4000 B.C. (Richardson 1973:199). The artifact inventory from El Estero, tentatively dated at 4000 B.C., is composed of the same forms and the same unifacial chipping patterns found at Siches (Richardson 1973:201). The Honda chipped stone industry, dated at around 3000 B.C., is quite similar (Richardson 1973:201).

The reconstructed subsistence patterns for Siches, Estero and Honda support Stothert's contention that the northwestern lithic tradition cultures were exploiting inland and coastal environments, not merely littoral regions. Siches subsistence was based largely on mangrove molluscs (Anadara tuberculosa and Ostrea colombiensis). The utilization of wild and domesticated plant foods is strongly suggested by the frequent occurence of stone food grinding equipment. Richardson (1973:201) reports bottle gourd and carbonized seed remains from PV7-19, a Siches site. Some fish bones, mollusc remains, mortars and stone bowls are evidence for a generalized resource utilization during the Estero phase (Richardson 1973:201). The Honda remains are interpreted by Richardson (1973:202) as reflecting a littoral orientation coupled with the use of either wild or domesticated plant foods.

Stothert (1974) presents a lengthy discussion on the criteria for distinguishing patterns in technologically simple stone work. The results, as outlined above, point to a shared pattern of technology and a generalized resource utilization from approximately 10,500 B.C. to

3000-2500 B.C. in northwestern South America. If Stothert and others are correct, this sets the baseline for further investigations on the Archaic ecosystem and its transformation to a Formative structure. By defining the spatial and temporal limits we can shift our focus to a narrower perspective and study and speculate on the processes by which diversity arose, by which self-sufficient agricultural communities became established and by which these communities started colonizing.

In lithic technology, some sort of cultural cohesiveness or interaction prevailed during the post-Pleistocene. Subsequent diversity can be found in differential relations between Archaic communities and their different physical settings.

Environment and the Archaic Community of Southwestern Ecuador

Northwestern South America is a mosaic of landscapes and Ecuador possesses a great variety of climates (Momsen 1968:91). Variation is found in the highlands, tropical forests, savannas, coastal environments, river systems, hilly thorn forests and deserts. The exploitation of these various environments encouraged cultural diversity with respect to patterns of settlement and economy.

Southwestern Ecuador consists of several important physiographical features. These are the coastal strip, the Colonche hills and the Guayas Basin. Momsen (1968:101-104) points out that the variation in precipitation patterns in these areas is a result of the relative closeness of the Perú current which brings a cool, low-humidity air-

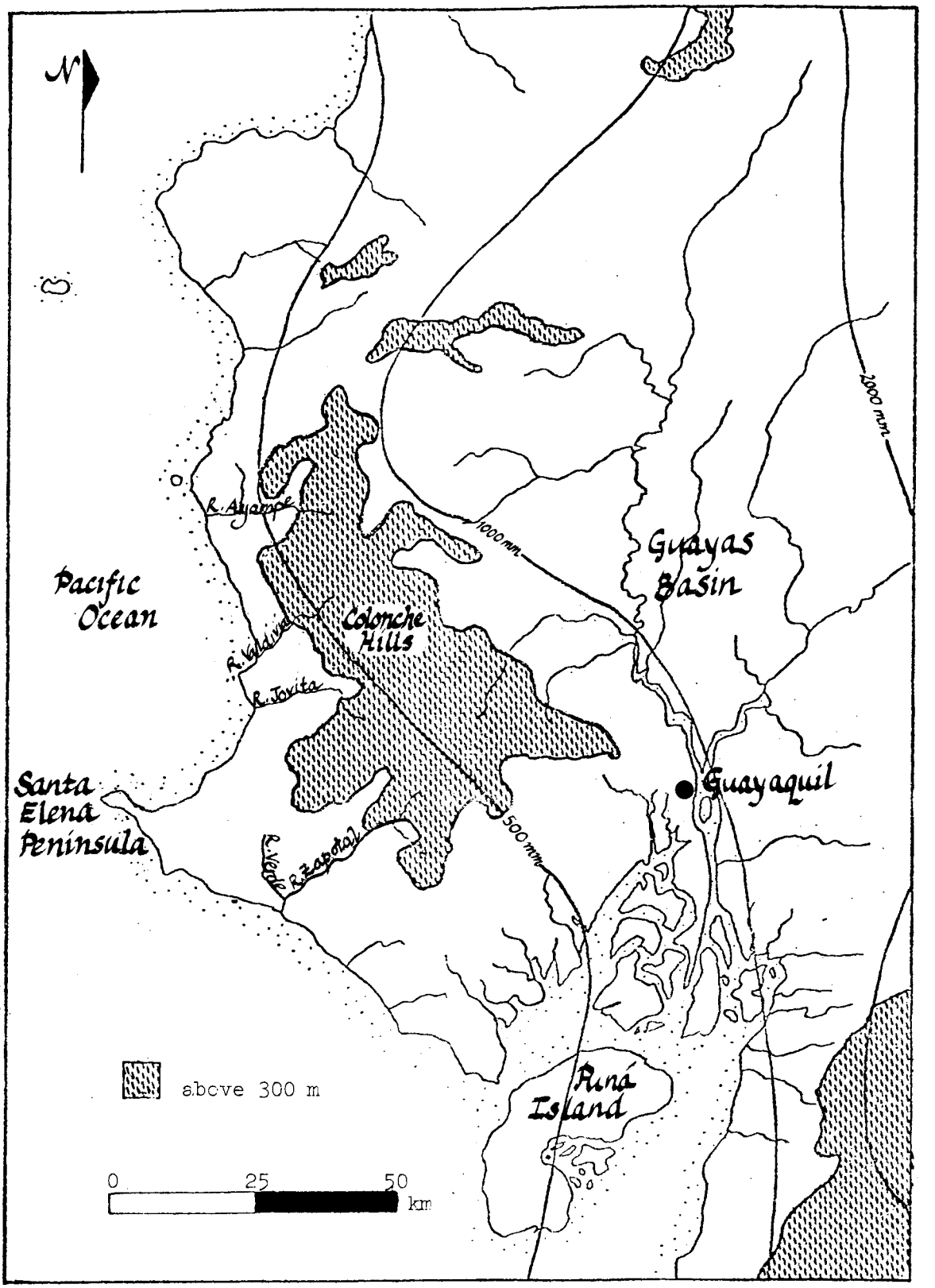
mass and the Equatorial air mass which brings warm, moist air southward. This is in turn modified by topography, namely the Colonche hills. These hills halt the flow of the Equatorial air mass and produce a steep precipitation gradient. Consequently, the Pacific coast is drier than the Guayas Basin (see Map 4). This situation is alleviated somewhat from southern Manabí province northward due to the proximity of the Colonche hills to the coast.

I believe that it was this factor of precipitation variability which affected different Archaic adaptations in southwestern Ecuador. It was also this factor which later influenced the colonization pattern of Valdivia from the Guayas Basin to the Pacific coast.

The Archaic, or Vegas, of the coast is the best known preceramic complex of southwestern Ecuador. Stothert (1976) argues for a typological relationship between the technologically simple stonework of El Abra and Vegas as well as a more generalized affinity to Richardson's (1969, 1973) sites in the region of Talara. Lanning (1967:14) defined Vegas as a member of a preceramic horizon which seemingly spread throughout northwestern South America.

Willey feels that the Vegas people of his littoral tradition were specialized exploiters of coastal mangroves. However, at the Vegas site of OGSE-80 on the Santa Elena Peninsula, Stothert (1976:89) found that:

> ". . . The Vegas people apparently hunted deer, fox and peccary and in some manner procured various species of bird, rabbit, rodent, snake and lizard (including a large species). They also ate several species of small and medium fish, crab and mollusks, the



Map 4: Annual precipitation in southwestern Ecuador
(after Momsen 1968:figure 1)

> great bulk of which are Anadara tuberculosa (mangrove specific). Excavation showed that the shells were fairly continuous through the undisturbed strata, but they are not densely packed, compared to shell mounds elsewhere. The faunal remains actually suggest a land orientation. I believe that the site could have been occupied year round because a great variety of resources were being exploited in several adjacent niches: swamps, riverine and littoral areas, the hills and wooded valleys of the 20-, 30-, and 100-meter terraces. Plant remains were not preserved."

OGSE-80 has radiocarbon dates of 6650±200 B.C. and 5650±100 B.C. (Stothert 1976:88).

Lanning (1967:13) reported that the artifact assemblages in other Vegas sites support an interpretation of alternating seasonal economies. Riverside camp sites are found inland, and shell middens are both near ancient estuaries and along the shore.

However, Stothert (1977) has reexamined the Vegas settlement pattern on the basis of continuing excavations at OGSE-80 and now believes that OGSE-80 and the Vegas settlement pattern relate in one of the following ways:

(1) Vegas sites were year round settlements of gatherers and horticulturalists. Some of them may have been as large as OGSE-80.

(2) Santa Elena Vegas sites were inhabited sequentially for several thousand years. Burial of the dead (burial packages) was carried out at OGSE-80.

(3) OGSE-80 functioned as a central base village for the surrounding and scattered Vegas populace.

Stothert's ongoing research is the main source of information

on the Archaic adaptation in southwestern Ecuador. Nothing is yet known on the Archaic in the Colonche hills of the Guayas Basin where an adaptation to the different environment is to be expected.

The Archaic and the Evolution of the Formative in the Guayas Basin

The Vegas culture of the Santa Elena Peninsula is a model of one variant of adaptation to the environmental diversity in northwestern South America and southwestern Ecuador. The Archaic of the Guayas Basin should reflect a different pattern of resource exploitation and spatial organization because of the different community-land relations which probably arose in the Guayas Basin as compared to the much drier Santa Elena Peninsula region with narrow floodplains.

I follow Lathrap (1968:26), Sauer (1969), and others, who earlier observed that the primary adaptation of tropical forest culture is to the riverine environment. Large river systems are important in organizing both spatial and social interactions. The river provides communication between adjacent settlements. It gives fish protein necessary in the diet and it possesses plant and soil resources along the banks.

Sauer (1969:140) presents a "pristine model" for this form of adaptation. He regards a permanent habitation by fishing villagers as the basis for the development of agriculture. The manipulation of nearby plant resources modifies the physical setting and produces a system of adaptation quite different from the seasonally shifting and generalized mode of production practiced by hunter-gatherers such as those of the Vegas culture on the Pacific coast.

The resources along the river systems of the Guayas Basin could have been easily cropped by sedentary communities. There is no need to pursue a seasonal round for fish since there is no marked seasonal difference in aquatic resources of tropical rivers, although fishing is most productive during the dry season and plant resources are more abundant in the rainy period. Consequently, there is no actual dead season which demands movement within an area. Some procurement strategies for specialty items might, however, demand greater movement. But these strategies would have represented only a minor component in the exploitation of resources.

The great number of plant foods which can be exploited from the central base of the riverine fishing villages causes a trend "toward decreasing effective resource space" (Binford and Chasko 1976:137), or packing more communities into limited regions of a riverine environments such as the Guayas Basin. This effects a greater reliance on the immediately available fauna and flora. The intensification of wild food collecting has profound results. In fact, Binford (Binford and Chasko 1976) argues that an intensification of the female role in food procurement - that is, more intensive plant food collection - and the concomitant increase in the level of carbohydrates in the diet, as compared to protein foods, will initiate slow term historical trends. These trends include a growing regional population and a density dependent response of more circumscribed resource allocation. Further increases in the use of plants will follow this and lead to sedentism

and an associated mode of production which ensures sufficient food from a restricted space (Binford and Chasko 1976:139). That mode of production is agriculture and that is where the disjunction between Archaic and Formative adaptations occurs.

Agriculture is, then, "a new means of production from already important plant materials" (Binford and Chasko 1976:140). It requires a new standard in land-community relations which Lathrap (1974) feels was developing in the moist tropical lowlands of northern South America by 3000 B.C. It also requires new social relations for labor organization (Godelier 1972; see also Friedman 1975).

Summary

The few recorded preceramic sites of southwestern Ecuador all come from the Pacific coast. The Vegas sites on the Santa Elena Peninsula suggest a pattern of seasonal resource utilization of littoral and inland savanna/riverbank foods. The apparent model shows a generalized economy and a settlement strategy conditioned by the variation in precipitation patterns. In short, this profile offers none of the preconditions for sedentism and agricultural origins prescribed by Sauer (1969) or Binford and Chasko (1976).

The search for the origins of agriculture, ceramic technology and sedentism must shift to inland areas. The Valdivia phase, which follows the Vegas phase on the Pacific coast, is the best evidence that such developments originated inland. There are no precedents for Valdivia I on the Pacific coast.

This model covers a small geographical area. It does, however, allow for a closer look at the evolution of one variant of the Formative adaptation in northwestern South America. The development of the southwestern Ecuadorian Formative is interpreted as simply one particular case of a larger processual transformation which took place in northwestern South America at around 3500 B.C. Sites such as Puerto Hormiga, Momil and Bucarelia in Colombia (Reichel-Dolmatoff 1965), Rancho Peludo in Venezuela (Rouse and Cruxent 1963), and Monagrillo in Panama (Willey and McGimsey 1954) represent the economic change which characterized the development of the Formative out of the Archaic.

Changes in resource utilization, spatial organization and population growth during the Archaic led to a more intensive exploitation of both plant foods and aquatic fauna along the great river systems of northwestern South America. Sedentism, agriculture and ceramic technology were some of the radical responses to these problems.

It was at this time in Ecuador, Colombia and the Upper Amazon (for which there are even fewer data on Archaic communities) that efficient Formative economic systems "would have generated expanding populations which in turn would have colonized other areas of riverine flood plain within the moist tropics" (Lathrap 1974:149). I have alluded to the structure of Archaic settlements along these rivers. Subsequent changes in community organization would intensify this linear pattern of resource utilization. Lathrap (1974:149) points out that the conflicts over resources led to rapid colonization, in a linear fashion, of adjacent river valleys. Following this linear col-

onization the next change is toward the closer packing of communities. Valdivia communities are as yet the earliest known examples of the South American Formative which give evidence for this sort of colonization process.

CHAPTER IV

COLONIZATION

The large river systems of northern South America produced cultures which Lathrap (1974:116) interprets as a "rapidly expanding agricultural system centered on the riverine floodplains of northern South Amercia." The eventual result of the continued expansion and packing of settlements along the riverine floodplains, such as the Guayas Basin, would have been expansion by daughter communities into areas amenable to continuing the original production strategy. These new regions in southwestern Ecuador were the river valleys draining the Colonche hills. It is there that this type of expansion by Valdivia communities can be documented.

The reasons for village fissioning are many. The ethnographic literature on the South American tropical lowlands is replete with arguments on this subject. Carneiro (1970, 1974) uses the Kuikuru to show that when a group reaches the limits of its carrying capacity it will break up and a daughter village will be founded. Ultimately, this continued fissioning will fill up a circumscribed area (i. e., the river valley) and the movement will take place to areas on the periphery. This would be to tributaries or, farther afield, into other watersheds with spaces unoccupied by similarly adapted peoples. The filling up of these areas then forces social adjustments such as warfare, conquest, amalgamation, confederacies, alliances and finally the evolution of the state (Carneiro 1974:87).

Chagnon (1968) reiterates the role of population pressure as a function within society in the South American tropics. Yet, to Chagnon, the carrying capacity is rarely reached. Population growth within Yąnomamö society leads to social conflicts especially over women. These conflicts "over women are so frequent that the group elects to fission rather than attempt to keep an uneasy internal peace" (Chagnon 1968: 40-41). Chagnon (1968:40) further states that after a village fissions "there is a tendency for the group to attempt to maximize its size."

The appearance of Valdivia on the Pacific coast of southwestern Ecuador marks an early stage in village fissioning. These Formative colonizing communities which moved into such areas as the Chanduy and Ayampe Valleys of the Pacific Coast (Maps 1, 5 and 6) apparently began with small on-site populations and increased dramatically (Marcos 1977). In turn, additional communities arose from subsequent fissioning of the original population (Maps 5 and 6).

Flannery suggests a method for approaching the understanding of the development of complex settlement systems within the New World Formative. He divides settlements into patterns and systems. The first is the arrangement of sites within the region considered. This is easily produced on a map and it is amenable to sub-division with respect to periods of time. The settlement system is the "set of rules that generated the pattern" (Flannery 1976:162). These rules are dependent upon the ecological and social conditions of a culture.

Valdivia settlement patterns exhibit several distinctive developments. In the period from 3500 to 1500 B.C., site spacing was reduced,

causing settlement packing. The change in pattern was no doubt accompanied by a continuously evolving set of rules governing the system.

The Valdivia settlement pattern and system is best known from sites found during surveys of the areas west of the Colonche hills. The Chanduy Valley was surveyed in 1975 and 1976 and the Río Blanco-Ayampe Valley was surveyed in 1979. Elsewhere along the coastal lowland other Valdivia sites are known. Middle and late Valdivia sites show an evolution of the Valdivia settlement pattern/system in the Chanduy and Ayampe Valleys. Although Valdivia III through VIII sites do not belong within my definition of early Valdivia, their inclusion is warranted on the basis that they reflect the settlement pattern/system which I feel operated in producing pressures for colonizing new regions. Middle and late Valdivia settlement patterns are similar to the hypothetical packing of riverside communities in the Guayas Basin during the Archaic and the advent of the Formative.

The Valdivia I Settlement Pattern

Only a few sites are known for Valdivia I. These were summarized in Chapter I. Few valleys have been completely surveyed, so it seems reasonable to assume that more Valdivia I settlements will be found. Valdivia I sites are: Loma Alta, Punta Concepción, Las Balsas, Centinela, Real Alto and San Jacinto (see Map 1). OGDa-34 in the Guayas Basin may also be included.

Loma Alta's position stresses an inland orientation. No other Valdivia I sites are known from the Valdivia Valley and its tributaries.

G-31, at the mouth of the valley, is of an early Valdivia (II) age. If the relative age of the two has been correctly inferred, it stands as a daughter community of Loma Alta and its establishment was 300 years after Loma Alta's founding. Norton (1977:12) suggests that growing population pressure, protein deficiency and an ecologically non-competitive Vegas neighbor resulted in the establishment of a Valdivia community at G-31. This gave the Valdivians access to new protein sources and new farmland. This demarcates a pattern of linear expansion along the river.

The parent community for Loma Alta is unknown. Hypothetically, we can deduce that the rules which produced the linear expansion for early Valdivia in the Valdivia Valley would apply. In this regard, looking eastward and upriver, the next propitious area for an agricultural settlement is on the other side of the Colonche hills in the Guayas Basin. I predict that the location of Loma Alta's parent settlement is to be found at the base of the eastern side of the Colonche hills.

Las Balsas (Valdivia I) and Palmar (Valdivia II) form a similar pair in the linear stream pattern. They lie some thirty kilometers apart in the Rio Jovita Valley. Unfortunately, little is known of Las Balsas except for its identification in the literature (Norton 1971).

Punta Concepción represents a special case within the early Valdivia settlement pattern. It was not an agricultural village or hamlet. Its occupation was, furthermore, small and short-lived. Norton contrasts the fixed settlement at Loma Alta with Punta Concepción. He

points to the latter as a "shellfood gathering site, sporadically visited by groups of inland agriculturalists" (Norton 1977:5). Stothert (1974:94) thinks that the site probably had a short-term occupation. Punta Concepción is the only known early Valdivia site which displays a specialized and ephemeral function. More work needs to be carried out in an attempt to identify other such sites and to define their significance in the early Valdivia economic system.

The Chanduy Valley

Centinela and Real Alto constitute another dyadic relationship in the early Valdivia settlement pattern. Two seasons of excavation at Real Alto make it one of the best known Valdivia sites. On the other hand, Centinela has only had preliminary testing by Zevallos. No published reports are available. It is clear, however, that both sites contain the complete Valdivia I through VIII inventory of ceramics. If we remain faithful to the idea that Valdivia originated inland, then the undated Centinela site ranks as the parent community to Real Alto, some thirty kilometers downvalley. No other Valdivia I or II site was found in between during the 1975 and 1976 surveys of the Chanduy Valley.

The Blanco-Ayampe Valley

The 1979 survey of this river system in southern Manabí province located at least one Valdivia I site, San Jacinto (OMJPLP-37). It is more than fifteen kilometers from the coast by way of the valley bottom. San Jacinto lies in the rugged and heavily forested terrain of the northern Colonche hills. It is in an area of greater precipitation rela-

tive to those areas mentioned above as having Valdivia I sites.

San Jacinto is approximately 85 kilometers to the west of OGDa-34. River systems draining the western and eastern sides of the Colonche hills form an avenue of travel between the two. I can only speculate that this avenue was used prehistorically and that more Valdivia I sites will be found interspersed throughout this distance.

Settlement Pattern Summary - Early Valdivia

The early Valdivia sites that are identified for southwestern Ecuador show a pattern. These Valdivia sites, with the exception of Punta Concepción, are oriented to the riverine flood plains. Five river valleys have early Valdivia sites. When these valleys are considered as individual units, then a linear distribution is apparent. The distance between the early Valdivia sites within these valleys ranges from about fifteen to thirty kilometers except in the Río Blanco-Ayampe region. It seems reasonable to hypothesize that the Guayas Basin was the center from which this pattern of dispersal emerged.

The Early Valdivia Settlement System

The distance between early Valdivia communities is significant. Fifteen to thirty kilometers constitute a day's walk. If new areas for agricultural production were all that were sought by these communities, then a ten kilometer move would have been sufficient. Such a distance removes the daughter settlement to a position out-

side the catchment area of the parent settlement as proposed by Vita-Finzi and Higgs (1970) for Neolithic communities. This rule on its own would give the following settlement pattern for linearly distributed sites:

1 - - - - - - - 2 - - - - - - - 3
10 km 10 km

The early Valdivia settlement pattern was generated by a rule which gives the following distribution

1:		2:
Loma Alta		G-31
Las Balsas	- - - - - - - - - - - -	Palmar
Centinela	15-30 km	Real Alto
?		San Jacinto

The system's rule can only be guessed. A possible one is provided by Chagnon in his study of the settlement pattern among the modern Yąnomamö of Brazil and Venezuela. He states that primary considerations for new colonies are based upon defensibility. Defensibility is predicated on "particular topographic features of the potential site" and "its general location with respect to enemy and allied villages" (Chagnon 1973:128). The distance involved varies depending upon the relationship between groups so that a two or three day travelling distance is preferred for hostile groups, whereas, friendly settlements may be established within "a half-day's walk, but if possible, at least a day's journey is considered a more desirable distance" (Chagnon 1973:129).

Several early Valdivia sites command positions which would be ad-

vantageous for defense. More importantly, all of the known early Valdivia sites are at least one day's walk apart. It seems that some form of social spacing was operational in determining the early Valdivia settlement pattern.

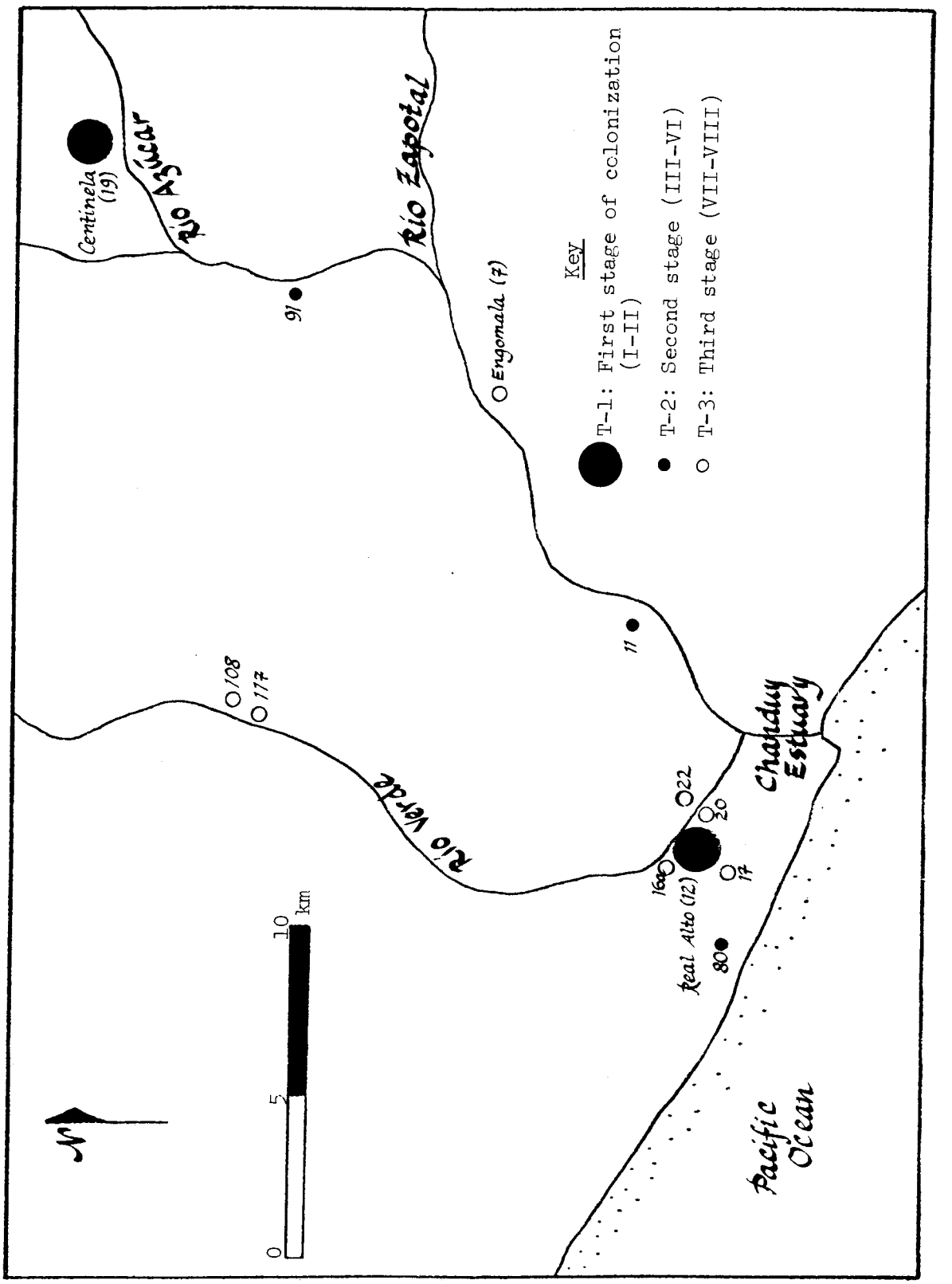
Valdivia Settlement Pattern Evolution

The expansion of Valdivia communities to the ocean's edge set a limit on continued westward colonization. Continued growth within a community would have strained the rules of community interaction. The limitation of land available for colonization would necessarily have affected the settlement system. As a consequence, the settlement pattern would change.

Three periods of Valdivia settlement are heuristically employed here in order to illustrate the evolving pattern from 3500 to 1500 B.C. The data were garnered from the 1975 and 1976 surveys of the Chanduy Valley and the 1979 survey of the Blanco-Ayampe Valley. Zeidler (1977) previously presented the Chanduy Valley data which I am using here in a modified form.

The Chanduy Valley

Time period 1 (T-1) lasted from about 3500 to 2300 B.C. It includes sites of Valdivia I and II affiliation. Time period 2 (T-2) represents the middle Valdivia settlement of the Chanduy Valley - 2300 to 1800 B.C. - including phases III, IV, V and VI. The last stage (T-3) comprises late Valdivia - phases VII and VIII - which ended about 1500 B.C. with the beginnings of the Machalilla phase. Map 5



Map 5: Valdivia sites and the colonization of the Chanduy Valley

illustrates the evolution of settlement in the Chanduy Valley.

Flannery (1976:180) predicted that Formative settlements in Mesoamerica can be located with respect to certain rules. After the first stage of expansion (T-1) the second stage would find "new villages spaced midway between the previously founded daughter communities."

Two sites are attributable to the second stage of expansion for the riverine area between Real Alto and Centinela. OGCh-11 and OGCh-91 lie about ten kilometers from Real Alto and Centinela respectively. These locations provide for the exploitation of new catchment areas having five kilometer radii. The daughter communities of T-2 lie just at the point for developing new catchment areas while at the same time remaining close to the parent village. The rule of colonization here appears to have been established with priority given to opening up new farmlands rather than establishing a prescribed social distance from the parent community as was the case during T-1.

OGCh-80 is less than five kilometers from Real Alto. Its location gives the impression that it lies within Real Alto's catchment area. However, OGCh-80 is actually propitiously located on the banks of a small but distinct river drainage, the Río Perere. The farmlands adjacent to this river are sufficiently far removed from Real Alto so as to preclude their use by the inhabitants of that village.

T-3 settlements of late Valdivia continued and intensified the process of packing settlements into a circumscribed linear river valley. Four satellite hamlets were founded around Real Alto. OGCh-7, Engomala,

was established almost exactly half-way between OGCh-11 and OGCh-91. The upper portions of the Río Verde were settled at this time by Valdivia. OGCh-108 and OGCh-117 are located about ten kilometers upriver. They overlook the river floodplain from elevated positions on an inland savanna.

The Valdivia VII and VIII and early Machalilla settlements closely adjacent to Real Alto indicate an evolving settlement system. By this time Real Alto had apparently become a center for administration and ceremony. Marcos, Lathrap and Zeidler (1976:4) describe Real Alto as:

> ". . . controlling several farmsteads scattered along the Río Verde and other lesser rivers such as El Río Real, thus managing some 600 acres of riverine agricultural bottom lands. This system of a control center with satellite settlements implies a stratified society . . ."

Engomala's location is predictable. It is situated on an expansive floodplain below the juncture of the Río de Azúcar and Río Zapotal and below the Chanduy hills. It was also the only place left along the river bottom between Centinela and Real Alto where a catchment area with a five kilometer radius could be carved out.

OGCh-108 and OGCh-117 are slightly anomalous because of their ten kilometer distance from Real Alto. This distance may reflect conditions for the first stage of expansion up the Río Verde of the Chanduy Valley.

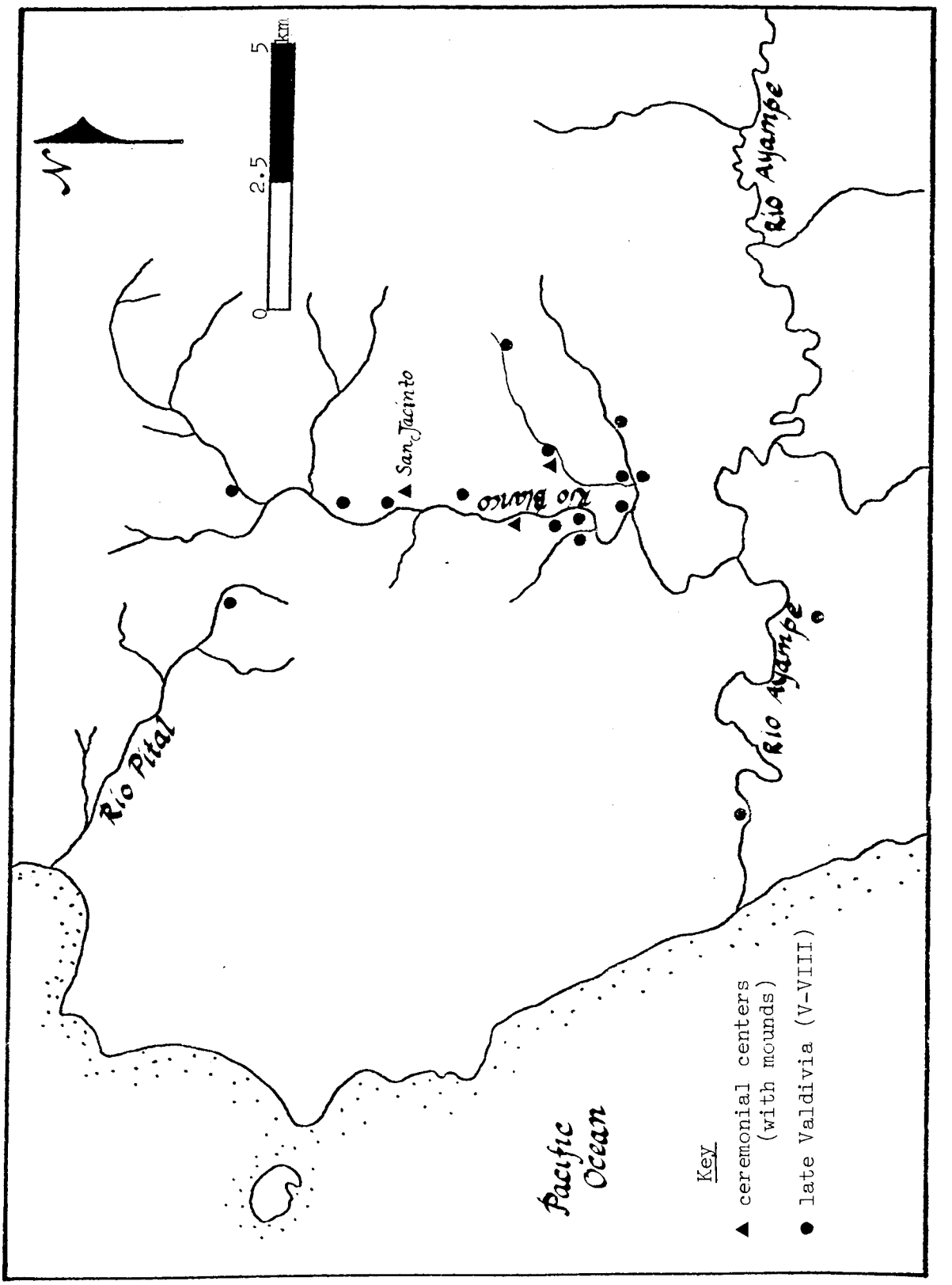
The third stage of colonization in the Chanduy Valley represents a time when saturation was being completed. By the end of T-3 there were no longer any unused catchment areas. The settlement pattern shows this readily. The rule which governed the system was no doubt based upon utilizing the available farmland within the circumscribed valley bottom lands.

The Blanco-Ayampe Valley

A 1979 survey in southern Manabi province located 19 Valdivia sites in a survey of the Ríos Pítal and Blanco-Ayampe (Map 6). Seventeen of these sites were packed into a space of only eight kilometers from north to south along the Río Blanco, a tributary of the Ayampe. Many more Valdivia sites may be in the area but the dense vegetation of the Río Blanco and the lower Río Ayampe precluded our finding them.

A large number of the Valdivia sites (16) are restricted to the later part of the Valdivia sequence (V-VIII). Three sites, including San Jacinto, have large ceremonial mounds (up to four meters height) similar to those found at Real Alto. San Jacinto, at least, spans the entire Valdivia sequence. The other two may also have similar life-spans but diagnostic sherds from their pot-hunted deposits were not sufficient enough in number to be unequivocal. These three sites are within four kilometers of each other.

All 19 sites are located in a heavily forested and hilly region of the Colonche hills. They all appear oriented to the river system of the Río Blanco-Ayampe. It is significant to note that in the adja-



Map 6: Valdivia sites and colonization of the Blanco-Ayampe Valley

cent dry Río Pítal Valley of cactus and thorn bushes only one Valdivia site was found and that was near the divide in the watersheds of the Ríos Pítal and Blanco. This distribution, then, represents a positive test case that the Valdivia settlement pattern was an adaptation to the tropical forest riverside environment.

The extreme packing of Valdivia settlements in this region has not yet been paralleled in other areas. The most economical reason for this pattern is that the Blanco-Ayampe Valley is confined to the Colonche hills which abut on the Pacific coast in this area. Since the hills catch the rain bringing Equatorial air masses (Momsen 1968), this region is better watered and the environment more closely resembles the Guayas Basin. The Blanco-Ayampe Valley exhibits the type of community packing during Valdivia that could be expected for areas close to the Guayas Basin. Therefore, the rainfall gradient which Momsen (1968) describes for southwestern Ecuador played an important role in prescribing the parameters of the Valdivia settlement system.

Summary

The Valdivia settlement pattern and system shows an evolution from its beginning by 3500 B.C. to its end at 1500 B.C. Three periods can be constructed for analyzing this phenomenon. T-1 represents the initial period of colonization of the Chanduy Valley. Real Alto was established during the Valdivia I phase. It was probably a fission or daughter community of Centinela, thirty kilometers away. This pattern

CHAPTER V

BETTER HOMES AND GARDENS, THE EARLY VALDIVIA HOUSE AND ECONOMY

Introduction

This chapter is about the houses in which early Valdivians lived. It is also about the economy of the early Valdivia community. There are many limitations to the data and they should be treated accordingly. The site data are to be interpreted with regard to the processes of cultural development outlined in the preceding chapters.

Problems of Investigation and Analysis

The excavation of deeply buried communities is fraught with problems. The greatest of these, as Brown (1975) correctly points out, is the comparison of different strata from within the same site. It is also difficult to compare several deep midden sites "with respect to sample size, sample control, and overall scope of the cultural record" (Brown 1975:155). The castigations of Flannery's Skeptical Graduate Student can be added to this: "We'll never find any architecture in this mound until we stop digging by artificial 20-cm levels" (Flannery 1976:14).

The problem is two-fold. First, caution must be taken in excavating deep middens in order to discern the horizontal and vertical distribution of associated artifacts. Second, the excavation must identify culturally significant units such as house structures, living floors and storage pits which cut through artificial levels of

excavation. These cultural units must be used as the units of excavation. The artifacts and features left at archaeological sites are the remains of human behaviour. This may appear obscenely obvious to us; however, deeply buried communities continue to be excavated without deference to what is so obvious.

Brown (1975:159) takes Willey and McGimsey (1954) to task for failing to treat artifact frequency differences as a result of "the areal distribution of associated artifacts." Their excavation of the Monagrillo shell midden in Panama did not attempt to differentiate activity areas but rather assumed "site-wide progressive change" (Brown 1975:159) was reflected in the stratigraphy.

Many deep middens fail to yield domestic structures. Some of these consist of seemingly undifferentiated soil profiles. Valdivia sites of southwestern Ecuador are typical of this. They are dusty and ashy. Sites like Real Alto and G-31 are the products of more than one thousand years of continuous human settlement. It is only natural that intensive and long-term occupation by farming villagers would leave deposits of confused provenience. This is exactly the reason that features and structures must be identified. Without such identification we are left with only a description of artifacts. Any subsequent assumptions on village economy and social structuring will be inadequately formulated.

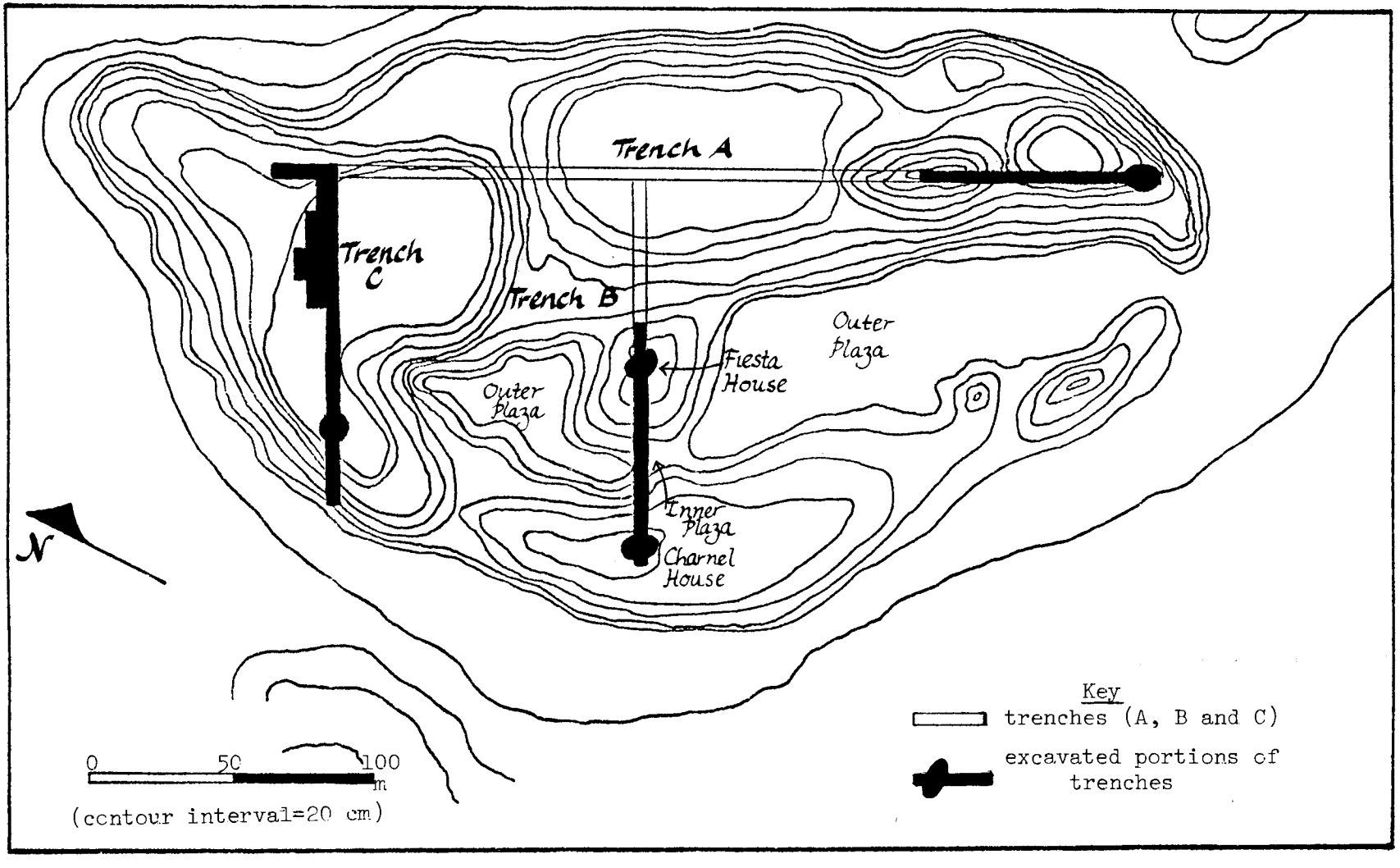
One of the best ways of sampling a deep midden is to transect it. This entails excavating long trenches through the site (Flannery 1976: 68). This procedure was employed at Real Alto in 1975 (Lathrap, Marcos

and Zeidler 1977). Features and house structures were noted and recorded from all over the site. Three trenches transected portions of Real Alto and revealed a complicated picture. It is clear that the stratigraphy is not the same in all points of the site. The transects show long-term settlement but different phase occupations occur at different parts of the site. Living floors, wall trenches, storage pits and so forth occur within the matrix of the midden. Using these features as units of investigation the community layout may become clear.

Trench C at the northern portion of the site gave evidence of the first occupation at Real Alto. Valdivia I and II make up the lower 70 cm of strata. This is capped by 30 cm of Valdivia VII and VIII and Machalilla refuse. Features such as storage pits of the later phases disturb parts of the lower strata.

The remains of several houses were identified in 1975 at the bottom of the midden in Trench C. These were ascribed a preceramic affiliation. The 1977 excavations which I conducted at Real Alto expanded the excavations at Trench C. From these excavations I was able to identify intrusive pits, house floors and other socially meaningful units and, where possible, to discover the association between artifacts and these units. Levels of 10 cm were used in conjunction with the cultural stratigraphy to tie in the features and structures.

The main objective of the 1977 excavations became to excavate and analyze the remains of the lowermost houses associated with Valdivia I



Map 7: Plan of Real Alto

ceramics. The location of "the areal distribution of associated artifacts" (Brown 1975:159) and the identification of related house structures were the main priorities.

The sample size constitutes a problem which only many more years of continued excavation will solve. Fifty-six m^2 of a Valdivia I living surface were sampled in 1977. The 1975 sample was slightly larger. Because of the small size of these excavations any attempt to reconstruct the overall plan of the Valdivia I village is partly guess work. I hope that my speculations on this subject will be treated accordingly. I feel that the next priority in excavating the early Valdivia community is the determination of its size, its variation, its composition and the possible presence of different organizational units (i.e. residential zoning). This information will be found if we structure our investigations properly.

Architectural Patterns

The Early Valdivia Household Cluster

Winter (1976:25-31) showed that it is useful to look at Formative Period houses of Mexico within the framework of the "household cluster". This unit includes the house and its associated features. The household cluster is presumably a behaviourally meaningful unit. Its use as an analytical device allows for greater accuracy in detecting activity areas which can be inferred by studying the associations between features and cultural debris.

Seven Valdivia I houses are known from excavations at Real Alto. Structures 58, 59, 60 and 61 were revealed in 1975. The extended excavations in 1977 yielded Structures 2-77, 3-77 and 4-77. These houses are defined primarily on the basis of post hole distribution in sterile clay. The clay lies at the base of the cultural deposits 90 to 110 cm below the present day surface. One other possible house is visible on the level plans. It was not given a structure number in 1975. It seems to me, however, that the post hole distribution and refuse discard pattern suggest a house. I list it as Structure X on the level plan (Figure 4).

Valdivia I houses were located by carefully brushing and probing each level. Houses in the upper portion of the strata were Valdivia II. These houses possessed wall trenches which are visible as cracks in the soil. The lower house structures, Valdivia I, show up at the base of the midden. These houses constitute the earliest occupation of the site. The levels were meticulously scrutinized from 80 cm to sterile for Valdivia I houses. This was accomplished by brushing the loose dusty soil in order to expose undisturbed and more compact soil. This in turn was checked by using trowels, ice picks, wooden stakes, fingers and so forth. This led to the detection of slight aberrations in soil consistency where post molds were present.

Another factor in detecting Valdivia I houses was a concentration of shell about 10 cm thick. The shell was densely distributed around the perimeters of the houses. Although shell was present within the house, there is a gross quantitative difference between its distribution

inside and outside. Wall profiles which dissect individual houses clearly show this distribution (Figure 2). The pattern is similar to the one noted by South (1977) which he calls the Brunswick Pattern. The Brunswick Pattern of refuse disposal is typified by the discard of refuse adjacent to the home "primarily at the back door, but also adjacent to the front doorway" (South 1977:47). In that, as will be described, Valdivia I houses only had one entrance way, the refuse discard area was the area encircling the house after being tossed or dumped out the entrance. South (1977) demonstrated that the identification of the Brunswick Pattern enabled the prediction of house location for eighteenth century British-American sites in North Carolina. The recognition of a similar pattern of refuse disposal permits greater accuracy in locating Valdivia I houses at Real Alto.

Structures 58, 59, 60, 61 and X were originally classified as preceramic, pre-Valdivia houses. An association with Vegas seemed probable. This interpretation was based largely on the fact that within the shell concentration, the refuse zone, few ceramic sherds were found. The few that were found, however, were thought to be either intrusive from the upper levels or sherds of the San Pedro style.

The most carefully and completely excavated house of the lowest level is Structure 2-77. It provides the necessary control for making judgements on cultural associations and architectural detail. It is clearly a Valdivia I house and so, probably, are the other structures.

The following description of the Valdivia I house is based on Structure 2-77. The other known houses of Valdivia I exhibit conformable outlines, although detail is lacking. It is imprudent to assume that all Valdivia I houses looked like Structure 2-77. We simply do not have a great enough data base to be certain of the degree of variation. It must be borne in mind that the following description applies simply to a few houses unearthed at Real Alto. These house are the remains of a few families. More work at Real Alto, Loma Alta and other early Valdivia sites needs to be done before we can treat the sample as representative.

The early Valdivia (I) house was a simple one room abode. Structure 2-77 measures 450 cm on the northwest to southeast axis and 320 cm on the northeast to southwest axis (Figure 1). Thirty post molds are preserved. Several of them appear to be paired. This probably served to increase the tensile strength of the structure. The pairings occur at the northwestern and southeastern ends of the house and may have provided the basis for subsequent building. A center post mold is present within the house. This no doubt served in conjunction with the posts at the ends in erecting the framework. The posts were about 5 to 10 cm in diameter. This is an uncertain figure because it was not always possible to see the size of the mold. The loose and ashy soil caused problems with each cleaning of the molds. Each time the hole would expand in size. Awareness of this and continued technical refinements should alleviate the problem in the future.

There is some suggestion that the posts were placed at an angle

with the bases pointing inwards towards the center of the structure. This was not always clear and it is uncertain as to whether all posts were positioned in such a fashion. If such was the case, then in all probability the bases of the posts were embedded in the ground and then the post was bent and lashed to other posts and to the center post at the top of the house.

With most of the houses it was not possible to discover the location of the entrance way. The excavation of Structure 2-77 did pick up this feature quite clearly. Three post holes can be noted as deflecting inwards from the outer edge of Structure 2-77. These were accompanied by a similar deflection of the shell concentration, the refuse toss zone. In section profile (North 343/West 59-65) this shell deflection is visible. At first it appeared as an unexplained anomaly. However, upon complete exposure of the structure it became obvious that the shell is associated with post holes and together these mark an entrance to the Valdivia I house. The entrance is 100 cm in width at its outer limit. The distribution of the shell in the entrance distinctly exhibits the relationship of the shell and the house. It is because of this distribution that the deposition of the shell can be correlated with the occupancy of the house. The Valdivia inhabitants of Structure 2-77 tossed the shell refuse to the area outside the house. The shell accumulated during the time the house was inhabited and the two are clearly temporally associated. This last fact plainly associates the house with the radiocarbon sample GX-5267, 3545±200 B.C.

A number of sun-baked clay chunks was recovered from the level of Structure 2-77. These chunks suggest the conclusion that wattle and daub was applied over the house frame. Close examination of these reveals that local grasses, paja, were incorporated as wattle into the daub.

The orientation of Structure 2-77 was no doubt purposeful for protection against the weather. Real Alto's position, a few kilometers from the coast, means that ocean breezes hit the site from the southwest and bring a cooling refreshment to the otherwise hot locale. During the months of July, August and September a dampening fog, garúa, moves inland from the ocean during much of the night and day, the effect of which can be rather uncomfortable. The position of the house with its entrance to the northeast must have helped alleviate the discomfort of the inhabitants.

Whether or not the other houses of the Valdivia I settlement at Real Alto had entrance ways with a similar orientation is unknown. Structure X shows a probable southern exposure. In time, orientation was probably at least partly dependent upon the overall village layout but, unfortunately, it is not known what the complete Valdivia I village looked like.

In size Valdivia I houses were different from those of the middle and late Valdivia occupation at Real Alto. These larger structures were about 12 meters by 8 meters and were also elliptical. It is realistic to assume habitation by a nuclear family for each house during Valdivia I compared to probable house occupancy by the extended

family in the later, larger houses (Lathrap, Collier and Chandra 1975:43). A preceramic house from Chilca, Perú, of roughly equivalent age, was a circular structure approximately 240 cm in diameter (Donnan 1964:139). Thus, Valdivia I houses were not small for their time.

The floor of the Valdivia I house may have been basin shaped. Structure 2-77 does not show this but Structure 3-77, about 2 meters to the east, does have a difference of 2 to 9 cm between the edges and the central portion of the structure.

Only 5 post holes were identified during 1977 for Structure 3-77. The rest of the house was excavated in 1975. It was not recognized at the time since the post hole pattern for Structure 59 obscured it. A correlation of the field notes from 1975 and 1977 gives a view of overlapping patterns of post holes for Structures 59 and 3-77 (Figure 4). Four post holes of Structure 59 were picked up in 1977 for the northwest portion of that house. They underlay the shell refuse area of Structure 2-77. The overlapping of the structures attests to rebuilding practices during Valdivia I.

Structures 58 and 60 are incompletely mapped. The southern halves were recorded. The northern halves are conjectural. Structure 61 was not completely excavated. Eight post holes were identified but the rest of this structure was not excavated during the first season at Real Alto. Subsequent expansion of excavation was not aimed at that area. Structure 4-77 was identified when 3 post holes appeared in the corner of the most northwestern extension of the 1977 work. Time ran short before any more of this house could be dug. The outer

edge of Structure 4-77 was, like Structure 2-77, bordered by a shell refuse zone. Structure 3-77 also had this feature. About 150 cm northeast of Structure 2-77 was another area where the shell refuse zone diminished gradually. No post holes were present there. The significance of this is not understood.

I include several features within the Valdivia I household cluster. This class of associations is based solely upon the excavation of Structure 2-77. Other features may be added in the future. I can not be certain, of course, if this single cluster is typical of Valdivia I household clusters. It is apparent that most of the houses at Real Alto which date to Valdivia I times shared features similar to Structure 2-77. Whether this pattern was repeated at other early Valdivia communities is unclear.

The household cluster of Structure 2-77 includes: (1) a 10 cm thick concentration of shell and other refuse which marks the outer edge of the structure, this is the refuse toss zone; (2) a "clean" area inside the house itself; (3) a pit within the wall of the northern part of the structure; and (4) a possible association of cairns at the structure's border plus a ground milling stone similarly located. The artifacts which are associated with these elements of the household cluster may reflect activity zonation if they have not been removed from their meaningful locations by prior disturbances.

(1) The Refuse Zone

The shell toss zone represents an area of refuse deposition.

The shell concentration extends about 150 cm away from the house to the north. The extensions in other directions are obscured by the proximity of adjacent houses and unexcavated portions of the site. The shell refuse zone begins about 40 cm away from the post holes. This suggests that the intervening space was at least partly filled with wattle and daub applied to the framework of the posts. The shell and other garbage accumulated around and against the Valdivia I house. There is no evidence showing that building construction activity was intrusive into the shell level. In fact, the shell refuse concentration conforms to a toss zone for debris as depicted by Binford (1978) for the Nunamiut of Alaska and by South (1977) for the Brunswick Pattern of refuse disposal. The entrance to Structure 2-77 has a shell distributation most economically explained as a contemporary with occupancy.

This shell refuse zone is so named because of its most visible feature. Other material is found within the feature. Deer bone makes up the greatest amount of terrestrial faunal remains in caloric terms, fish skeletal remains are also abundant. The composition of the shellfish species list is diversified. A 50% sample from the toss zone around Structure 2-77 revealed the following proportions:

1.	Anadara tuberculosa	44%
2.	Cerithidea pulchra	44%
3.	Ostrea sp.	4%
4.	Turbo sp.	2%
5.	Pecten sp.	2%
6.	Other	4%

Anadara tuberculosa is most conspicuous. It is a large bivalve, roughly 7.5 cm in length. It is mangrove specific and was retrieved from the now relict mangrove swamp at the Chanduy estuary. It was no doubt an important food source although its over all caloric value was negligible in comparison to deer and fish.

The entire amount of shell associated with Structure 2-77 was not excavated in 1977. Several 2 by 3 m units were excavated in 1975. The quantitative material estimates are now lost to analysis. I counted the amount of shell in five 2 by 3 m units which surround Structure 2-77. The resulting figures provide a rather rough estimate of total number of shellfish in the refuse zone. Thirty thousand Anadara tuberculosa individuals were deposited by the Valdivian occupants of Structure 2-77 during its term of habitation. Other species are proportionally represented.

Ceramic sherds were found in definite association with the shell refuse zone. These are Valdivia I sherds as defined by Hill (1972-1974). The number of sherds within the shell refuse zone was not as great as found within the house. This is to be expected. Shell, animal and fish bone and other garbage would be removed from the house after the meal. Ceramic vessels have a domestic function and thus belong in the home. In many of the later Valdivia houses the greatest accumulation of sherds is found within the house. This is also the case for the excavated areas of Structures 2-77, 3-77 and 4-77.

Stone tools were abundant in the Valdivia I occupational debris.

The lithic material consists mainly of modified and unmodified flakes and debitage. Stothert (1974) classifies the stone knapping as technologically simple stonework. The entire array of stone tools of Ecuadorian coastal prehistory is singularly unspectacular. These small chert bladelets may have been used as manioc graters. Although worthy of speculation this is almost impossible to prove at this stage of investigation but may possibly be tested through a careful study of wear patterns.

Actual botanical remains within the refuse zone were sparse. They were, however, present. This is extremely important as they are the only preserved plant food specimens to be found in a Valdivia site with the exception of a carbonized corn kernel from the later Valdivia site of San Pablo (Zevallos 1966-1971; Zevallos, et al. 1977). Seven carbonized seeds were found. Five of them were submitted for identification. Three of these five are Canavalia beans. They are probably of the domesticated species Canavalia plagiosperma although a wild form classification (Canavalia brasiliensis of C. maritima) can not be ruled out entirely (L. Kaplan, personal communication to D. Pearsall).

Valdivia sites do not favor the preservation of botanical remains. The soil is sandy and friable and subjected to alternate rapid saturation and drying each year (Zevallos, et al. 1977:389). The carbonized seeds were preserved within the Valdivia I strata at Real Alto because they were embedded in the densely compacted shell refuse. The large amount of calcium carbonate from the shell may

have made preservation possible. I consider the chance that the seeds were intrusive as almost an impossibility. Several of the seeds were found inside bivalve halves in undisturbed deposits. They are definitely associated with the refuse which in turn is associated with Structure 2-77.

No hearths were recorded for any part of the early Valdivia community. Large amounts of wood charcoal were evident and this implies former hearths; however, these were disturbed with time. Fire-broken rocks were also present.

(2) Inside the House

The portion inside the early Valdivia house was relatively free of shell. Shell was present but not in the densely packed manner noted for the exterior. Activities such as cooking (if done inside), sleeping, food consumption, tool manufacture, male and female work areas and so forth can not be inferred. This, no doubt, is because Real Alto was inhabited over a long time span with constant rebuilding of structures. Only features such as post molds, storage pits and shell refuse accumulation would escape destruction or mixing.

The house floor or living surface of Structure 2-77 is between 91 and 85 cm below the modern surface. At 91 cm we struck sterile clay in the center of the structure. The depth to sterile clay varies at other parts of this section of the midden due to a naturally sloping surface to the east which accounts for a 10 cm differential within 6 meters (West 68 to West 62).

Six cm of occupational debris above sterile was laid down from the time of construction to abandonment. A portion of a Valdivia I fine-lined engraved bowl (Figure 27) was recovered in the upper part of the living surface of Structure 2-77. This was at 85 cm below the surface in the middle of the house.

Figurines Within the House

The figurine tradition in Ecuador and adjacent Nuclear America is a longstanding one. Valdivia stone figurines represent the first manifestation of this art form. The actual function of Valdivia figurines is problematical. They may have been used as fertility symbols (Zevallos 1966-1971), thus accounting for their phallic shape. Reichel-Dolmatoff (1961) showed that figurines are used today by tropical forest peoples of South America in healing ceremonies. Whatever their ultimate function(s), their history in Valdivia is rich. Discussion and illustration of Valdivia figurines are profuse (see Meggers, Evans and Estrada 1965; Lathrap, Collier and Chandra 1975).

The earliest Valdivia figurines were simple stone creations which oftentime were notched so as to give the impression of legs. Several [redacted] seriations of these early figurine forms have been attempted. The sample from Real Alto is too meager for this sort of analysis. Thirteen early Valdivia figurines were recovered in 1977. Two other anomalous figurines also appeared. There is a slight suggestion that early figurines exhibiting engraving (Figures 85l and m) belong to Valdivia II. This needs to be checked with a greater sample having

stratigraphic control.

The provenience of the figurines in the lowermost 10 cm level of Real Alto's earliest settlement is important here. Three figurines came from the confines of Structure 4-77 (Figures 85a, b and c) One other (Figure 85g) came from the level 20 cm above this and may or may not be associated with Structure 4-77.

Two figurines (Figures 85e and f) came from the southern half of Structure 2-77 and one (Figure 85d) came from the northern portion. In all cases the figurines were within a house structure. No figurines of the Valdivia I occupation were found in the refuse zones. This clearly segregates the function of this feature of the household cluster.

Two other stone objects also originated in the northern half of Structure 2-77. Neither of these forms has previously been reported in the literature on Valdivia. There are intriguing possibilities for their functions. One stone figurine, with an octagonal cross-section (Figure 85o), is .5 cm in diameter and 3 cm in length. The 6:1 length to diameter ratio is equivalent to the length to diameter ratio of an eight rowed race of South American corn named Pollo (Roberts, et al. 1957; Pearsall 1977:table 1). The carbonized San Pablo corn kernel has also been compared to modern day eight rowed maize (Zevallos, et al. 1977). Other possible corn effigies are known for Valdivia. These occur in the medium of plastic decoration on Valdivia ceramics of a later time period (Zevallos 1966-1971).

The other stone figurine form (Figure 85n) is significantly

larger at 6 cm length and 2.2 cm width. Its shape and size conform to the shëbenantai of Shipibo-Conibo groups of the Peruvian Montaña (Raymond, DeBoer and Roe 1975:51). Shëbenantais are used in female puberty ceremonies of adolescent females. If this figure was preserved in situ until excavated and if the identification is correct, then possibly a female activity area can be inferred for the northern half of Structure 2-77. It may not be coincidental that the phallic shape and size of this instrument is similar to the later clay figurines of Valdivia. A common function would be, then, implied for both and, perhaps, this accounts for the origin of the clay figurine tradition in Valdivia.

(3) The Pits

A pit, Feature 14-77, was discovered below the northern wall of Structure 2-77. It was also listed as Burial 3-77 because of the presence of human bones. The pit was 10 cm deep and excavated into sterile clay which is now 93 to 103 cm below the modern surface at this point. It is 89 cm at maximum length and 70 cm at maximum width. A broken hammerstone, two chert flakes, a deer astragalus, long bone fragments and severely shattered fragments of the human crania, including the sphenoid bone, were associated.

This feature was penetrated by a post mold which I interpret as the result of moving part of the wall of the house, digging a pit for the disposal of the human remains and subsequently replacing the post and wall of the house.

Marcos (1978:39-42) notes that human bones buried below the walls of Valdivia houses are a typical feature at Real Alto. These, he infers,

were "dedicatory or guardian burials" (Marcos 1978:39) which were protectors of the structures.

(4) Cairns

Cairns may be a diagnostic feature of early Valdivia (I) communities. They are reported from two of the three excavated early Valdivia sites, Loma Alta and Real Alto. They were not found at Punta Concepción, probably because of its special function. The Loma Alta cairns are associated with the earliest occupation of that site. Fourteen cairns were found at Real Alto in 1975 and 1977.

The cairns at Real Alto can not definitely be associated with the Valdivia I houses. The five cairns, Features 4, 5, 11, 12 and 13, recorded in 1977, all lie outside of the house outlines. Features 4-77, 5-77 and 12-77 were found at the edge of Structure 2-77. Feature 13-77 was on the northwest edge of Structure 3-77. Feature 11-77 lay just north of Feature 12-77, but no houses were noted immediately adjacent to it.

The two cairns on the southern edge of Structure 2-77 both rested on the top of the shell refuse area at a level 85 cm below the surface. This was the upper part of the living surface within Structure 2-77. I can not unequivocally demonstrate contemporeneity. Feature 12-77 rested at 80 cm below the surface, but it too lay on the top of the shell refuse as did Feature 11-77 and 13-77.

The largest cairns were those on the southern edge of Structure 2-77, Features 4-77 and 5-77. The others consisted of a few stacked grinding stone fragments.

Feature 4-77 was 15 cm high. The southern half of the feature was disturbed by pot hunting activity and erosion in 1976. Mano and metate fragments, deer bone and sherds were removed from the disturbed part. The intact portion rendered a complete mano measuring 18.3 cm in length and 21.9 cm in circumference; a fragment of a similarly shaped mano and 83 other grinding stone fragments of either manos, metates, mortars or pestles. Deer bone included: one mandible, one scapula, five vertebrae, one tibia fragment, one metapodial, several long bone fragments and an ulna sharpened at one end for use as a tool. A black chert flake, a brown chert flake and a black chert drill made up the lithic material. Thirteen ceramic sherds were associated with Feature 4-77. These include a combed, everted V shape rim sherd of a storage pot (see Chapter VI) and a body sherd from another storage pot. These can all be included within the range of Valdivia I ceramics at Loma Alta.

Feature 5-77 was complete. It too consisted of grinding stone fragments stacked together to form a cairn. Its top was 62 cm below the surface and it rested at 85 cm below the surface. It was 75 cm in maximum length (northeast-southwest) and 55 cm in maximum width (northwest-southeast). The cairn had 52 grinding stone fragments including one whole mano and a fragment of another. Most of the other stones were metate fragments. Two, however, were ground-stone mortar fragments. One sherd was recovered in association with Feature 5-77. It is a folded rim from a cooking vessel typical of the Valdivia I and II ceramics and identical to some Loma Alta specimens.

A whole ground-stone mortar was found at the northwest edge of Structure 2-77. It rested on sterile soil within the matrix of the shell refuse zone. This is a single artifact and thus does not constitute a feature of the household cluster.

The reasons for the construction of the early Valdivia cairns is unknown. So far, they have only been found in the context of Valdivia I. At Loma Alta they are dated to between 3060 and 2640 B.C. The best suited dates for the Real Alto cairns are 2810±120 B.C. (ISGS-468) and 2950±170 B.C. (GX-5268). These dates apply only to the stratum on which the cairns rested. I reiterate what I previously pointed out; it is unclear as to whether the cairns and the houses are structurally related. The dating of both suggests that Structure 2-77 was constructed earlier than the cairns.

Lathrap (1974:129) makes the observation that the manos and metates found at Loma Alta are similar to those found in association with "hard evidence for maize agriculture at the Valdivia phase site of San Pablo." Marcos, Lathrap and Zeidler (1976:6) interpret the Real Alto cairns of broken manos and metates as suggestive of the presence of a "ritual related to corn and agricultural productivity."

Housing Summary

Early Valdivia houses have been excavated only at Real Alto, but undoubtably they occur elsewhere. The recent excavations at Real Alto demonstrate that the most efficient and informative fashion for investigating an early Valdivia community is by identifying structures

(houses) and features of the household cluster.

The Village

We do not know the size or the plan of the Valdivia I settlement, but from the information from Real Alto, Loma Alta and Punta Concepción some guesses can be made. At Loma Alta the Valdivia I and II refuse fringes a low, flat-topped hill (Norton 1977:3). Norton considers the center of the site to be essentially devoid of material. The Loma Alta settlement may have had a circular arrangement of houses around an open central plaza. Excavating several randomly distributed transects through this deeply stratified midden should quickly resolve the question.

Punta Concepción was perhaps arranged in the "shape of a ring" (Stothert 1976:94) during the Valdivia I occupation there. But since this occupation was short-lived, one can not expect the architectural and organizational detail there to compare with Real Alto and Loma Alta, which were long-term, probably agricultural, settlements.

Real Alto's Valdivia I village plan may also have been circular but that is conjectural. The later Valdivia occupation at Real Alto was an arrangement of houses around a central ceremonial area. Two mounds with structures of probable ceremonial function on top looked out over the plaza which was bordered by a rectangular arrangement of houses (Lathrap, Marcos and Zeidler 1977). From this it seems a fair guess that the Valdivia I settlement at Real Alto was a ring of houses around a central open plaza.

Economic Systems

Lathrap (1970:67) was early to point out that the appearance of Valdivia is "best understood in terms of the economic basis of the culture." In presenting evidence that corn agriculture was a part of the Valdivia economy, Zevallos (1966-1971) disputed the more popular notion that Valdivians subsisted mainly by fishing and shellfish gathering. The dispute has receded in the minds of those currently engaged in researching Valdivia.

Farming

Lathrap (Lathrap, Collier and Chandra 1975:21) believes that Valdivia communities grew "the full catalogue of Tropical Forest crops." There are several plant foods for which there is direct or indirect evidence available for placing these foods within the inventory of Valdivia crops.

Probably the most important food in Valdivia society was corn. Zevallos (1966-1971), as mentioned above, was the first to posit the the existence of Valdivia corn cultivation, basing his conclusions on a carbonized corn kernel embedded in a Valdivia V-VI pot. There could hardly be a more secure context. Zevallos also identified corn cob and ear effigies on Valdivia ceramics.

Pearsall recently analyzed opal phytoliths from Real Alto and OGCh-20. She concludes in her report that there was "on-site cultivation of maize by at least 2450 B.C."(Pearsall 1978:178).

The occurrence of manos and metates in the early Valdivia deposits

at Real Alto and the construction of cairns there argues for corn agriculture by 3300 B.C. in the Chanduy Valley. Additionally, 44% of the shell refuse around the Valdivia I houses at Real Alto was Cerithidia pulchra, a small gastropod found in mangrove swamps and muddy estuaries and not eaten. Gathering this shellfish for food would be an uneconomical use of time. It is, however, "an efficient source of lime by volume" (Marcos, Lathrap and Zeidler 1976:6) and according to Zevallos, et al. (1977:288) was probably used in the preparation of maize as food.

Zevallos and Holm (1960:7) suggested that cotton may have been cultivated at the Valdivia site of San Pablo, basing this idea on the suspicion that cotton textile clothing was represented on the figurines from that site. At Real Alto, Marcos (1973:166) discovered a piece of baked clay bearing the impressions of two distinct textiles. The context of this find was a potter's work area dated to the Valdivia phases VI and VII (Marcos 1973:168). Marcos also cites perforated ceramic sherds as possible spindle whorls and, thus, possible further evidence of cotton. If this is evidence of cotton, it suggests the domestication of a wild form of Gossypium in the vicinity of the Gulf of Guayaquil (Marcos 1973:172).

Evidence for cotton in the early Valdivia community is meager. Marcos (1977:4) reports the presence of possible sandstone spindle whorls associated with the early houses at Real Alto. These spindle whorls came from a cairn (Feature 99) built on sterile clay within the Valdivia I stratum. No ceramics were found, or at least reported, but

I suspect that this is a result of the activity zonation previously outlined for the Valdivia I community.

Lathrap argues that certain Valdivia III bowl forms are deliberate replications of halved bottle gourds (Lathrap 1974:123). He states explicitly that the center of experimenting with gourd pyroengraving was at early Valdivia phase sites such as Loma Alta (I and II) and G-31 (II). It was during Valdivia III that ceramics borrowed definite characteristics of the bottle gourd's morphology and its traditional method of decoration (Lathrap 1974:124).

The best bit of information does not come from a Valdivia site or even from Ecuador. The material comes from the preceramic site of Huaca Prieta on the north coast of Perú (Bird 1948, 1963). Two carved gourds from Huaca Prieta show designs of figures. Lanning (1967:66) pinpoints the Valdivia culture as the origin of the Huaca Prieta art style as expressed on gourds. He sees the carved gourds as closely identical to Valdivia III ceramic bowls.

Coca (Erythroxylon coca) is inferred as used by Valdivia culture. Typical of the evidence is the presence of ceramic vessels identified as Valdivia lime pots. The head of a Valdivia figurine may exhibit an individual holding a wad of coca in his cheek. Other hallucinogenic drugs such as ayahuasca or yajé are speculative for Valdivia. The evidence is based on the presence of some of the paraphenalia of Tropical Forest religious ceremonialism (Lathrap, Collier and Chandra 1975:45-48).

L. Kaplan, now of the University of Massachusetts at Boston,

identified three carbonized seeds retrieved from the Valdivia I refuse at Real Alto as Canavalia and cautiously identifies them as C. plagiosperma, a domesticate. One of the seeds is fragmentary. Another is one cotyledon measuring 1.145 cm (length), 0.465 cm (width) and 0.300 cm (thickness for one half of the whole seed). The third is a nearly whole seed with both cotyledons. It measures 1.330 cm (length), 0.950 cm (width) and 0.765 cm (thickness for the whole seed) (D. Pearsall, personal communication). In addition, the last Canavalia bean has a preserved hilium of about 3 mm. This suggests the domesticated species C. plagiosperma (L. Kaplan, personal communication to D. Pearsall 1978).

Agricultural Summary

Continued research on Valdivia brings additional supportive data on agricultural practices in the Early Formative in Ecuador. There is now reasonable evidence to suggest that from the first appearance of Valdivia I on the Pacific coast the river bottom lands were producing corn and Canavalia beans. Corn may have been a major staple. The Canavalia beans were probably a minor part of the diet. In that Canavalia is almost always associated with the common bean and the lima bean (Sauer and Kaplan 1969:423) we can expect to find evidence of these beans in Valdivia sites if conditions are optimal.

The scheduling of agricultural activities by the Valdivia community in coastal Ecuador would have been partially determined by the seasonal rainfall. The rainy season, beginning around the end of January,

brings rapid growth of native plants. It is the time of renewed planting today on the Santa Elena Peninsula. However, away from the Peninsula there is a greater availability of water throughout the year. The river bottom of the Río Verde may be dry during the months following the rains but it continues to be farmed by the present day residents of the towns near Real Alto.

The inland areas and the regions settled by Valdivia I communities have higher water tables. There was a deliberate exploitation of this environment during Valdivia I.

Hunting and Fishing

Meat, probably the main source of protein, was obtained through hunting and fishing. Unfortunately, Byrd (1976), who analyzed the faunal material from the Valdivia I occupations at Loma Alta and Punta Concepción, analyzed only the middle and late Valdivia faunal remains from Real Alto.

Loma Alta was near good hunting territory in the forest-edge/savanna and the deep forest. White-tailed deer, agouti, rabbit, brocket deer, tapir, dog, peccary, opossum, mountain lion, fox, small rodents, armadillo, birds, snakes, land turtles and frogs were hunted and eaten (Byrd 1976:65). Byrd infers that deer, a major source of meat, were hunted seasonally during the dry season for five months (Byrd 1976:65-67).

The residents of Loma Alta also relied upon maritime fish for part of their diet. Norton (1977) concludes that an exchange network

of some sort was established between Loma Alta and the Vegas community at the mouth of the Valdivia Valley. Shark, catfish, jack and drum were found at Loma Alta, but they were probably of minor caloric importance in the Valdivia diet at that site (Byrd 1976:65).

Brocket deer (Mazama sp.) is the only terrestrial faunal species identified for Punta Concepción. One individual is represented (Byrd 1976:53). The decrease in the terrestrial fauna when compared to Loma Alta is hardly surprising considering the location and the apparent specialization of activity at Punta Concepción. Marine catfish, snook, drum and sea turtle form the rest of the Punta Concepción faunal inventory. Shellfish remains, although present, were not analyzed for comparison.

The most important animal hunted around the site of Real Alto was the white-tailed deer (Odocoileus virginianus). White-tailed deer provided the greatest amount of edible meat (Byrd 1976:70). Fish occur in greater numbers than deer and they were a constant food source. But in terms of amount of edible meat and caloric value they were secondary to the deer.

Deer can become an integral part of a system of maize cultivation. The increase in farmland under cultivation by Valdivians caused an increase in white-tailed deer which fed on the corn stalks (Marcos, Lathrap and Zeidler 1976:5). This suggestion is based on the white-tailed deer's browsing preference for new or secondary growth as found in cultivated or abandoned corn fields.

Fish remains also indicate a purposeful selection of certain

species. Wing (personal communication in Marcos, Lathrap and Zeidler 1976:5-6) suggests that certain species were the intentional choice of agriculturalists in procuring protein sources complementary to their diet. Catfish, shark, jack, grunt and drum were important fish foods. Catfish (Bagre panamensis) were most heavily utilized. A greater exploitation of catfish is indicated in later Valdivia times as compared to a middle Valdivia sample (Byrd 1976:70). Shellfish remains occur in the Real Alto midden. Byrd (1976) does not include this food source in her report. The proportion of shell diminishes in the middle to late Valdivia deposits at Real Alto. A dense accumulation of shell was noted only for the refuse zones surrounding the Valdivia I houses. Anadara tuberculosa was by far the most important source of shellfish food.

Faunal remains associated with Structure 2-77 of the early Valdivia Real Alto settlement include the same species identified by Byrd for Valdivia III through VIII. A count for deer, based upon the minimum number of individuals (MNI) as represented by the right calcaneum, is 14. Fish species were not quantified, although catfish seem to predominate. Approximately 30,000 Anadara tuberculosa bivalves were in the same sample. The deer and the shellfish (Anadara tuberculosa) can be compared for estimating relative importance. Each deer provides approximately 45.4 kg of edible meat (White 1953:396) or 57204 calories at 1260 calories per kg. Using Stothert's (1977:16) figure of 16.7 calories per bivalve it would take 3425 A. tuberculosa bivalves to provide the caloric equivalent of one deer; nine deer could provide the same number of calories as the 30,000 A. tuberculosa

bivalves around Structure 2-77. This number is surpassed by the deer represented in the same sample. A similar result might be evident for fish if the data were quantified.

Summary of the Economy

The hunting and fishing activities of the early Valdivia community were easily carried out within a five kilometer radius of Real Alto. The mangrove swamp in the Chanduy estuary and the sea are all well within the catchment areas as prescribed for agriculturalists. The crop fields attracted deer which were hunted. The surrounding hinterland could also have been exploited for deer and other mammalian species.

Any quantitative study of faunal material distorts the importance of plant foods from sites where these are not well preserved. Agriculture was the basis of the Valdivia economy. Corn and beans probably were among the significant crops grown. Other plant foods are yet to be identified. Protein sources such as shellfish, catfish and white-tailed deer were important protein complements to the diet. These sources provided the basic diet in early Valdivia times.

CHAPTER VI

FORMAL, COGNITIVE AND ECOLOGICAL EXPRESSION IN EARLY VALDIVIA CERAMICS

A Perspective for Analysis

I believe that cognitive and ecological expression by early Valdivia potters is represented in the art style and the motifs of their ceramics. This is a brief description of the various categories of early Valdivia ceramics and also my thoughts on what the motifs meant. It is an attempt at understanding one aspect of the symbolism manifested by a culture which partook in the expansion of agriculture and settled life about 3500 B.C.

Art, it is argued (Fischer 1967), is a reflection of society. It can be the superstructure or symbolism which rationalizes the social and economic elements of culture, the infrastructure (O'Laughlin 1975). The two act together. For convenience, however, I have separately described the early Valdivia house, village, economy and settlement pattern as it is now known. Part of this chapter is a look at some possible conceptualizations of daily life by the early Valdivians.

Rappaport (1968) referred to the conceptualization of the environment as the "cognized model". I suggest that such a model is presented symbolically on the Valdivia drinking bowls. The cognized model is inextricably bound to the environment and to the social and economic means of adaptation. As a consequence of this, it is impossible to disembody Valdivia homes and gardens from Valdivia symbolism.

The formal aspect is also an integral part of art. It is the standard of any "creative imagination"(Bunzel 1929). Several authors advance this:

> ". . . Creativity is predicated on a system of rules and forms, in part determined by intrinsic human capacities. Without such constraints, we have arbitrary and random behavior, not creative acts" (Chomsky 1975:133).
>
> ". . . Without a formal basis the will to create something that appeals to the sense of beauty can hardly exist" (Boas 1927:12).

An integration of the formal aspect (i.e, rules of design application on ceramic vessels) and the iconographic method (Panofsky 1962) provides a methodology for appraising the cognized model of the early Valdivia environment. This is my concern in the following. The purely descriptive component of this analysis can be enhanced by an independent study of other sources. These include: Meggers, Evans and Estrada (1965), Hill (1972-1974) and Marcos (1978).

Vessel Shapes and Additions to Hill's Valdivia I and II Classification

Lathrap (Lathrap, Collier and Chandra 1975:27-29) defines three categories of vessel shapes for Valdivia I and II on the basis of the pottery from Loma Alta. These categories can be compared to Hill's (1972-1974).

The first form is a tall pot with a concave neck and a mostly spherical body (Figures 5-12). Decoration on these pots may be absent. When it does occur it is restricted to the concave neck. The decoration was accomplished on moist clay either by incision or combing with a shell, probably Malea ringens or Anadara tuberculosa. This form is equivalent to Hill's jars with tapered thin lips and unformulated scrawl or combing (Hill 1972-1974).

The second form of vessel tends to be compressed in outline. The rim is modified with the application of an additional coil of clay; it is then pinched like a pie crust. Many of these vessels have bosses below a shortened neck (Figure 15). Hill's pots with folded rims and bossing are comparable.

The style occurs in both I and II, contrary to Hill (1972-1974:4-5).

A third form of early Valdivia pottery is the bowl (Figures 27-74). There is diversity in size and small bowls are found. Most bowls are rich but standardized. They are either: (1) engraved or (2) incised or excised through the red slip before firing.

Norton (1977) provides a classification of Valdivia I and II vessel shapes according to function; slight changes are seen through time. His attempt focusses on the ceramics from two sites, Loma Alta and Punta Concepción. His seriation further breaks down Hill's revisions into Valdivia Ia, Ib, Ic, IIa and IIb. I have found it impractical to employ this scheme on the data from Real Alto. This is not because the scheme may lack credibility. It is rather due to the fact that the great amount of mixing of refuse in a deep midden such as Real Alto precludes a realistic appraisal and a testing of the Norton classification. Punta Concepción, on the other hand, provides an excellent opportunity. Its short term occupation pinpoints a specific period of time (circa 3000 B.C. ?) during which a limited amount of pottery was manufactured.

Norton's classification of early Valdivia ceramics into functional categories is consistent with Lathrap's classification of the same ceramic inventory. His grouping includes three classes: (1) container jars, being globular thick walled, poorly fired with longish necks, everted V shaped rims and occasional scratchy incisions on the neck; (2) cookpots represented by plain globular jars with constricted necks, folded rims and bosses, pushed from the inside, onto the shoulders;

(3) bowls which have convex walls and narrow to thin unmodified rims during Valdivia I and flattened rims in Valdivia II (Norton 1977:17-18).

The recovered Valdivia I and II ceramics from Real Alto confirm the accuracy of both Lathrap's and Norton's classifications. Bowls are clearly distinguishable as a class distinct from the rest of the Valdivia I and II ceramic assemblage. Pots described as container jars are also evident. Whether or not these were for storage is problematic. The so-called cookpots from Real Alto were the only vessels to contain carbonized remains on their inside bottoms. This is most suggestive that cooking was the major function of this group. Several specimens (Figures 23-26) from Real Alto have the same general shape as the cookpot but lack both bosses and, significantly, the infolded rim. This may mark a different vessel class or a sub-division of the cookpot class

Drawings (Figures 5-73) are included so as to show the distinguishing features and variations within the vessel categories. The represented vessels are reconstructed to give their most probable shape. All of the pictured specimens come from the excavated material at Real Alto and are all from the Valdivia I and II strata examined in 1977. They are grouped by probable phase affiliation and functional category. The provenience of each specimen is provided. This can be best used by locating it on the floor plan (Figure 1) and the stratigraphic profile (Figure 2). The anomalies in stratigraphic position and phase affiliation are best explained by mixing. This was great and resulted from lizard activity and storage pit construction.

Formal Elements of Design

My discussion of design elements focusses on Valdivia I pottery. Some mention is made of Valdivia II design in order to show continuity and change in the elements and in such features as symmetry. Valdivia I ceramics which were clearly associated with a site feature (see Chapter V) are identified as so being. The precise provenience of the other specimens must be considered approximate. Design in all three categories is examined. Because of the richness in bowl decoration there is a bias with regard to the discussion of that category. Each category is treated by examining the formal aspects of design listed by Shepard (1956:260).

The field of decoration refers to the adaptation of the design to the vessel shape; that is, the place on the pot where the design goes.

Composition and structure include the plan formulated by the potter for the design's application. These spatial relationships are easily perceived on Valdivia I and II ceramics.

Symmetry is the relationship between the elements of design. It is the motion effected in the repetition of the design element. Valdivia I and II bowl forms are most amenable to this sort of examination. In fact, I suspect that changes in symmetry can be used to mark the difference between Valdivia I and II bowl designs.

The elements of design and motifs are the basis of most analysis. An element is an entity such as a cross-hatched triangle, a slanting

line, an engraved T and so forth.

The motif is made up of certain elements. Bunzel (1929:53) pointed out that there are really no elements per se but rather patterns of arranged elements which have meaning to the potter. The potter thus applies designs in a pattern which has the formal basis of creativity described by Boas (1927:12). This pattern is the motif. In this sense, I break from employing the motif categories defined by Meggers, Evans and Estrada (1965). Fine Line Incised and Red Incised are not motifs. They are techniques. At most, they are elements of design. Meggers, Evans and Estrada failed to identify the patterns of design on early Valdivia ceramics. I make an attempt here with special attention to bowl forms. I follow this with inferences on what these patterns meant to the artisan and the community.

This connotative analysis (Shepard 1956:259-260) adheres to the iconographic method of Panofsky (1962) and Cordy-Collins (1977): the design motif is objectively described; a complete analysis of the motif for patterning and identification is next; and finally, a search for interpretation and cultural context is made.

Container Jars

The fields of decoration on the container jar is restricted to the neck of the vessel. It often extends to the inflection point. This is visible on two specimens (Figures 8 and 10). Figure 10 is a Valdivia I container jar from Feature 5-77, a cairn. Figure 8 is a Valdivia II vessel which is included to show the features of this

class.

Figures 5, 6 and 7 are Valdivia I pots with pendants, produced by incision descending from the rim. These examples show the field of decoration restricted to the upper five to six cm of the vessels. It is unknown if these triangles occurred below this point. Other Valdivia I container jars do have decoration of a similar sort extending to about the point of deflection (see Lathrap, Collier and Chandra 1975:catalog numbers 1, 2 and 5).

Finger grooving is another decorative form found on container jars on the neck. Figure 9 is a squat jar illustrating this. The sherd from which the reconstruction is derived was found within the Valdivia I shell refuse zone. Lathrap, however, assigns this form to Valdivia II (Lathrap, Collier and Chandra 1975:72).

Composition and structure vary within this category. The pendant triangles suggest regular spacing. Elements are simple triangles with incised interiors or shell scraping. The simple repetition of design produces an uncomplicated symmetry. Except for the regular occurrence of pendant triangles descending from the vessel's rim, there is little to suggest that any set of rules was employed in producing decorative features on the container jars. The jars illustrated by Hill (1972-1974:figures 4-9) lack cohesiveness in design coordination except for the application of triangular elements on the neck.

There are few data at this time by which container jars can be

divided into Valdivia I or II categories. The ones illustrated with triangular pendants (Figures 5, 6 and 7) do seem to represent a Valdivia I diagnostic vessel form and decoration.

Cooking Pots

The design field on cooking pots is simply located at the rim or the shoulder. The rim is decorated with the addition of an additional coil of clay which gives an infolded appearance. This strip was then pinched. When bosses are present they are found at the shoulder.

The applique strip is a present or absent feature. More often than not it is present. Several of these vessels occur within the Valdivia I strata and show fire smudging. Any regularities within the spacing of bosses are not apparent to me. Norton (1977:17-18) used this quality of composition and structure to re-define phases I and II. The efficacy of this remains unresolved.

The nature of the design elements and their rule of application suggest a utilitarian function such as cooking for this category. Marcos (1978:47-49) notes that folded rims called "orejas" can be handled more securely and are today put only on cooking ollas by modern Ecuadorian potters. Of course, the already noted presence of carbonized food in these pots from Real Alto is better evidence for this.

Bowls

Bowls of Valdivia I and II have a design field usually restricted

to the upper portion of the vessel. This extends to the point of inflection. Figures 27-59 illustrate the positioning of the field of design on bowls.

Design on the bowl form is almost always formulated in a modular band. Other cases are not the rule and are rare. The band is continuous around the bowl. Its width is dependent upon the amount of layering of design elements within the band. The band's structure is composed of elements of design; the relationship of the design elements within the band structure is significant. Each element is dependent upon the adjacent element in achieving the production of the motif. Without this detail of composition the design fails. Rowe (1967) notes this feature is a dominant form in Andean art.

The two major motifs to be discussed employ composition and structure in slightly different fashions. One calls for the entire band to be considered together whereas the other focusses attention on breaking down the band, if my speculations are correct.

The elements of design of the two major motifs of Valdivia I and II bowls are readily evident upon examination. One band presents the strategic placement of hatched triangles and filler lines. These are the two important and distinguishing elements of this motif. The second form is a series of interlocking T elements which form a fret pattern around the band. The T, then, is diagnostic. A third, but minor, variant occurs infrequently. It is a rounded square with a dot in the center.

All of the elements are produced by incision, excision or engraving

usually through a red slip. There are several additions or deletions of decoration to the essential elements. These are generally unimportant except for phase recognition. On the other hand, towards the end of Valdivia II the elements of design become more conventionalized or the two common elements are sometimes conglomerated. For example, the interlocking T becomes a series of repeated I elements; or the band composition incorporates one layer of the motif with the triangle element with another layer possessing the T element motif. The rounded square element is sporadically involved but it remains nebulous in this analysis.

The symmetrical arrangement of the design elements on early Valdivia bowl forms changes with time. These changes might be employable in further refining the seriation. Several sherds from bowls were found in definite association with the Valdivia I houses described in Chapter V (Figures 27 and 28). These represent the beginnings of the motif at Real Alto. In one case (Figure 27) from Structure 2-77 three horizontal lines surround the body. Hatched triangles rest above these and are simply repeated on a red slip. The other example (Figure 28), from Structure 4-77, consists of an upper and a lower row of repeated cross-hatched triangles through a blackened slip. The rims of both vessels are thinned and the diameters at the rim are 34 and 33 cm, respectively.

Other examples of this form of symmetry, a simple translation of the element of design, come from vessels not in definite association with a structure or a feature. These include Figure 29 which has

zigzagging and straight lines running across the body. I suspect from the vessel's provenience that it was disturbed from its place near Structure 3-77.

These are the earliest forms from Real Alto. Additional specimens conform to this design formulation with slight variations in both vessel shape and design. These examples appear most consistently in the stratigraphic levels just above the lowermost stratum.

The classic Valdivia II bowl forms have decoration in which symmetry is transformed from the simple translation of the Valdivia I design element. Elements in Valdivia II are arranged by bifold rotation (Shepard 1954:269) in the construction of the modular band. Filler lines in conjunction with the triangle element are fully exploited. The triangles sometimes become blunted to form a trapezoid. Examples of these are noted in the Figures. These specimens include most of the variation in the Valdivia II triangle element motif although they come from the lower strata of Valdivia II at Real Alto. Whatever the variation in element application, composition or symmetry, the motif remains the same in Valdivia I and II, a span of at least 500 years if not more.

The interlocking T or step-fret element motif is equally conservative in its longevity. It was not found in definite association with the Valdivia I houses. The significance of this remains unknown. No gross changes in symmetry can thus be inferred. It is apparent that this motif occurs approximately 20% of the time on decorated bowl forms. The triangle element occurs in 72% of the cases within the

Table 3 Frequency of motif occurrence

Sample I: Valdivia I and II - 70-100 cm level from Real Alto

motif	element	number	percentage	
snake	triangle	24	72.7%	
feline	T	6	18.2%	
?	square	3	9.1%	
		33	100.0%	total

Sample II: Valdivia II - Structure 1-77 - 30-50 cm level

motif	element	number	percentage	
snake	triangle	34	72.3%	
feline	T	11	23.4%	
?	square	2	4.3%	
		47	100.0%	total

same class. Table 3 shows the frequency of occurrence from two samples of Valdivia I and II pottery. The reason for this breakdown in the occurrence of the three elements is unknown; it may be socially predicated or functional or something else.

I am necessarily imprecise in assigning temporal importance to many of these factors. I advocate a cautious approach to seriation with the conjunctive use of discrete features or living floors which can be ordered independently. Failing to do so invites methodological errors derived from mixed samples which are evident in deep, un-stratified middens.

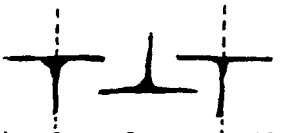
The Snake and the Feline Motif

I contend that the two dominant themes represented by the motifs of hatched triangles and interlocking T elements are the snake and the feline respectively. As such, they are the basic units of the potter's composition. The elements of design, as mentioned, are put together in such a way that two motifs are fashioned. It is necessary to show how this was done previous to a discussion of why it was done, what it means and my reasons for believing that the early Valdivians incorporated the feline and the snake into their symbolism.

The snake motif derives its existence from complete consideration of the modular band which makes its way around the upper body of the bowl. The hatched triangles are the serpents marking. These come in several arrangements but commonly form a diamond or X pattern. It is interesting to note that this latter term, X or equis in Spanish,

is the name given to one of the most dangerous snakes in South America, the fer-de-lance pit viper. Another pit viper, the bushmaster, has similar markings. This impression is, of course, not sufficient in identifying snake-ness.

The feline motif depends upon the systematic dissection of the interlocking T band. This produces a series of faces connected together. The faces include the eyes, the noses and, importantly, feline-like mouths. The band becomes a row(s) of feline faces by breaking down the T arrangement in the following fashion:



According to this formula a mouth is visible in the center, an upturned upper lip is transformed into the nose bridge and the horizontally slit eyes complete the face. In many case the upturned upper lip is shown as a small upside down V which is a non-adult human mouth but a distinguishing trait of the feline and the human infant (cf. Benson, ed. 1972:figure 1).

Both motifs existed in Valdivia for more than 500 years. This record of endurance plus the almost total exclusion of other motifs on the bowls is important. Such a history as a continuously used motif blatantly implies that a reason was behind the repeated scratching of similar geometric designs on one particular vessel shape.

The restriction of the motifs to the bowls of Valdivia I and II reflects a distinctive function for these bowls. The drinking bowls, or mocaguas, of tropical forest groups today are typically decorated

with meaningful designs (Reichel-Dolmatoff 1971; Whitten 1976; Harner 1973). Many of these are communal beer drinking bowls used in ceremonies promoting social cohesion. At Real Alto decorated bowl forms were found in a ceremonial context. The fiesta house on a ceremonial mound contained such broken bowls in large number. This probably represents an early practice of communal beer drinking. Structure 1-77 from Trench C at Real Alto is a Valdivia II house floor with the associated sherds of many similar bowls heaped together.

There are several reasons to believe that the identification of the motifs is correct. The period of longevity and conservatism mentioned above is an attestation of meaning. The appearance of the design elements as some things that look like snakes and felines is another. But, both of these reasons are weak and imprecise. More pertinent analysis is necessary to show continuities and transformations through time within Valdivia and associated ceramic traditions. Furthermore, ethnographic analogy using similarly adapted cultures may be informative (Furst 1968).

The Snake

Several lines of evidence lend credence to my belief that the Valdivia I and II hatched triangles are snake symbols. Pre-Valdivian art in South America is scarce and at this time there is no record of pre-Valdivian artistic expression on ceramics. As a consequence, the geometric design can not be traced back to a more realistically

portrayed form. The best that can be done is to seek nearly coeval similarities, later examples and ethnographic data.

Porras (1975) reported on the existence of a Formative phase in the Ecuadorian Oriente along the Río Huasaga. Pastaza phase ceramics can be dated to at least 2205 B.C. (Porras 1975:135). Temporally, this relates to Valdivia III. Stylistically, the ceramics are quite close to Valdivia; bowl forms often have hatched triangles or fretting. Porras, however, was unable to show any chronological ordering for most of his ceramic sequence within the Pastaza phase. The triangle elements and depicted faces (felines ?) (Porras 1975:lamina 9b and f) show significant parallels to the Valdivia I and II styles.

DeBoer, et al. (1977; Porras 1975) located on the Peruvian side of the Río Huasaga a "virtually identical" ceramic inventory (DeBoer, et al. 1977:7). These Kamihun ceramics again share similarities to Valdivia and are cross dated with the Pastaza phase. There is one example of an appliqué decoration which is definitely a snake and is associated with a row of triangles bordering the rim (DeBoer, et al. 1977:figure 20).

A second bit of archaeological evidence comes from the ceramics of the Chorrera phase of Ecuador's Late Formative. Lathrap, Collier and Chandra (1975) illustrate four examples of snake effigy jars (catalog numbers 335, 375, 376 and 377). Again, these are unquestionably snakes and are in three cases the fer-de-lance (Bothrops sp.) or equis; in one case, another pit viper, the bushmaster (Lachesis sp.) is probably presented. These cases all show the elements of design

(although not vessel shape) to be exact duplications of some Valdivia II snake motifs with the only exception being the substitution of paint for filler lines.

The connection with Valdivia is strengthened by examining the similar triangle elements on the Ayangue Incised ceramics of the intermediate Machalilla phase (see Meggers, Evans and Estrada 1965). Also, Grieder's (1978) study of post-Chavin Recuay style pottery of Perú points out that "chained diamonds or zigzags to identify pit vipers (fer-de-lance or bushmaster) may have begun in the Chorrera art of Ecuador (Grieder 1978:177). I would extend this connection back to Valdivia.

A Bahía phase vessel from Manabí, Ecuador (Estrada 1962:figure 50a) depicts two "priests" with serpents in each hand symbolizing their authority (Estrada 1962:71). This example from a post-Chorrera culture illustrates a seemingly long-term concern with snakes by the prehistoric inhabitants of western Ecuador.

An aggregate of the pertinent archaeological information shows that the snake is most likely represented by the hatched triangle element in early Valdivia. If, considering the longevity of the motif, it must represent something, then the best bet right now is that it is the snake which is depicted. Specifically, I see most similarities with the equis, the fer-de-lance.

There are remarkable ethnographic examples which specify snake symbolism in ceramic manufacture and decoration and in ritual. These examples are taken from cultures of the Colombian and Ecuadorian tropi-

cal forests. The ecological adaptation of these societies is most closely parallel to what I am positing for Valdivia.

Whitten (1976) reports that the jungle or Canelos Quichua of Ecuador use the snake symbol in decorating their pottery. He states:

> ". . . Women study the patterns on the skin of the dead snake (the bushmaster and the palm viper) carefully, seeking to capture the churana, marking, of the vanquished supai on the rims of their mucahuas" (Whitten 1976:76).

The reference to mucahuas or mocaguas is significant. It is on these bowls that, in Valdivia I and II, the snake motif is found. It is also these vessels which are used in beer drinking or hallucinogen taking ceremonies of the South American tropical forest groups and in Valdivia, as mentioned above.

Reichel-Dolmatoff (1971) analyzed similar features within Desana society of the Vaupés area of the Colombian Amazon. Yajé or ayahuasca (Banisteriopsis caapi) is prepared as an hallucinogenic drink and kept in a special pot. This is decorated by "repeating the designs that adorned the mythical Snake-Canoe" (Reichel-Dolmatoff 1971:172). The Snake-Canoe was the transporter of the first people to earth "and its skin was painted yellow and had stripes with black diamonds" (Reichel-Dolmatoff 1971:26).

Harner points out that the ritual drinking of hallucinogens (sometimes mixed with chicha, beer) by most South American tropical forest tribes induces visions of "snakes, generally poisonous varieties and the anaconda, and of jaguars and other dangerous forest felines" (Harner 1973:160). It is the ceramic vessel or a gourd which is the container

of this vision inducing substance. The transcription of the vision onto the vessel, the mocagua, relates to this. Thus, the motif represents the vision. In this respect compare a Jívaro shaman's vision of a snake (Harner 1973:169) to the Valdivia I snake motifs represented by repeated hatched triangles, specifically Figure 27. They are almost identical.

The Feline

Chavin art of Perú is full with the feline motif. Chavin may in some way be descendant from Valdivia. In addition to identifying serpent symbols in Recuay art, Grieder also recognized feline imagery. He notes: "Even for the conventional designs felines, along with serpents, provided the basic ideas. . ." (Grieder 1978:169).

The connection of Chavin and Recuay to Chorrera is amorphous and the relationship to Valdivia is temporally distant. The idea of a connection is intriguing but some more appropriate evidence is, however, available.

Although there is no pre-Valdivia I and II ceramic art style known in South America, the ceramic art of Valdivia III-V may be examined for comparisons. The bowl forms of this time characteristically have anthropomorphic faces (see Hill 1972-1974:figures 30 and 31). In some case a definite feline face is represented (Meggers, Evans and Estrada 1965:plate 41g). Sometimes the most conventionalized T element is reproduced in Valdivia III-V in a slightly altered fashion (see Hill 1972-1974:figures 26-29). The combination of these two pieces of information strongly suggests that the origin of the feline-

human face is to be found in Valdivia I and II.

A cat head on a bowl from Early Tutishcainyo (circa 2000 B.C.) in the Peruvian Montaña (Lathrap 1970:86-87, figure 8) is similar to the face on one of the Valdivia III/IV gourds from Huaca Prieta (Bird 1963: figures 1b and 1c). The superior appendages on both undoubtably represent the ears. This is the position where they are found on felines, not humans. Both Early Tutishcainyo and Huaca Prieta correspond chronologically to Valdivia III-V. As noted previously, Huaca Prieta gourds have unmistakable connections with Valdivia.

The jaguar makes its appearance in another form in Valdivia. The shaman's stool, commonly a wooden seat in the shape of a jaguar, occurs in Valdivia as small ceramic replications (Lathrap, Collier and Chandra 1975:catalog numbers 118 and 119; Meggers, Evans and Estrada 1965:figure 63a-f). A shaman's sucking or snuffing tube occurs in Chorrera. This is a carved bone showing a shaman sitting on a stool which is probably the figure of a jaguar (Lathrap, Collier and Chandra 1975:47, catalog number 551).

It can not be coincidental that felines are found in association with shamanistic paraphernalia. It is also not coincidental that Valdivia III-V anthropomorphic faces depict both humans and felines, sometimes separately and sometimes amalgamated. The reason for this is clear. The jaguar is the avatar of the shaman in tropical forest cognitive systems.

The applications of both snake and feline motifs on drinking bowls adheres to a formal rule of design. It is only within this con-

text that the motif has meaning. Again, the drinking bowls are used in ritual. Reichel-Dolmatoff (1972:62) describes the experience:

> ". . . Under the influence of these drugs people project the culturally preestablished image of the jaguar upon the wavering screen of colors and shapes produced by these psychoactive drugs; they turn into jaguars or, at least see feline monsters in the hallucinations which the shaman explains to them. The shaman's role is essential in this context. He is the mediator who 'talks to the jaguar' and who, at the same time, is the jaguar's voice."

One precocious expression of these concepts is to be found in early Valdivia. The snake and the feline, two powerful tropical forest denizens, were symbolized and ritualized by the early Valdivia artisans and their society.

Conclusions

Shepard (1954:259-260) insists that certain procedures should be carried out in going beyond the formal aspects of design analysis and into connotative analysis:

> ". . . meaning of design should be sought whenever possible . . . not alone the identification of a serpent, for example, but also an understanding of what the serpent signified or symbolized to the people who represented it."

This last but mandatory step is the most precarious of all. It is necessary, however, if an attempt is to be made towards understanding Valdivia society in its tropical forest context. In this regard the procedure must be carried out in full if meaning is to be sought in design analysis.

The snake and the feline are symbols of the forest. The tropical

forest and the river system were the ecological setting of the Valdivia community. As a consequence, the snake and the feline symbolized early Valdivia epistemology.

The use of these symbols on Valdivia I and II bowls had ritual importance. Ritual incites union and the cosmology unifies the group socially and ecologically in the forest. Reichel-Dolmatoff points out that this promotes "ecological responsibility" and that it represents "a truly remarkable effort at intellectual interpretation, at providing a cognitive matrix for life" (Reichel-Dolmatoff 1976:317).

The snake and the feline were the motifs of a cognized model (Rappaport 1968:237-241) in Valdivia I and II. They were important as actors and models in the environment. More profoundly, these animals were "metaphors for survival" (Reichel-Dolmatoff 1976:311) in the early Valdivia community.

CHAPTER VII

THE END

A Theoretical Perspective

The description of a culture rests on determining a "synthetic definition" (Godelier 1977:63) which focusses on the social and economic formation. Briefly, with this approach, the mode of production (i.e. agriculture) and social and ideological superstructure (i.e. the settlement system and motif imagery) are recognized and then their operational values are analyzed with emphasis on their articulation (Godelier 1977:63). An ultimate goal is to find the structure in dominance which arises from a determinate mode of production (Althusser 1970:108). According to this perspective, it is production upon which society operates and evolves.

Many factors may be involved but certain ones are essential in determining the social and economic formation. The evidence for agricultural productivity during the Early Formative in Ecuador is slight but it increases annually. Zevallos (1966-1971) first pointed out thepossible importance of agriculture in Valdivia. It was, then, probably the essential or determinate production strategy in its form of operation in Valdivia. As a consequence, it would have articulated the other aspects of society. These aspects were the Valdivia settlement system and the cognized model of the environment.

A Review

An accumulating body of data suggests that the southwestern Pacific

coast of Ecuador was peripheral to the development of Valdivia I. Rather, it was this environment that Valdivia I communities moved into. The immediate center for the impulse leading to this colonization at around 3500 B.C. was probably the Guayas Basin.

Certain deductions, outlined in Chapter III, account for my view on the development of the Formative out of the Archaic in the Guayas Basin. It was a new order which culminated out of a process of slow term historical trends. These trends included increases in regional population with a response of more circumscribed resource allocation. This was subsequently modified by increases in the use of wild botanical resources until an associated mode of production which insured sufficient food from a restricted space (Binford and Chasko 1976:139) was realized. This, the development of agriculture, was enacted along the riverbanks of the tropical rivers of northwestern South America. The case study here is the involvement of the early Valdivia community in this process.

Fissioning within these settlements could have expanded the system from the center. Indirectly, the expansion is visible as an end-product - the establishment of early Valdivia to the west of the Guayas Basin. The archaeological evidence is derived from a few Valdivia I sites and several extensive surveys of the Pacific coastal valleys. A comparison of Valdivia I sites shows that the earlier ones, as demonstrated at Loma Alta and G-31, are situated inland. Other examples do not have the detailed dating that this pair has.

The surveys of the Chanduy Valley and the Blanco-Ayampe Valley

demonstrate an infilling of communities after initial colonization. The patterning further demonstrates an orientation to the floodplain environment necessary for agriculture. In southern Manabí province, where environmental conditions more closely approximate the Guayas Basin, the packing of Valdivia communities was more intense. This may reflect the determining mode of production - an expanding agricultural system adapted to the riverine environments of the tropical lowlands.

The early Valdivia occupation at Real Alto is the best known example of a community established through this process. The recovery and analysis of data from Valdivia I sites is just beginning. The artifacts, the features and the structures of the society, when put in in proper regional context, show a small settlement established on the edge of the Río Verde floodplain. The work at Real Alto added Canavalia beans to the list of crops grown by these communities. It produced a plan for the Valdivia I house and an excavation strategy for identifying refuse disposal areas and activity areas. The full cultural context remains incomplete but it is a start.

The work in southwestern Ecuador is, thus, beginning to give up the settlement pattern data and the living floors which Flannery (1973: 308) deemed as critical. If preservation of botanical remains were better, quantification of floral and faunal remains would be comparable. Unfortunately, the problems of excavating Early Formative middens in the wetter tropics of South America are great and sometimes foreboding but, hopefully, never defeating.

The ceramics of Valdivia I are precocious in their development. But chronological problems divert attention from more important questions, namely, those on the proposed basis for Valdivia. My analysis of the Valdivia I and II ceramics from Real Alto corroborates the established vessel shape categories. A formal analysis of design demonstrates that only three motifs were applied to Valdivia I and II bowls. Never were the rules of application confused with respect to vessel shape. Motif application is conservative in that the two most important motifs were used for over 500 years with little modification which affected anything but symmetrical arrangement, composition and structure.

I suggest that the motifs had meaning in early Valdivia society and the recognition of snake and feline imagery has important ramifications as these animals provided a cognized model of the environment. They symbolized the problems and the attempted solutions inherent in an expanding and changing agricultural society. This ritualization unified a society whose relation to the environment was changing as a result of a further circumscription of resources.

A Synthetic Definition

Leach's study of the Pul Eliya community demonstrated that in the economy:

> ". . . the basic valuable is scarce water rather than scarce land; it is the total water-supply available to a community which sets a limit to the area of land that may be cultivated and hence to the size of the population which may survive through subsistence agriculture" (Leach 1961:17).

A basic valuable in the Valdivia I economy appears to have been scarce water as the system encroached upon the drier periphery. From what is presently known, the better watered areas of southwestern Ecuador were more intensely settled by Valdivians than the drier regions. Quantitative and qualitative distinctions are observable. The rainfall gradient pattern described by Momsen (1968) effectively models the course that the evolving Valdivia settlement pattern and system took. Scarce land, for sure, was a factor but this was adumbrated by the availability of water as rainfall and, thus, as high water tables in the river valleys.

Agricultural productivity can not exist without sufficient water. The choice of settlement by early Valdivia communities was purposeful in this regard. The colonizing agriculturalists of 3500 B.C. selected the more arable lands of the riverine environments and Valdivia I was a result of this.

The economic formation of Valdivia I, as known from sites near the Pacific coast and in the Colonche hills of southwestern Ecuador, may be reduced in terms to the availability of water in the river bottomlands. This was the dominant structure in Valdivia society and it effected a cultural-environmental interaction and the subsequent charting of Valdivia society.

Reichel-Dolmatoff (1976:314) cites three factors as germane to maintaining a balanced ecosystem. They are: (1) population growth; (2) the exploitation of the physical environment; and (3) the control of aggression. I hypothesized that Valdivia can be accounted for in

terms of population growth in the Guayas Basin and an expansion to the periphery. The expansion was prescribed by the availability of fertile land. The continued packing of communities caused pressure to be exerted and the exploitation of the physical environment to be modified with re-allocations of resources. This disrupted attempts at controlling aggression.

The control of aggression invites ritual in terms of myth, social activity and structure and even symbol. The communal drinking ceremonies of tropical forest groups today reflect this function for it brings people and their neighbors together in social interaction. The history of this practice may be traceable to early Valdivia.

Snake and feline imagery on the Valdivia mocaguas, bowls, represents some symbols for the livelihood of the early Valdivia community. These symbols invoke ecological responsibility and the maintenance of the ecosystem as it was balanced around 3500 B.C. But if these are symbols of balance and maintenance, an instability must be inherent in the system. Accordingly, Leach (1954:278) noted that "if ritual is sometimes a mechanism of integration, one could as well argue that it is often a mechanism of disintegration."

The disintegration of the early Valdivia community was prompted by factors internal to its existence - the expansion of Valdivia and the finite availability of water and farm lands. Growing pressure on this resource produced a change in settlement pattern, hierarchy and composition. Thus, it was necessary that Real Alto arose as a cere-

monial center which was mandated to create a newly balanced ecosystem which, in turn, was to be modified, forever.

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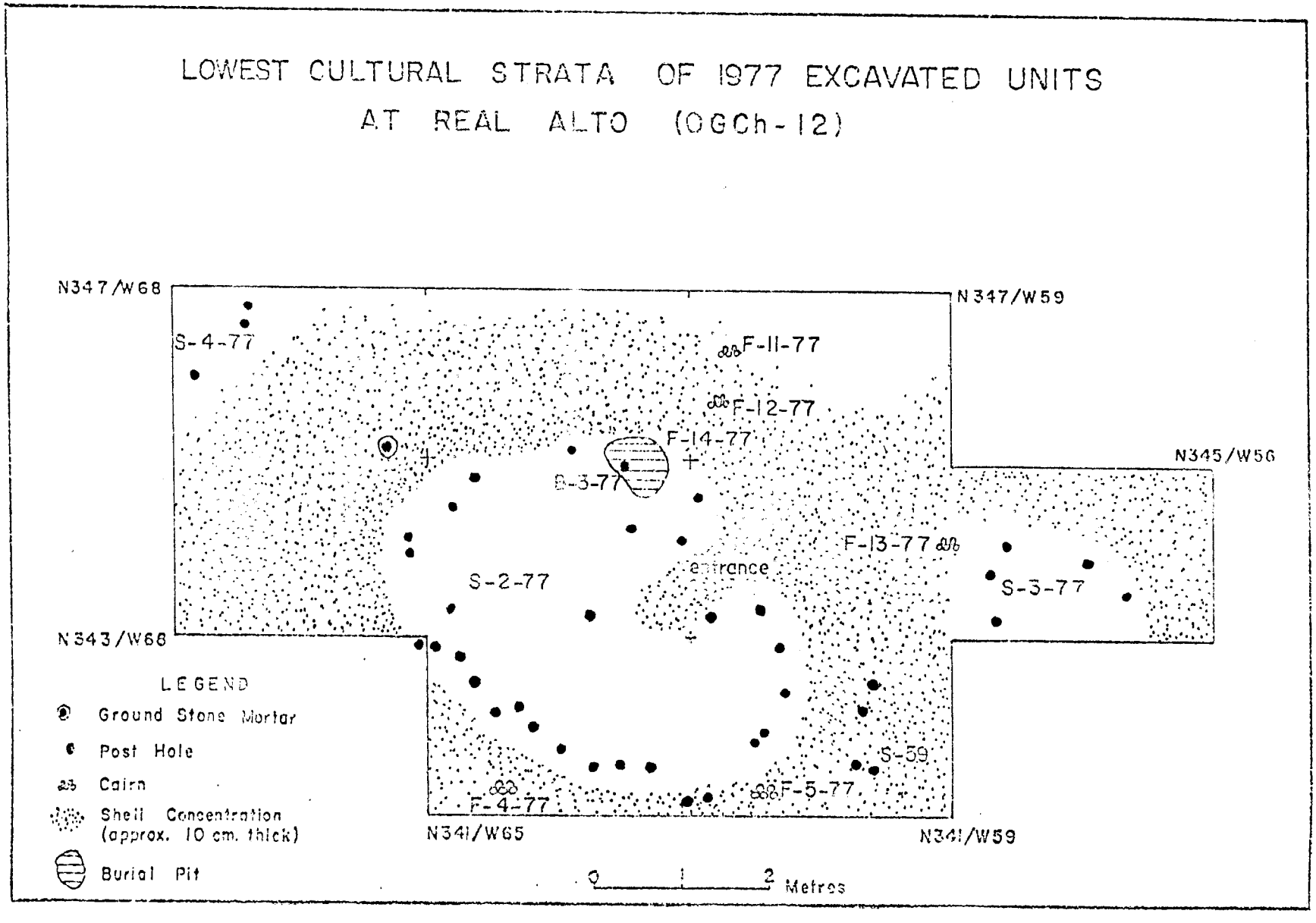

LOWEST CULTURAL STRATA OF 1977 EXCAVATED UNITS
AT REAL ALTO (OGCh-12)
N347/W68
N347/W59
N345/W56
N343/W68
N341/W65
N341/W59
S-4-77
F-11-77
F-12-77
F-14-77
B-3-77
F-13-77
entrance
S-2-77
S-3-77
S-39
F-4-77
F-5-77
LEGEND
Ground Stone Mortar
Post Hole
Cairn
Shell Concentration (approx. 10 cm. thick)
Burial Pit
0
1
2
Metres

Figure 1

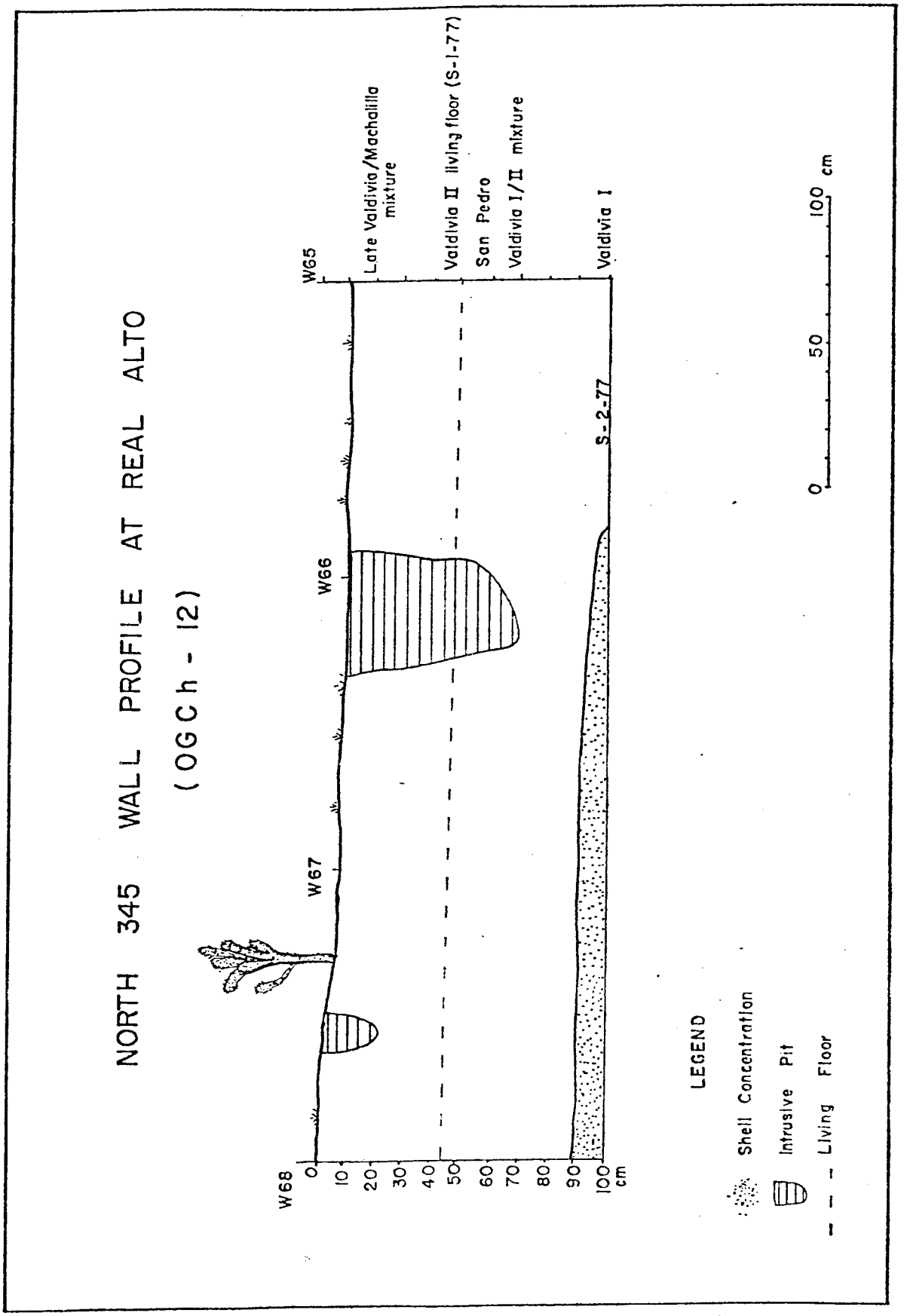
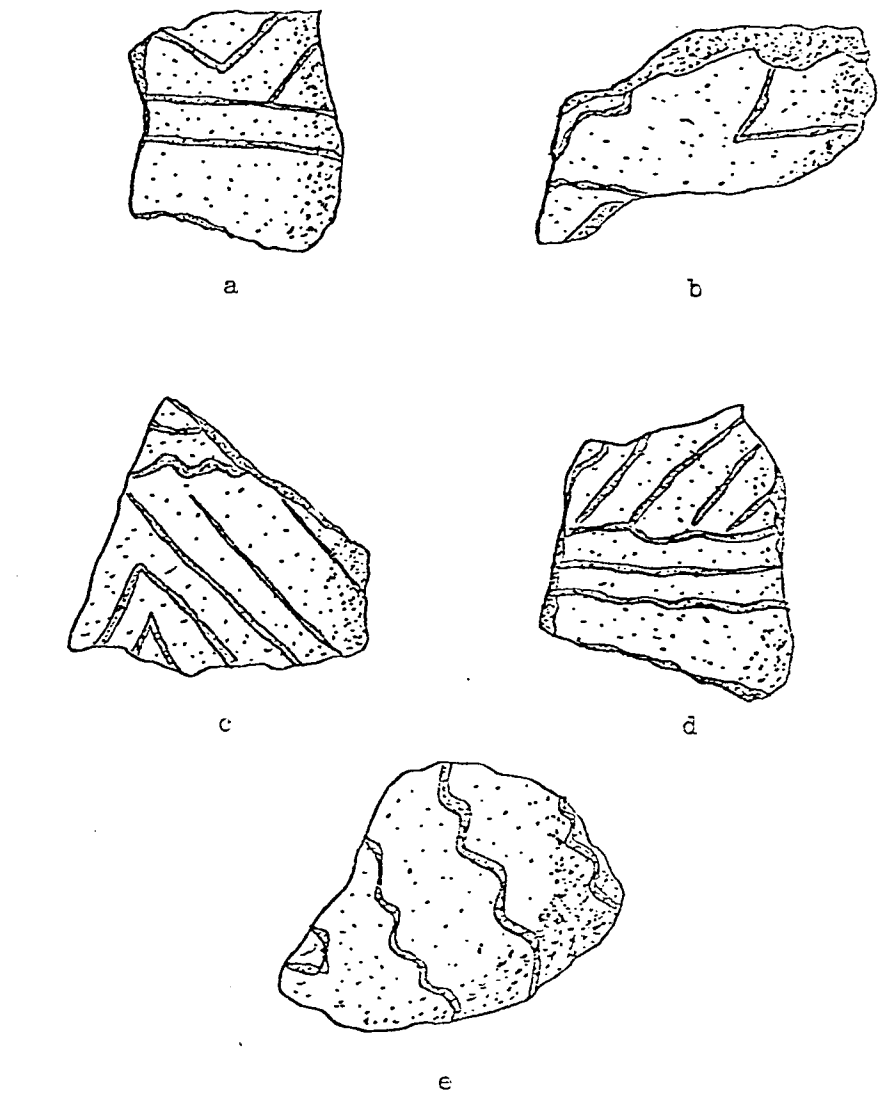

NORTH 345 WALL PROFILE AT REAL ALTO
(OGCh - 12)
W65
W66
W67
W68
S-2-77
Late Valdivia/Machalilla mixture
Valdivia II living floor (S-1-77)
San Pedro
Valdivia I/II mixture
Valdivia I
0 10 20 30 40 50 60 70 80 90 100 cm
0 50 100 cm
LEGEND
Shell Concentration
Intrusive Pit
Living Floor

Figure 2



Provenience: a- North 343-345/West 59-62; 40-50 cm
b- North 345-347/West 62-65; 40-50 cm
c- North 343-345/West 56-59; 50-60 cm
d- North 343-345/West 56-59; 50-60 cm
e- North 343-345/West 62-65; 50-60 cm

Figure 3: San Pedro sherds from Real Alto

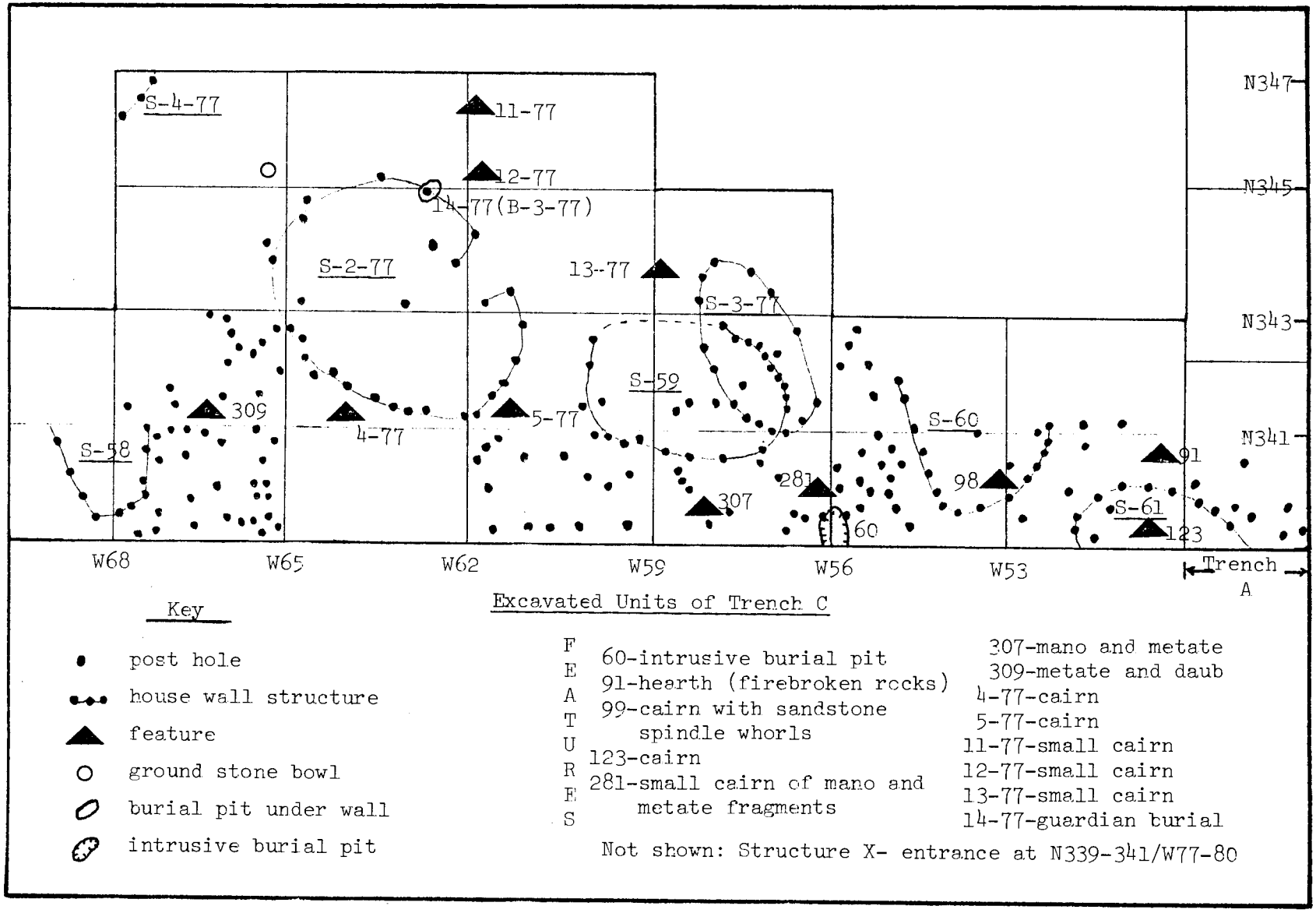
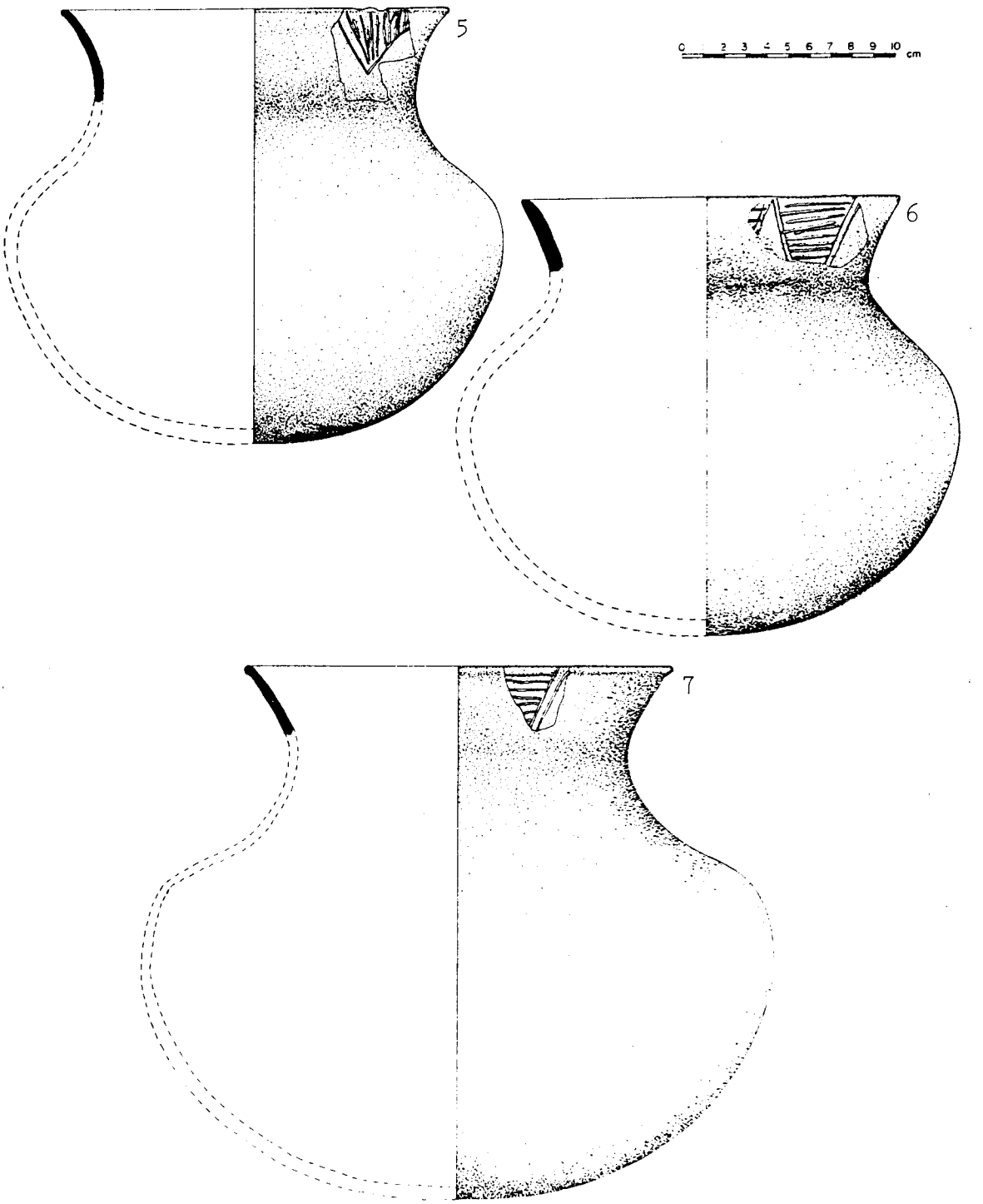


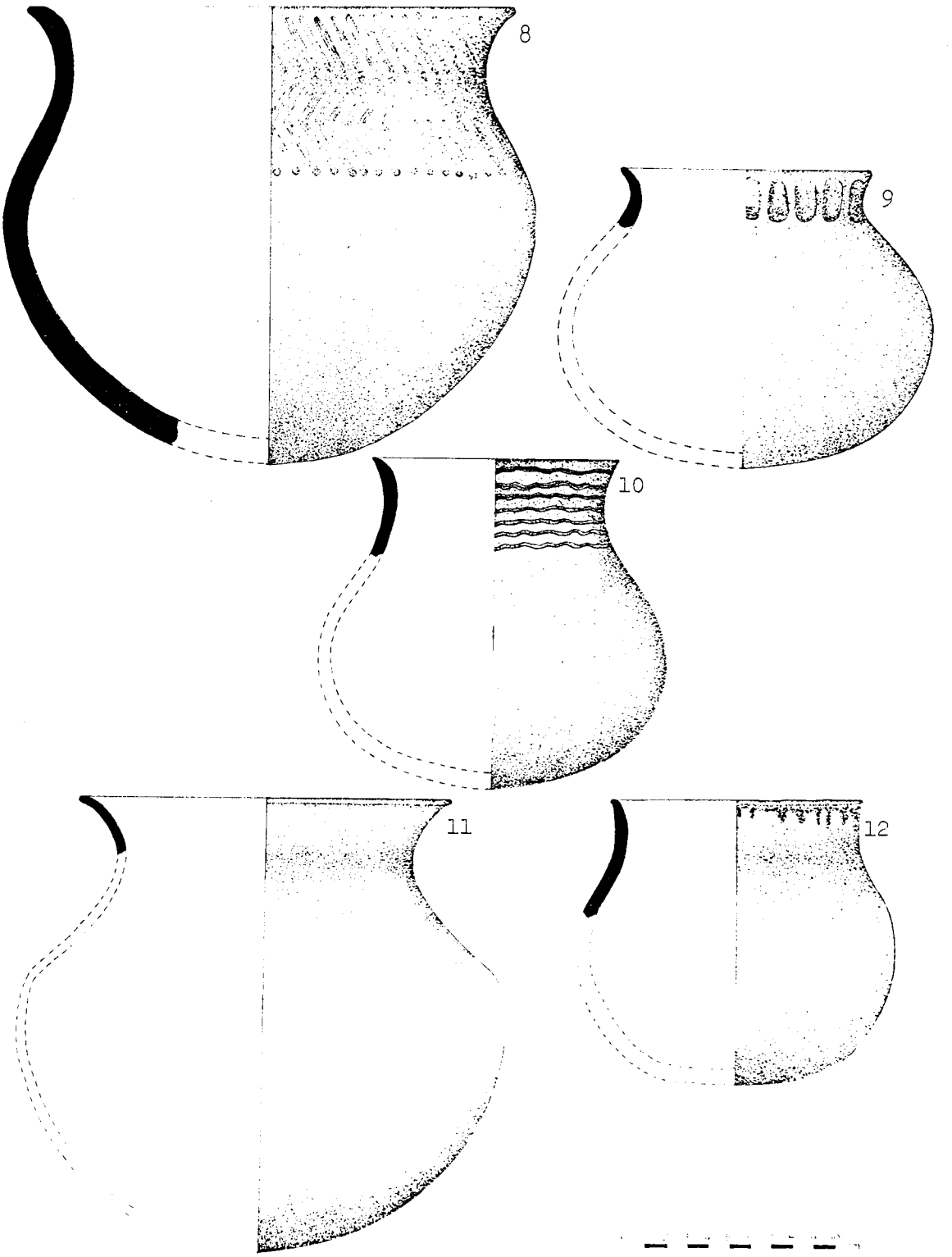
Figure 4: Features and structures of the lowest cultural strata at Real Alto (1975 and 1977)

Figures 5-12 Container jars

Figure	Provenience
5	North 345-347/West 62-65; 85-90 cm
6	North 341-343/West 62-65; 30-40 cm
7	North 341-343/West 62-65; 80-90 cm
8	North 343-345/West 65-68; 50-60 cm
9	North 345-347/West 62-65; 85-90 cm
10	Feature 5
11	North 345-347/West 62-65; 85-90 cm
12	North 345-347/West 65-68; 90-100 cm



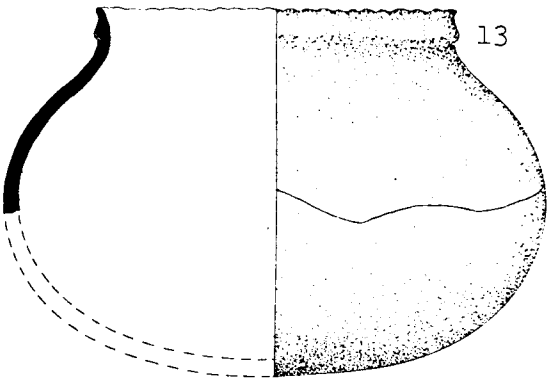
Figures 5-7

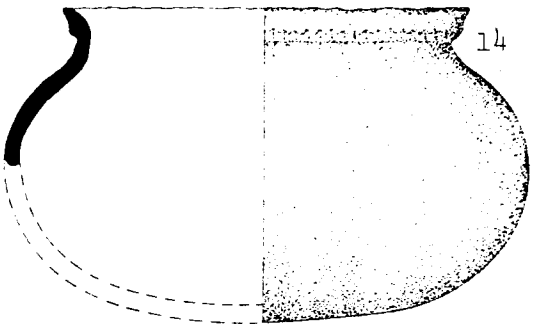


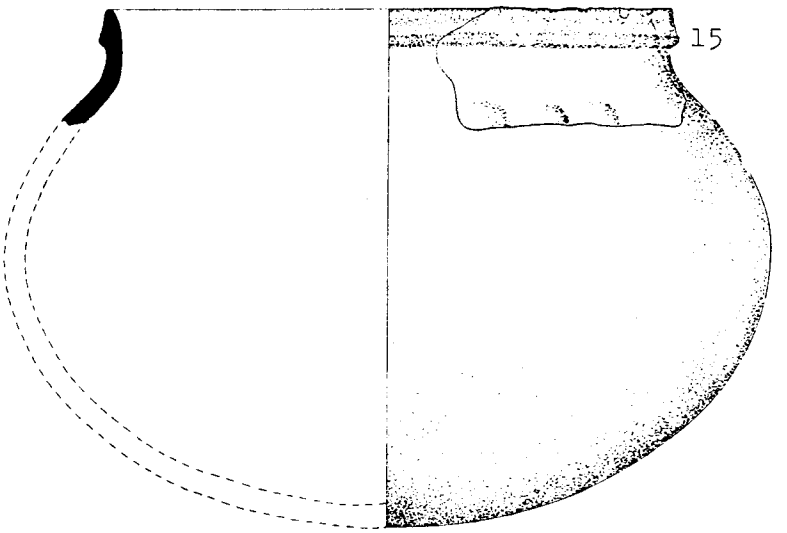
Figures 8-12

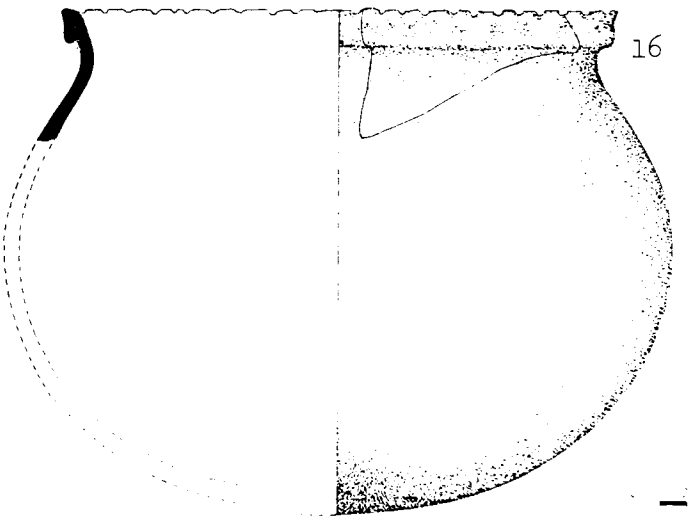
Figures 13-26 Cookpots

Figure	Provenience
13	North 345-347/West 62-65; 70-80 cm
14	North 345-347/West 65-68; 70-80 cm
15	North 345-347/West 62-65; 85-90 cm
16	North 345-347/West 59-62; 80-90 cm
17	North 345-345/West 65-68; 90-100 cm
18	Feature 4
19	North 345-347/West 59-62; 80-90 cm
20	North 343-345/West 65-68; 60-70 cm
21	North 345-347/West 62-65; 85-90 cm
22	North 345-347/West 62-65; 80-85 cm
23	North 343-345/West 62-65; 85-90 cm
24	North 343-345/West 62-65; 80-85 cm
25	North 345-345/West 62-65; 80-85 cm
26	North 343-345/West 65-68; 80-90 cm

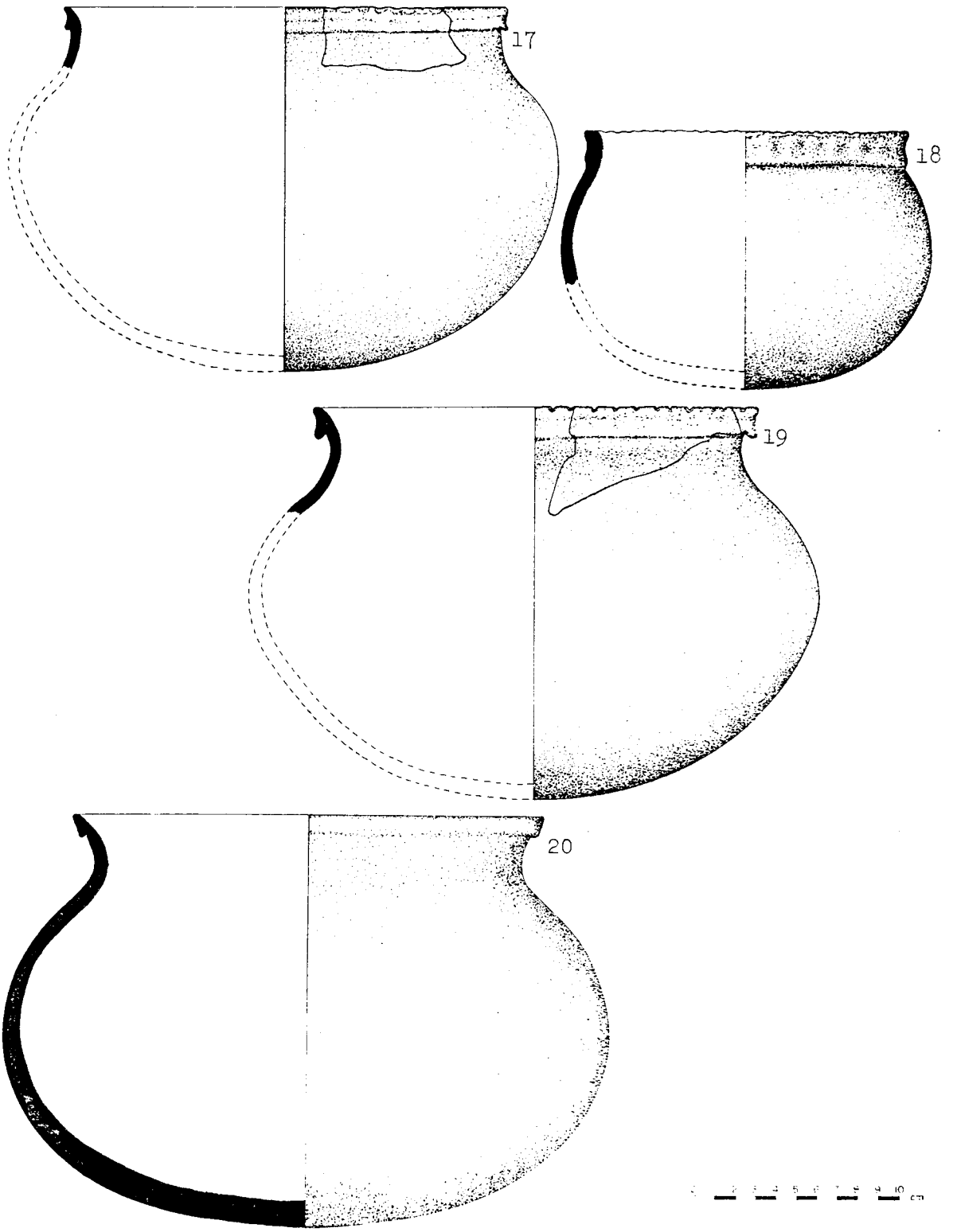




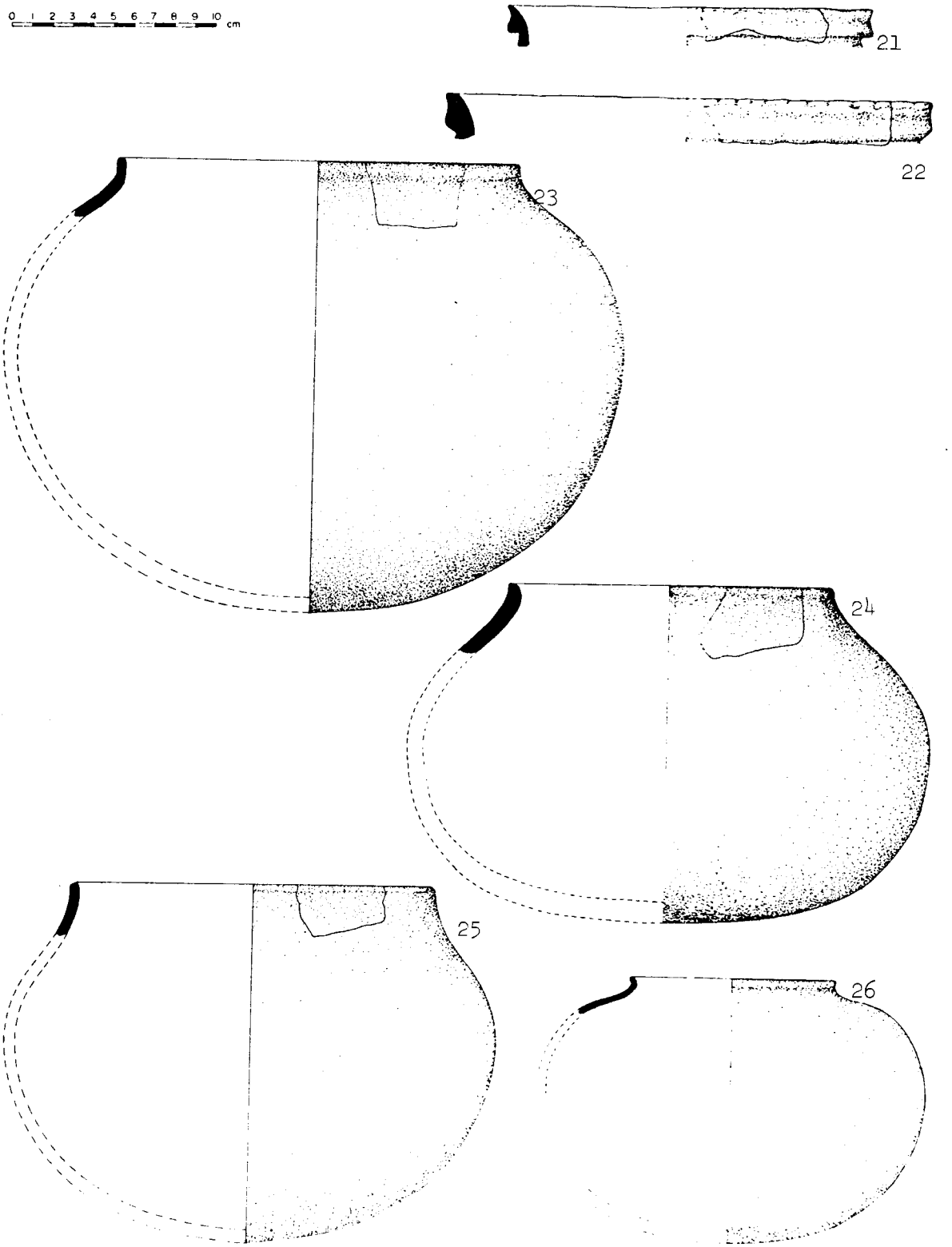




Figures 13-16



Figures 17-20

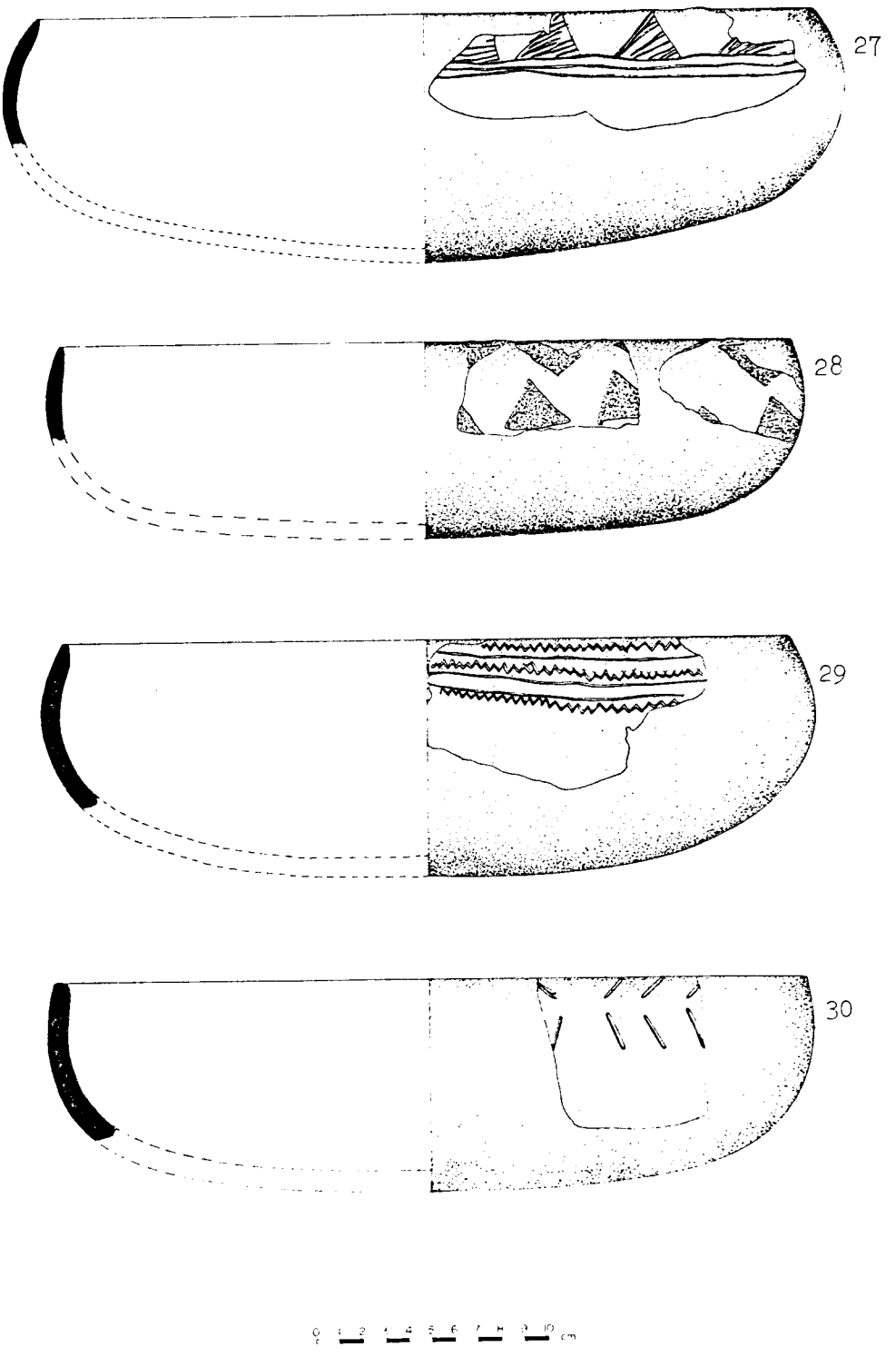


Figures 21-26

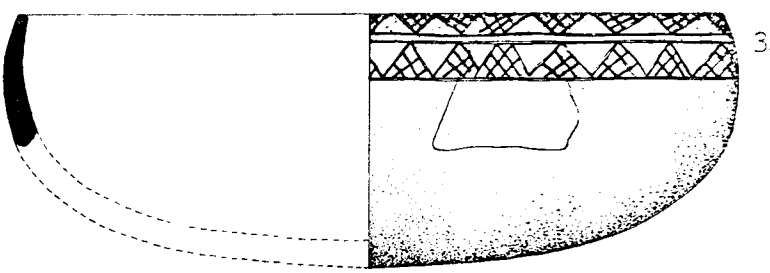
Figures 27-73 Bowls

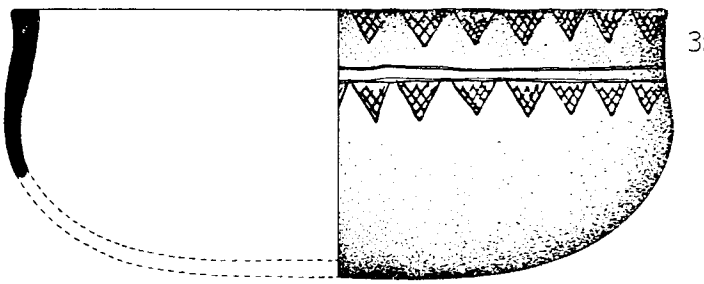
Figure	Provenience
27	North 343-345/West 62-65; 80-85 cm
28	North 345-347/West 65-68; 90-100 cm
29	North 343-345/West 56-59; 50-60 cm
30	North 343-345/West 65-68; 70-80 cm
31	North 345-347/West 62-65; 70-80 cm
32	North 345-347/West 62-65; 85-90 cm
33	North 343-345/West 65-68; 90-100 cm
34	North 345-347/West 65-68; 70-80 cm
35	North 345-347/West 62-65; 80-85 cm
36	North 345-347/West 62-65; 60-70 cm
37	North 343-345/West 65-68; 70-80 cm
38	North 343-345/West 65-68; 70-80 cm
39	North 345-347/West 59-62; 70-80 cm
40	North 345-347/West 65-68; 70-80 cm
41	North 345-347/West 65-68; 80-90 cm
42	North 345-347/West 65-68; 80-90 cm
43	North 345-347/West 62-65; 85-90 cm
44	North 341-343/West 62-65; 80-90 cm
45	North 345-347/West 62-65; 70-80 cm
46	North 343-345/West 62-65; 70-80 cm
47	North 343-345/West 65-68; 70-80 cm
48	North 343-345/West 62-65; 85-90 cm
49	North 343-345/West 62-65; 70-80 cm

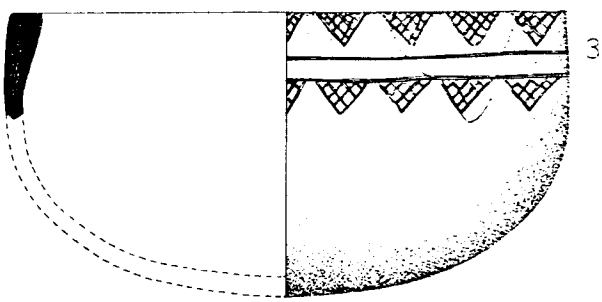
Figure	Provenience
50	North 345-347/West 65-68; 70-80 cm
51	North 345-347/West 62-65; 85-90 cm
52	North 345-347/West 62-65; 80-85 cm
53	North 341-343/West 62-65; 70-80 cm
54	North 343-345/West 65-68; 70-80 cm
55	North 345-347/West 62-65; 70-80 cm
56	North 345-347/West 62-65; 85-90 cm
57	North 343-345/West 62-65; 70-80 cm
58	North 343-345/West 65-68; 70-80 cm
59	North 345-347/West 62-65; 70-80 cm
60	North 345-347/West 65-68; 80-90 cm
61	North 345-347/West 62-65; 80-85 cm
62	North 341-343/West 59-60; 80-90 cm
63	North 345-347/West 62-65; 85-90 cm
64	North 345-347/West 59-62; 80-90 cm
65	North 343-345/West 62-65; 85-90 cm
66	North 343-345/West 65-68; 80-90 cm
67	North 343-345/West 65-68; 90-100 cm
68	North 343-345/West 65-68; 90-100 cm
69	North 345-347/West 65-68; 80-90 cm
70	North 345-347/West 62-65; 80-85 cm
71	North 343-345/West 62-65; 85-90 cm
72	North 345-347/West 65-68; 80-90 cm
73	North 343-345/West 65-68; 80-90 cm

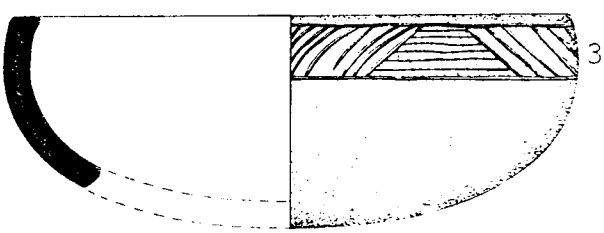


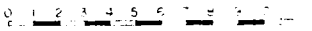
Figures 27-30



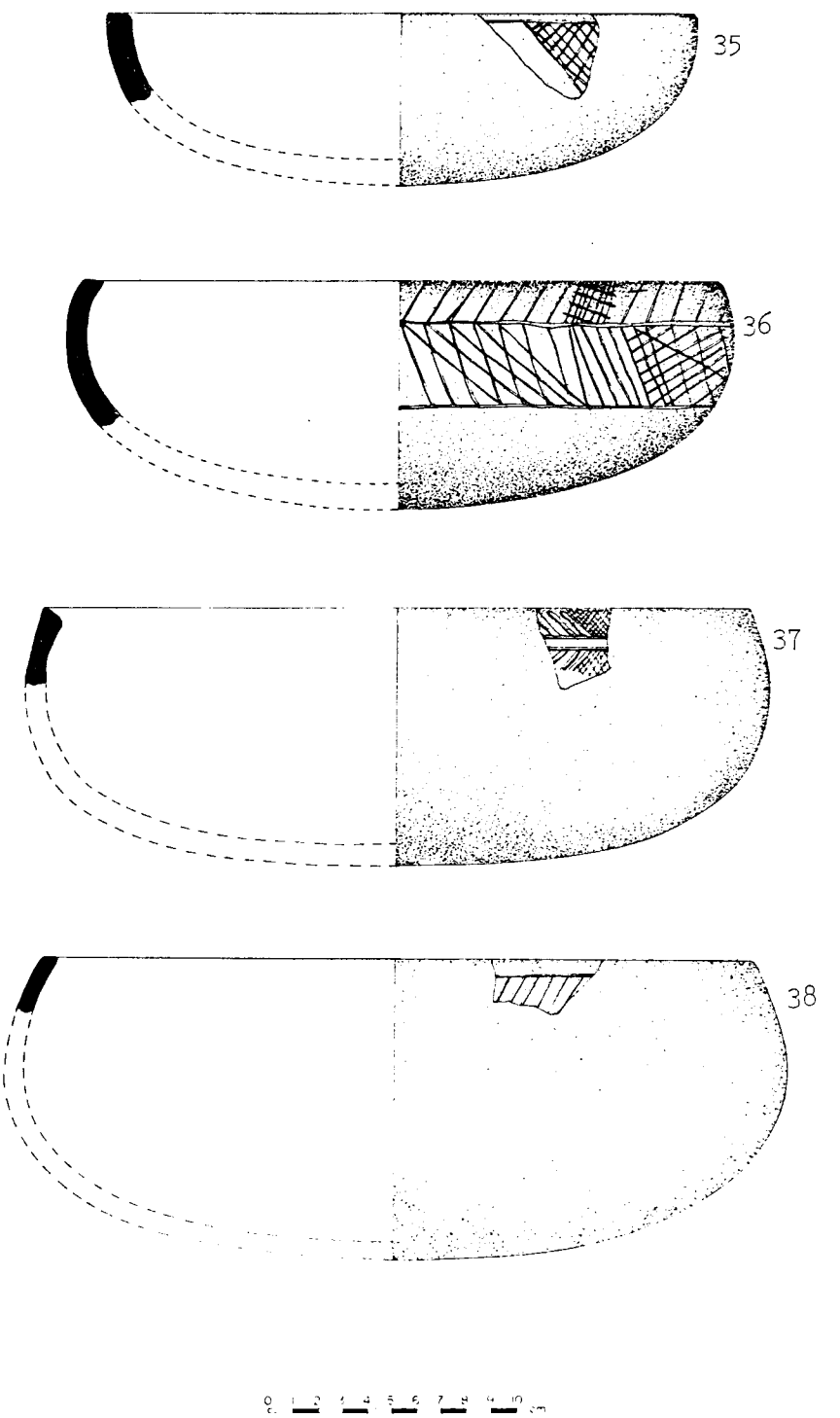




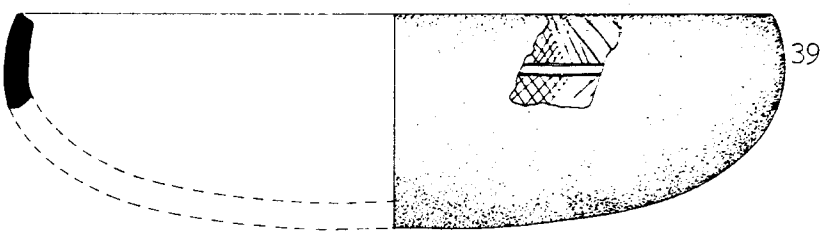


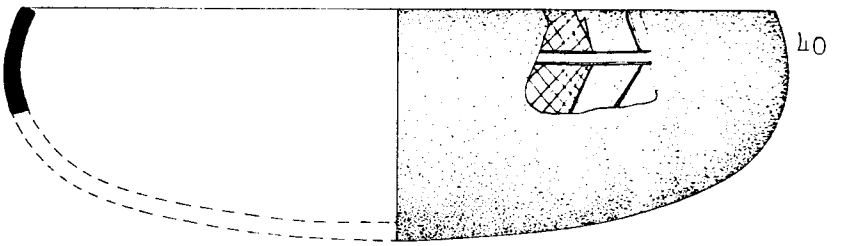


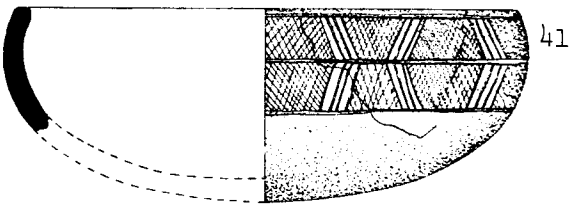
Figures 31-34

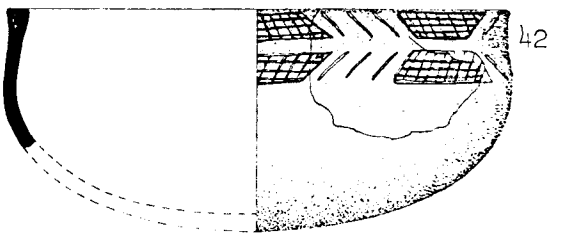


Figures 35-38

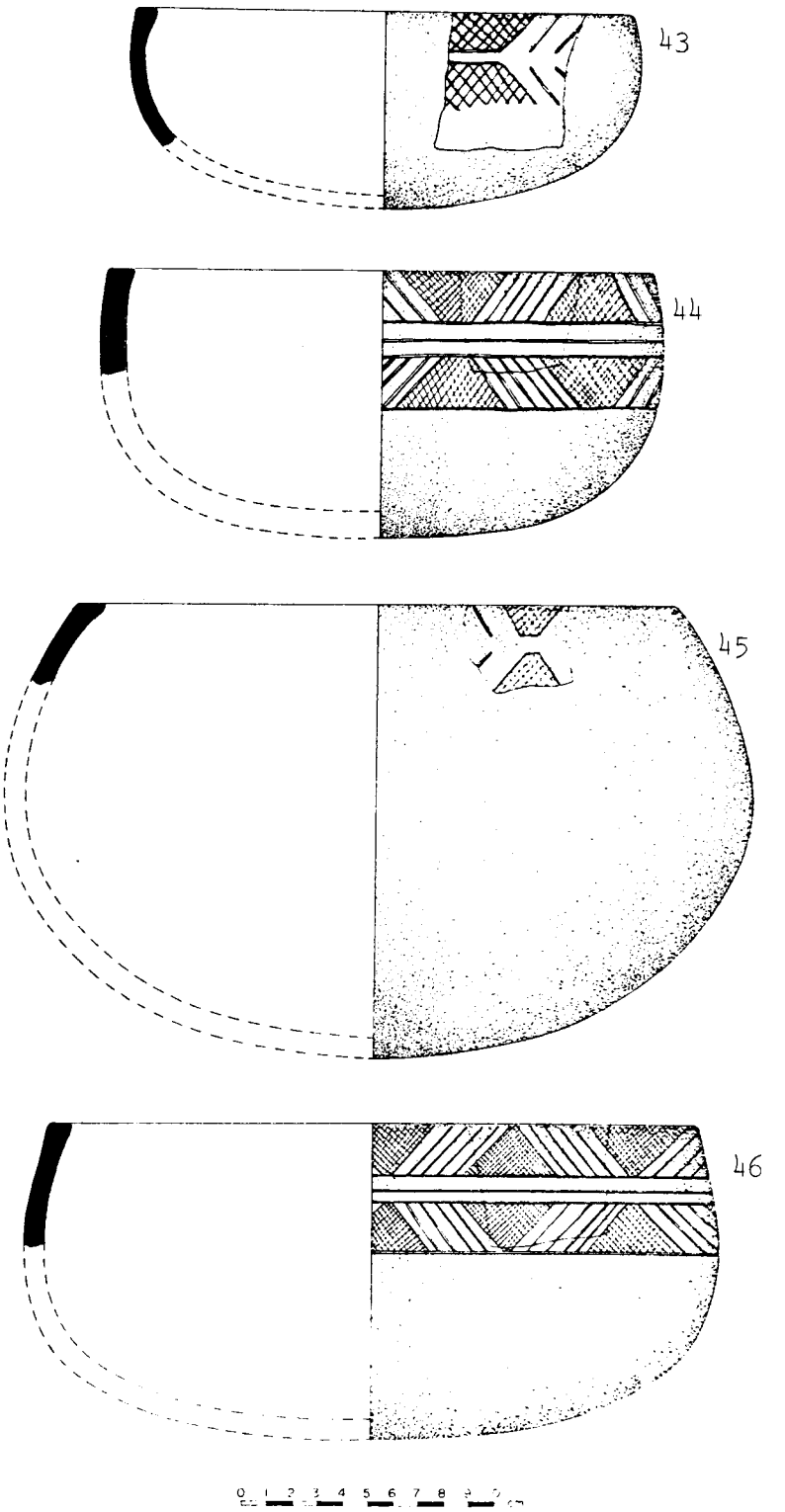




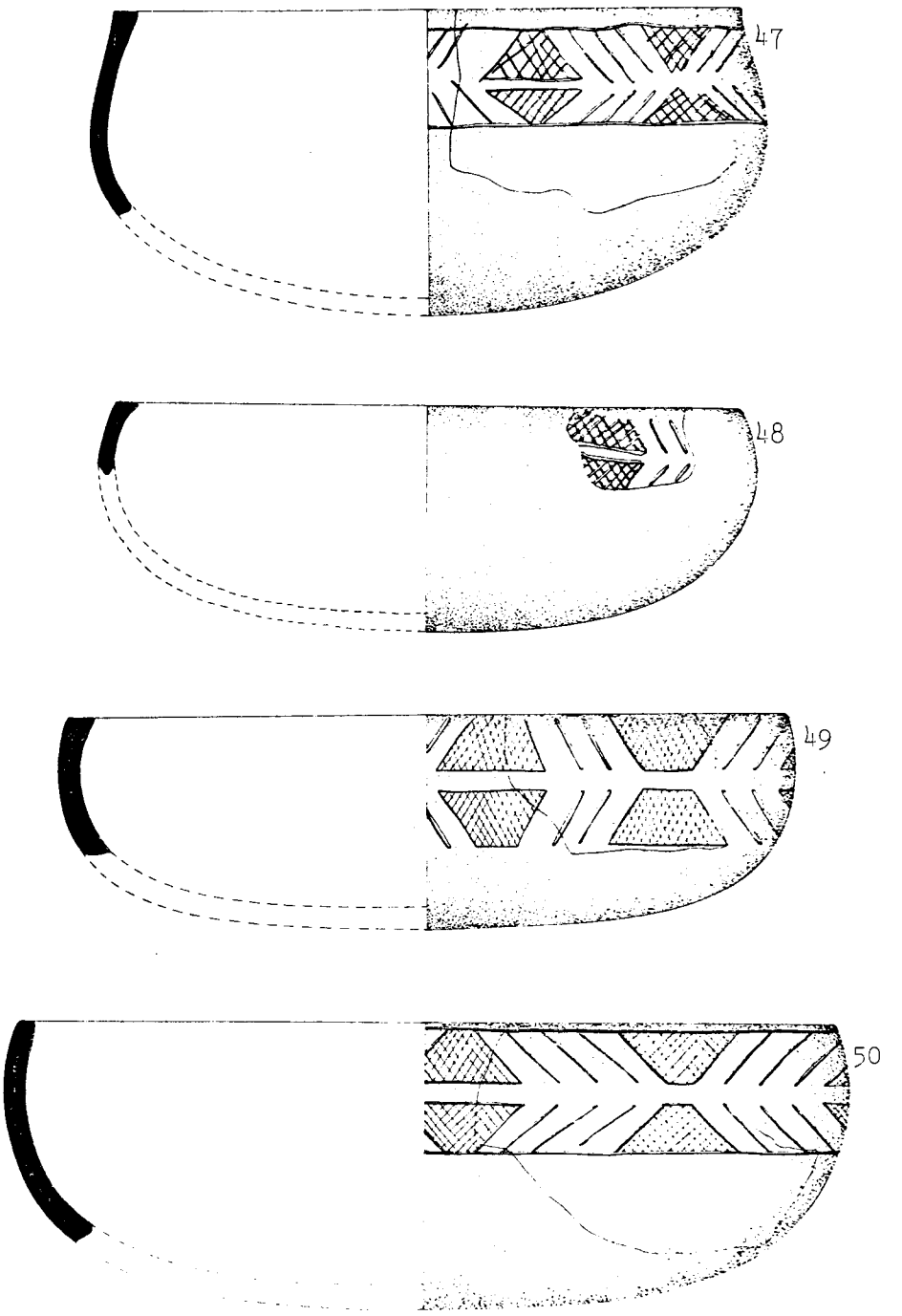




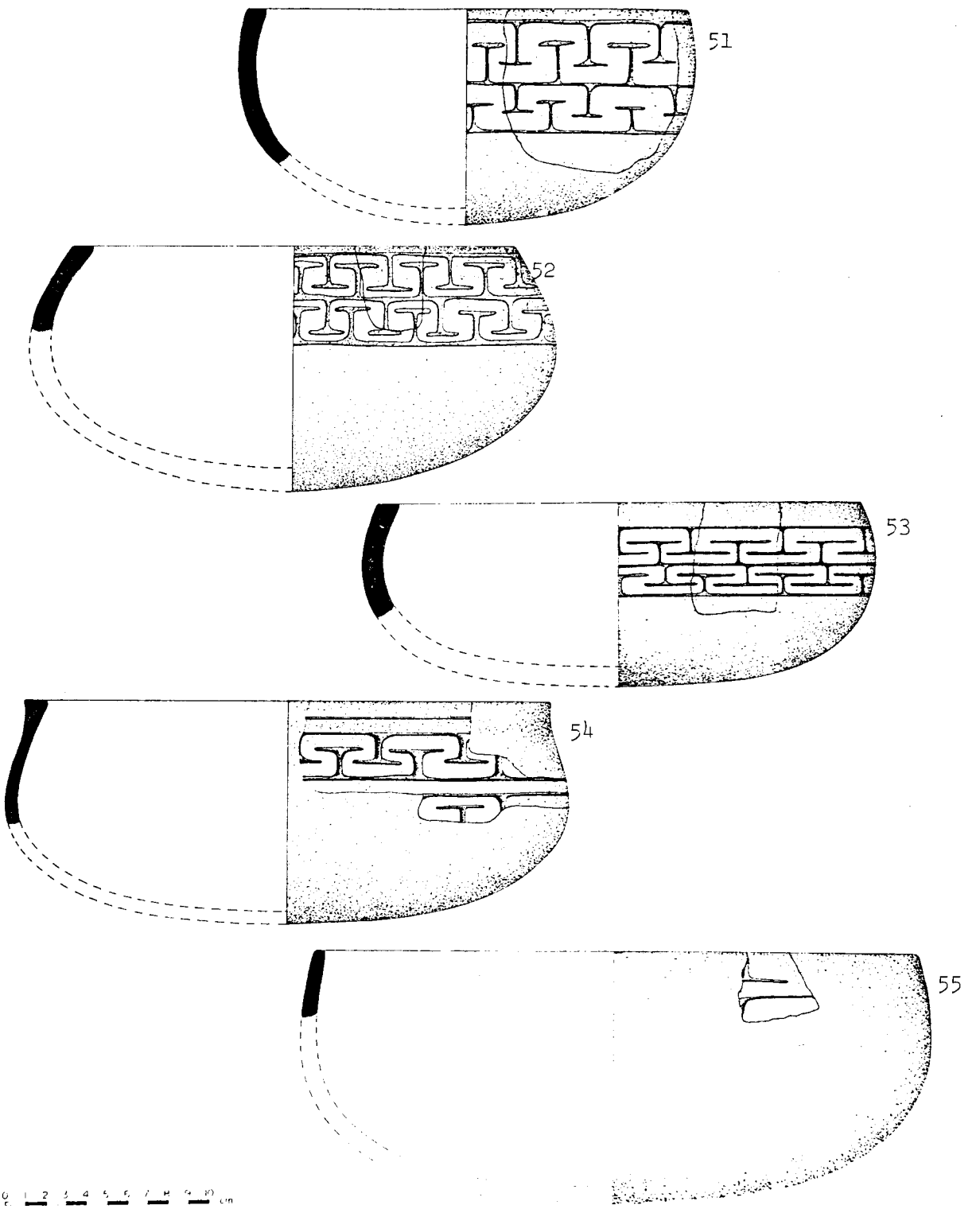
Figures 39-42



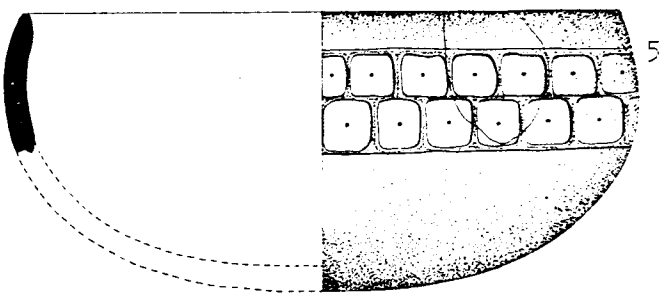
Figures 43-46

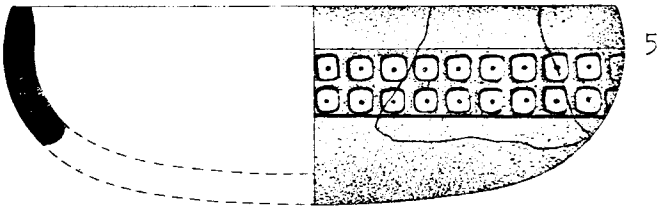


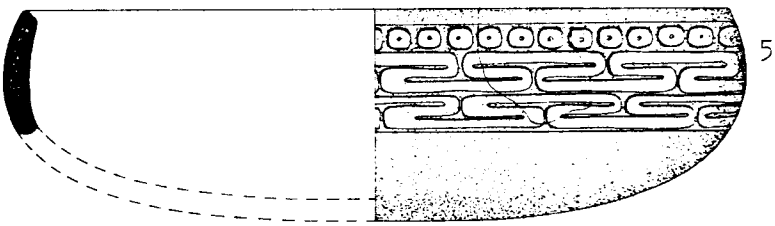
Figures 47-50

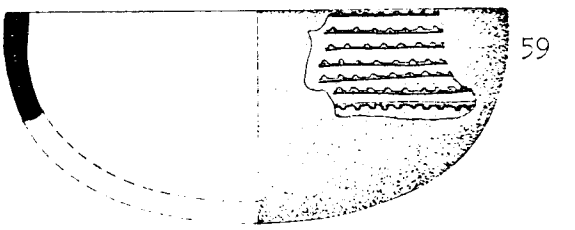


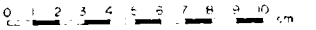
Figures 51-55



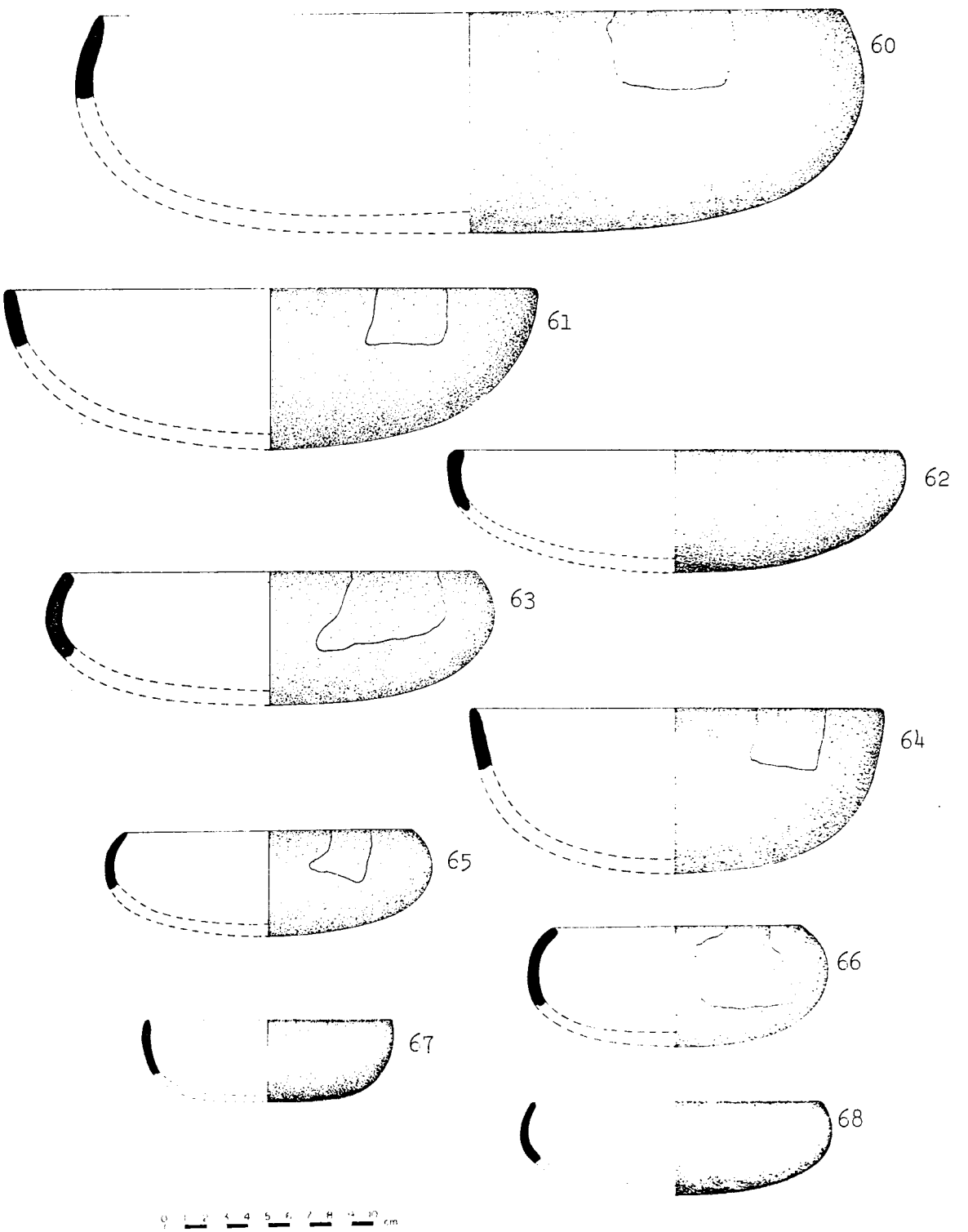




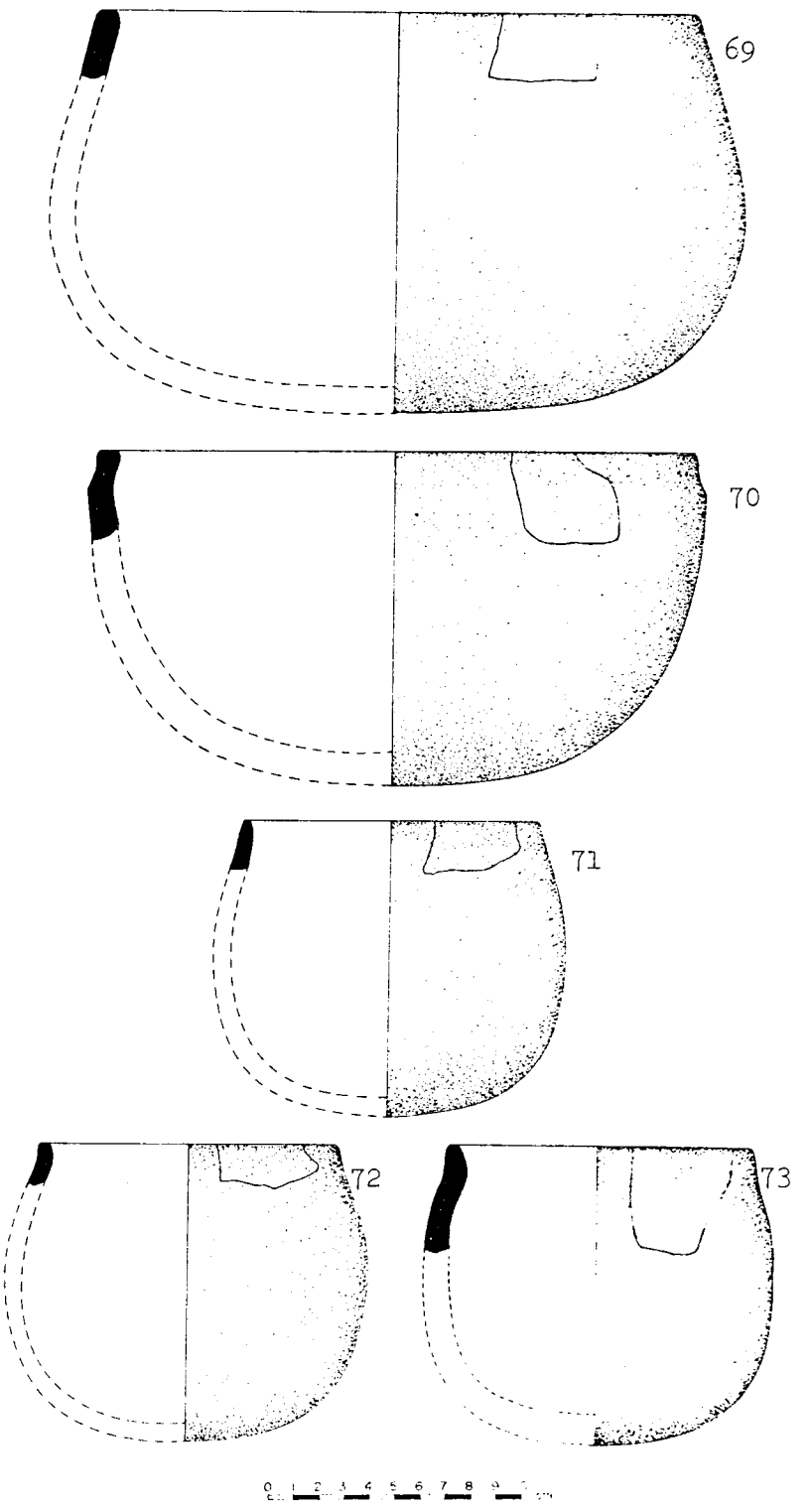




Figures 56-59



Figures 60-68



Figures 69-73

Figures 74-84 Additional decorated sherds from the lowest cultural strata at Real Alto (1977)

Figure	Provenience
74a	North 345-347/West 62-65; 85-90 cm
74b	North 345-347/West 62-65; 85-90 cm
74c	North 345-347/West 62-65; 85-90 cm
74d	North 343-345/West 56-59; 80-90 cm
74e	North 341-343/West 62-65; 80-90 cm
74f	North 343-345/West 65-68; 90-100 cm
75a	North 345-347/West 62-65; 85-90 cm
75b	North 345-347/West 65-68; 80-90 cm
75c	North 345-347/West 62-65; 85-90 cm
75d	North 345-347/West 65-68; 90-100 cm
75e	North 345-347/West 62-65; 85-90 cm
75f	North 343-345/West 62-65; 80-85 cm
76a	North 345-347/West 62-65; 85-90 cm
76b	North 343-345/West 65-68; 80-90 cm
76c	North 345-347/West 65-68; 80-90 cm
76d	North 345-347/West 59-62; 80-90 cm
76e	North 345-347/West 65-68; 80-90 cm
77a	North 345-347/West 62-65; 80-85 cm
77b	North 343-345/West 62-65; 85-90 cm
77c	North 345-347/West 65-68; 80-90 cm
77d	North 345-347/West 65-68; 80-90 cm

Figure	Provenience
78a	North 343-345/West 65-68; 80-90 cm
78b	North 345-347/West 62-65; 85-90 cm
78c	North 345-347/West 65-68; 80-90 cm
78d	North 345-347/West 65-68; 80-90 cm
79a	North 345-347/West 65-68; 80-90 cm
79b	North 343-345/West 59-62; 85-90 cm
79c	North 345-347/West 62-65; 85-90 cm
79d	North 345-347/West 62-65; 85-90 cm
79e	North 345-347/West 65-68; 90-100 cm
79f	North 341-343/West 59-62; 80-90 cm
79g	North 345-347/West 62-65; 85-90 cm
80a	North 343-345/West 65-68; 80-90 cm
80b	North 343-345/West 65-68; 80-90 cm
80c	North 345-347/West 65-68; 90-100 cm
80d	North 345-347/West 62-65; 80-85 cm
80e	North 343-345/West 62-65; 85-90 cm
80f	North 341-343/West 59-62; 80-90 cm
80g	North 343-345/West 62-65; 85-90 cm
81a	North 345-347/West 62-65; 85-90 cm
81b	North 345-347/West 65-68; 80-90 cm
81c	North 345-347/West 62-65; 85-90 cm
81d	North 345-347/West 65-68; 80-90 cm
81e	North 345-347/West 62-65; 70-80 cm
81f	North 343-345/West 65-68; 80-90 cm

Figure	Provenience
81g	North 345-347/West 62-65; 85-90 cm
81h	North 345-347/West 65-68; 90-100 cm
81i	North 345-347/West 62-65; 85-90 cm
81j	North 343-345/West 62-65; 85-90 cm
82a	North 343-345/West 65-68; 70-80 cm
82b	North 345-347/West 65-68; 90-100 cm
82c	North 343-345/West 65-68; 80-90 cm
82d	North 345-347/West 62-65; 85-90 cm
82e	North 343-345/West 65-68; 80-90 cm
82f	North 341-343/West 62-65; 80-90 cm
82g	North 345-347/West 65-68; 80-90 cm
82h	North 345-347/West 65-68; 80-90 cm
83a	North 345-347/West 65-68; 80-90 cm
83b	North 343-345/West 65-68; 80-90 cm
83c	North 345-347/West 65-68; 90-100 cm
83d	North 345-347/West 65-68; 80-90 cm
83e	North 345-347/West 62-65; 80-85 cm
84a	North 345-347/West 65-68; 80-90 cm
84b	North 345-347/West 62-65; 85-90 cm
84c	North 345-347/West 65-68; 90-100 cm
84d	North 343-345/West 59-62; 85-90 cm
84e	North 345-347/West 62-65; 85-90 cm

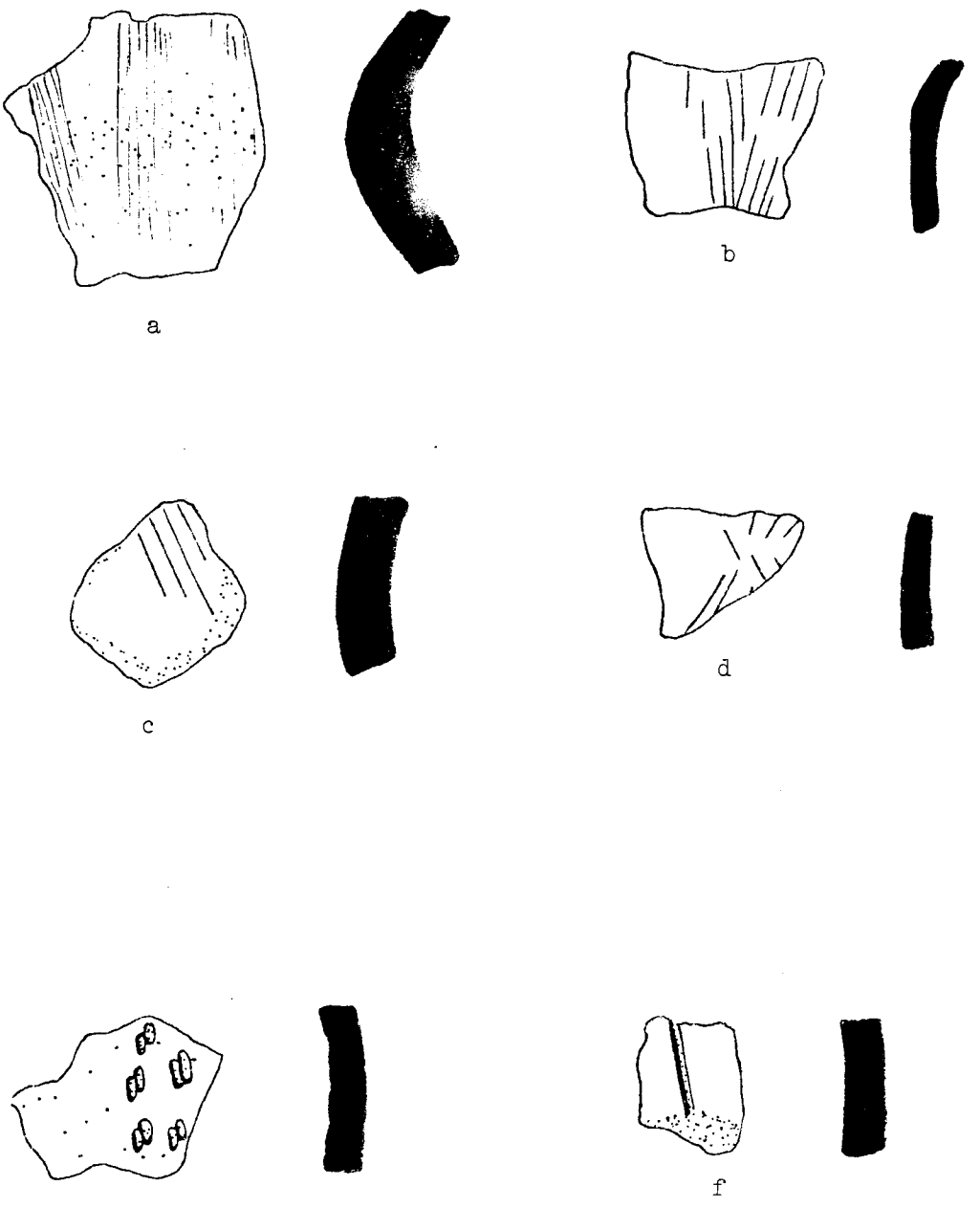


Figure 74 (a-f)
(actual size)

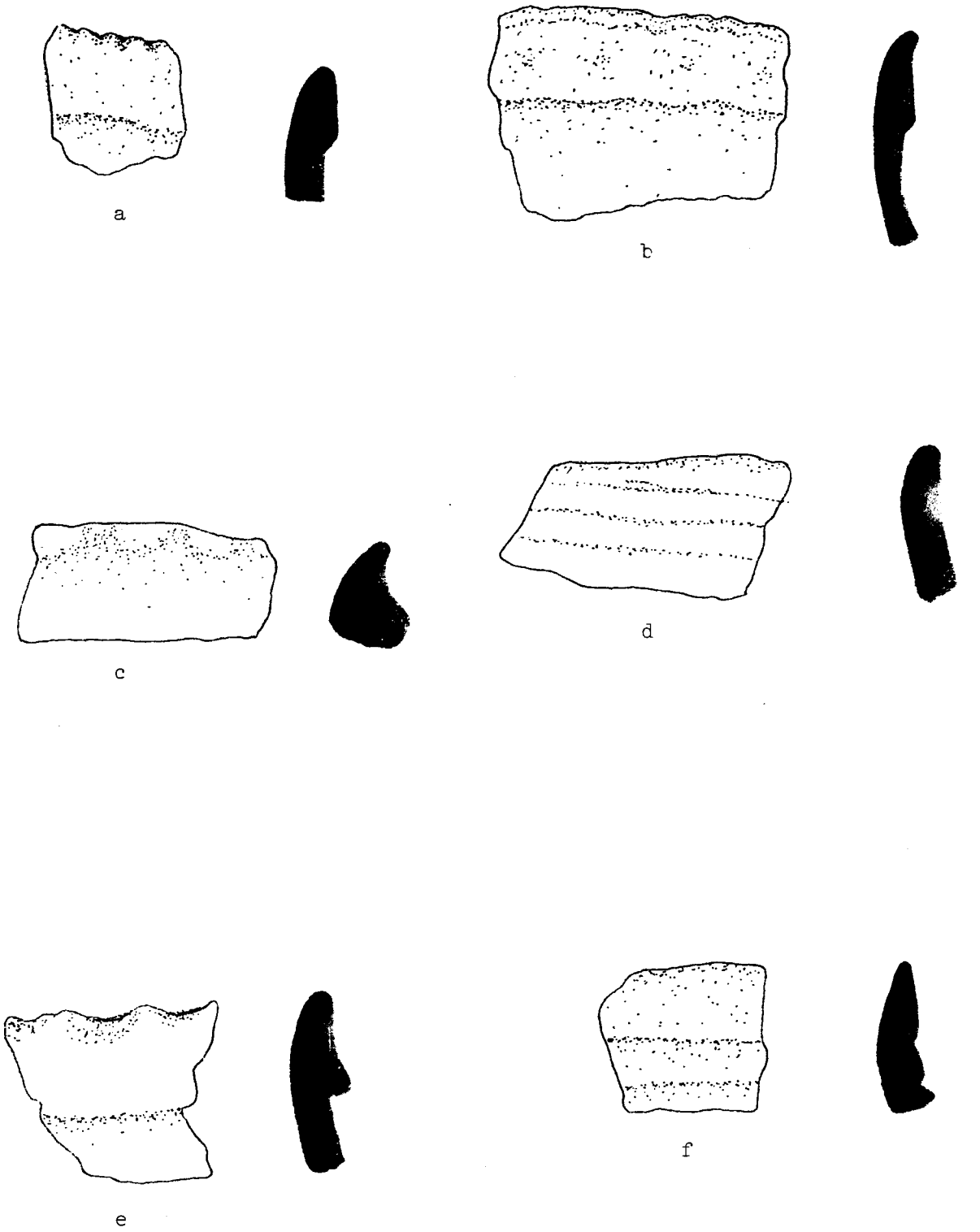


Figure 75 (a-f)
(actual size)

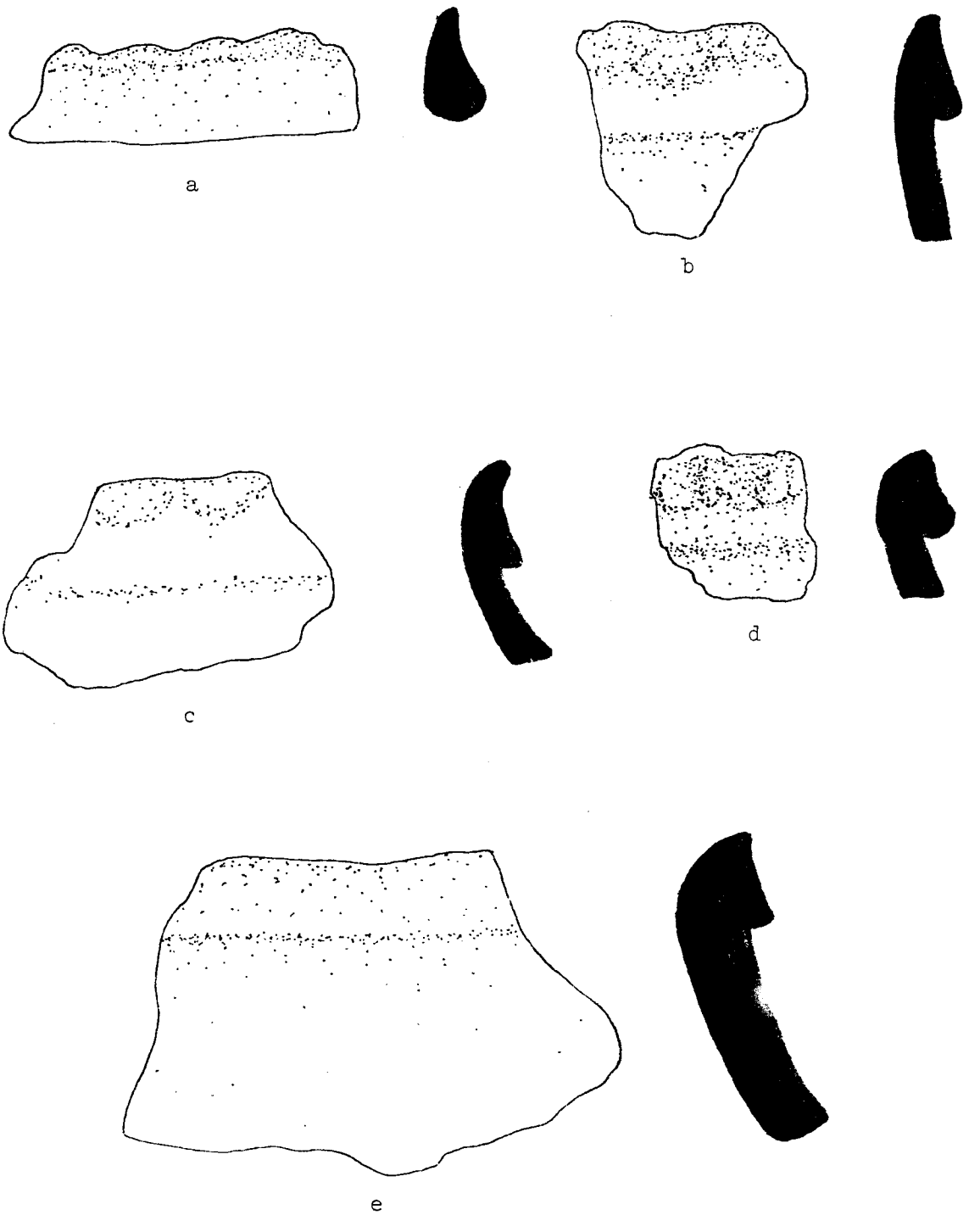


Figure 76 (a-e)
(actual size)

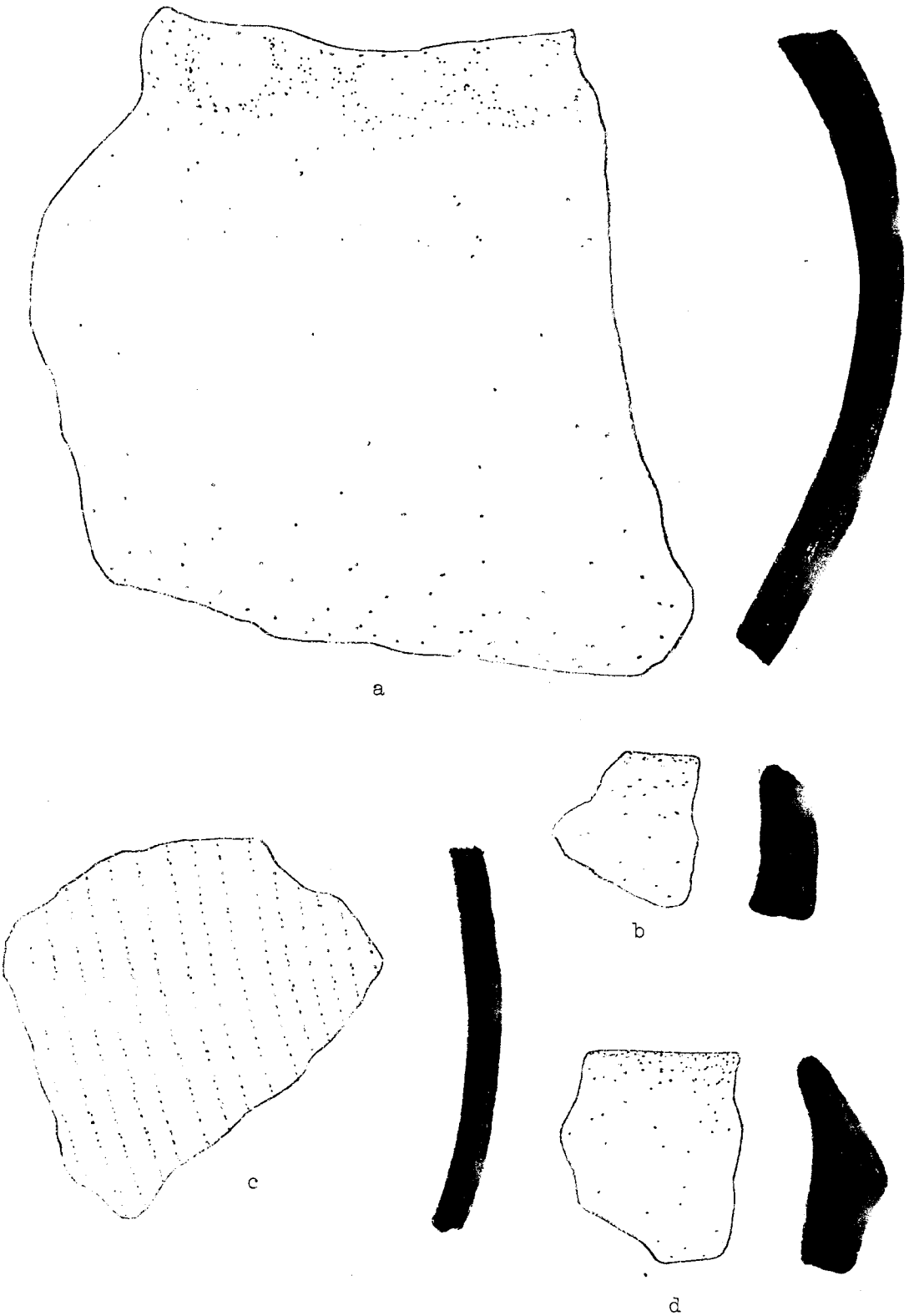


Figure 77 (a-d)
(actual size)

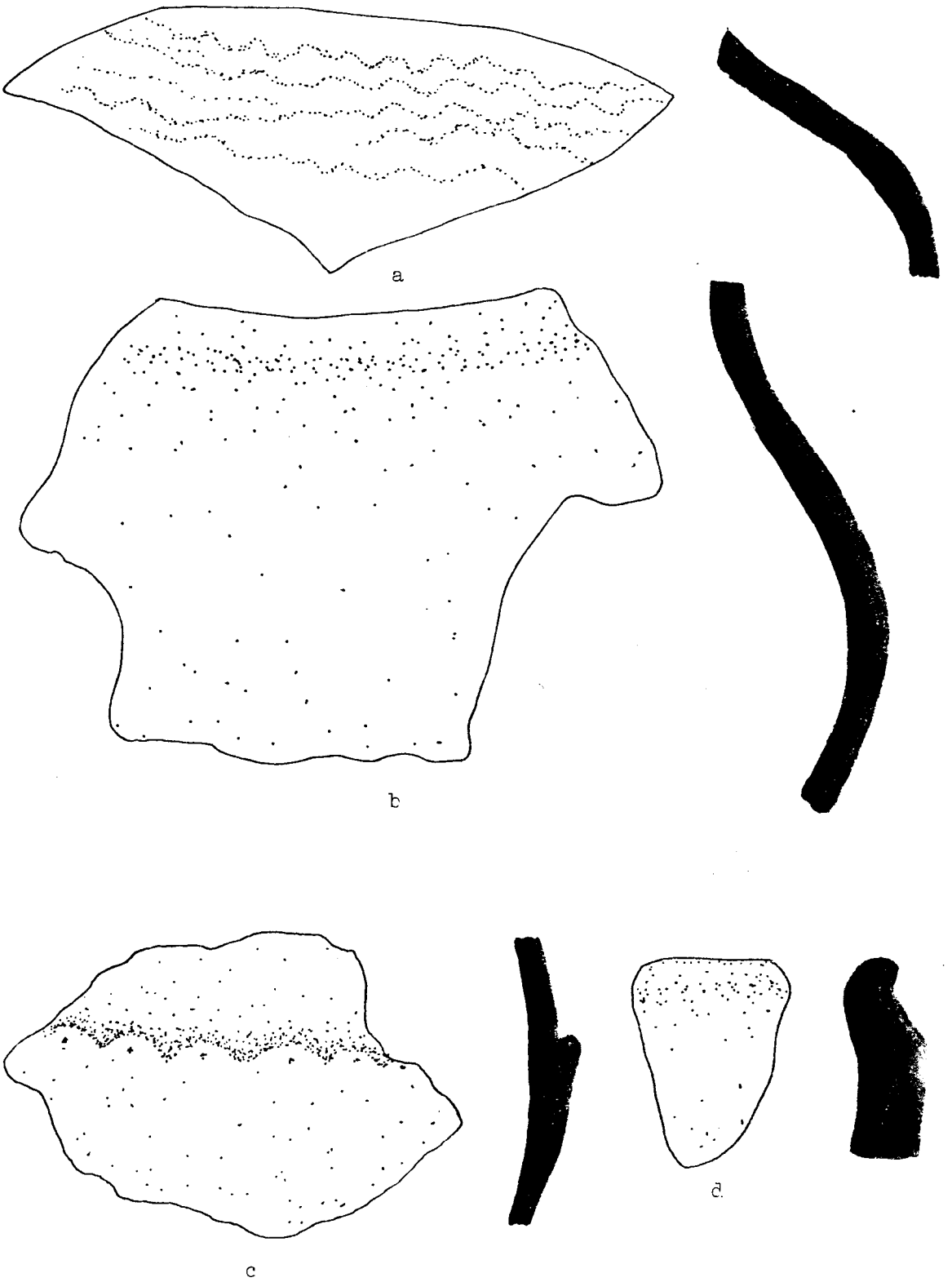


Figure 78 (a-d)
(actual size)

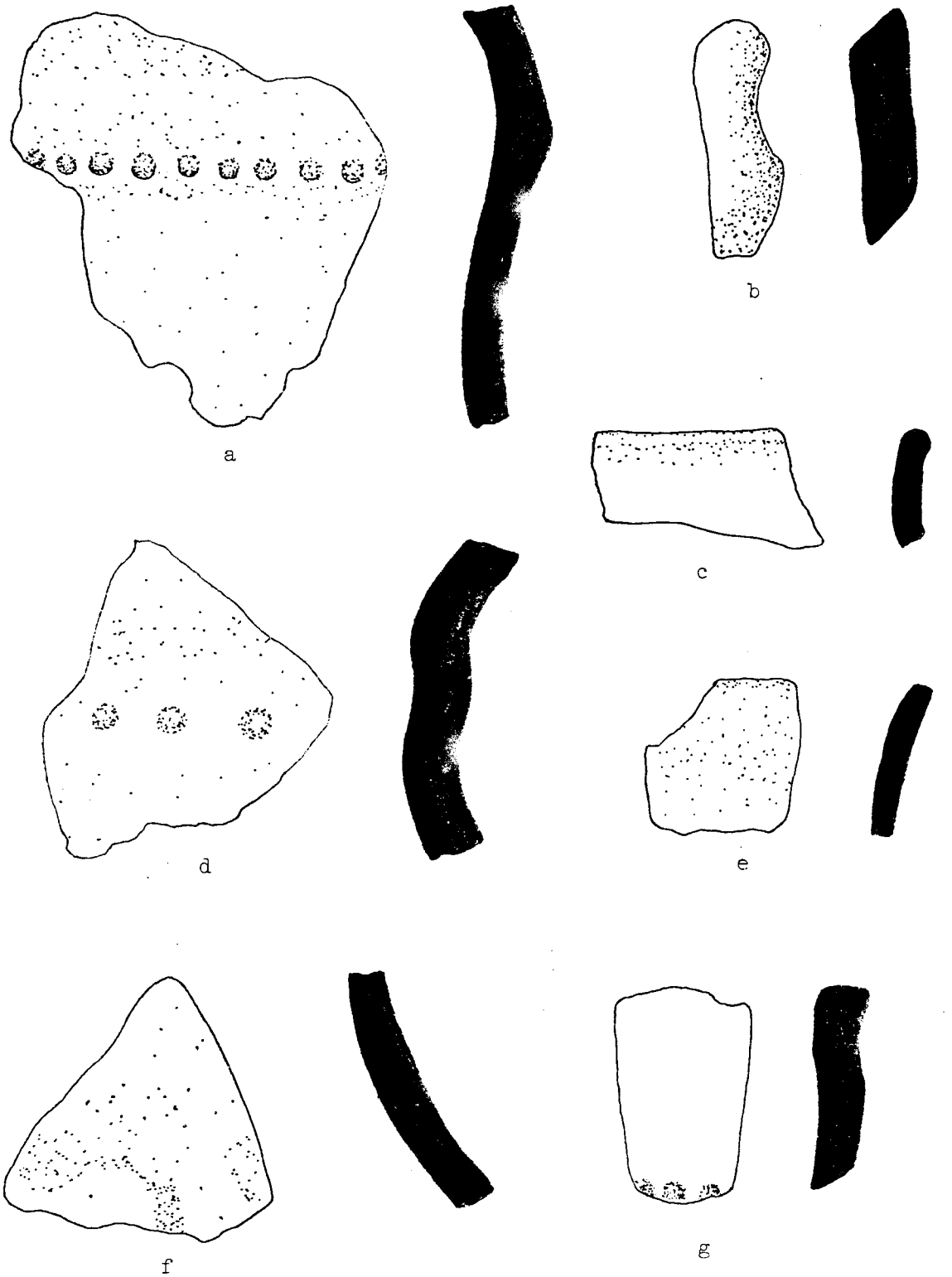


Figure 79 (a-g)
(actual size)

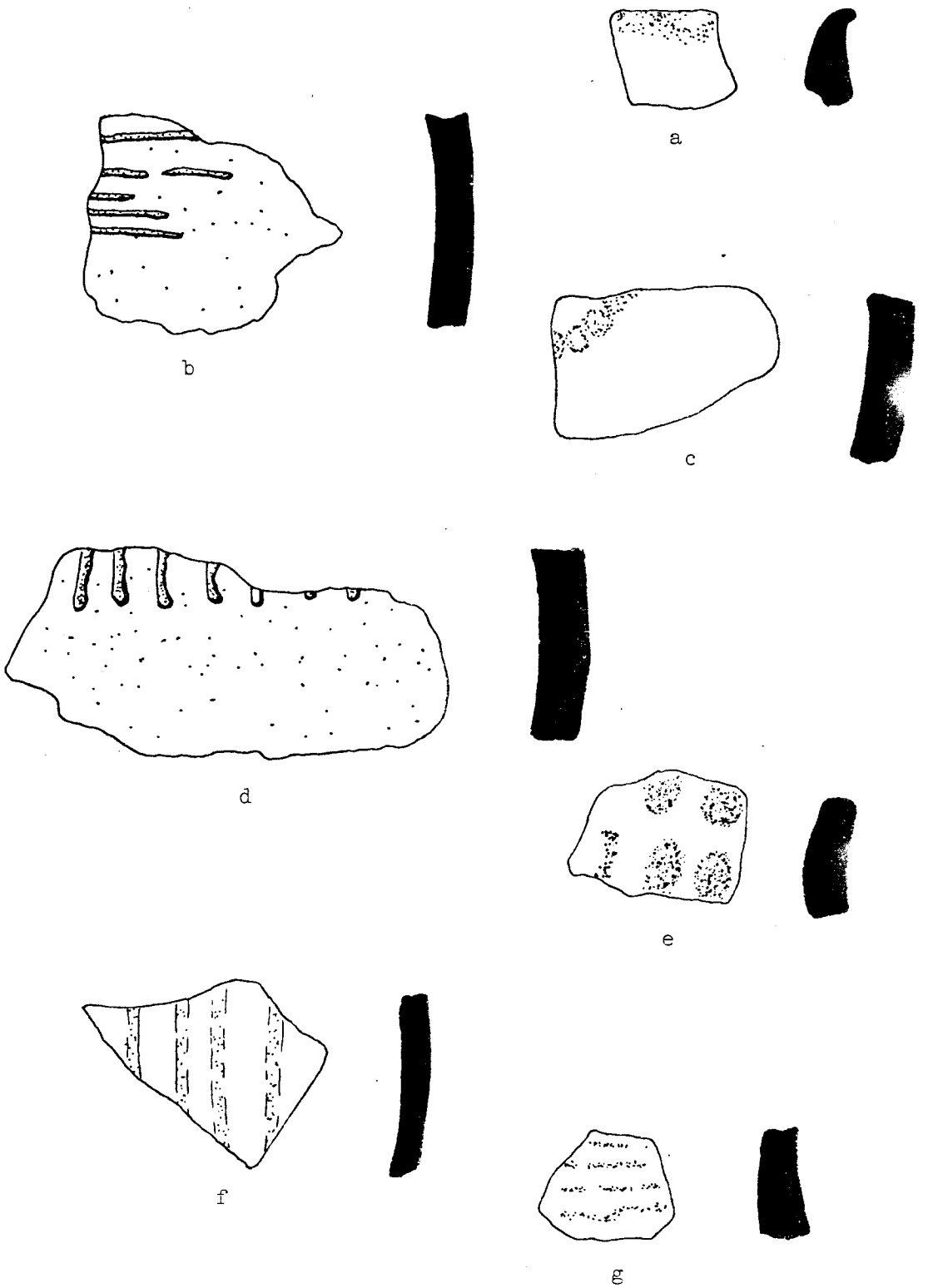


Figure 80 (a-g)
(actual size)

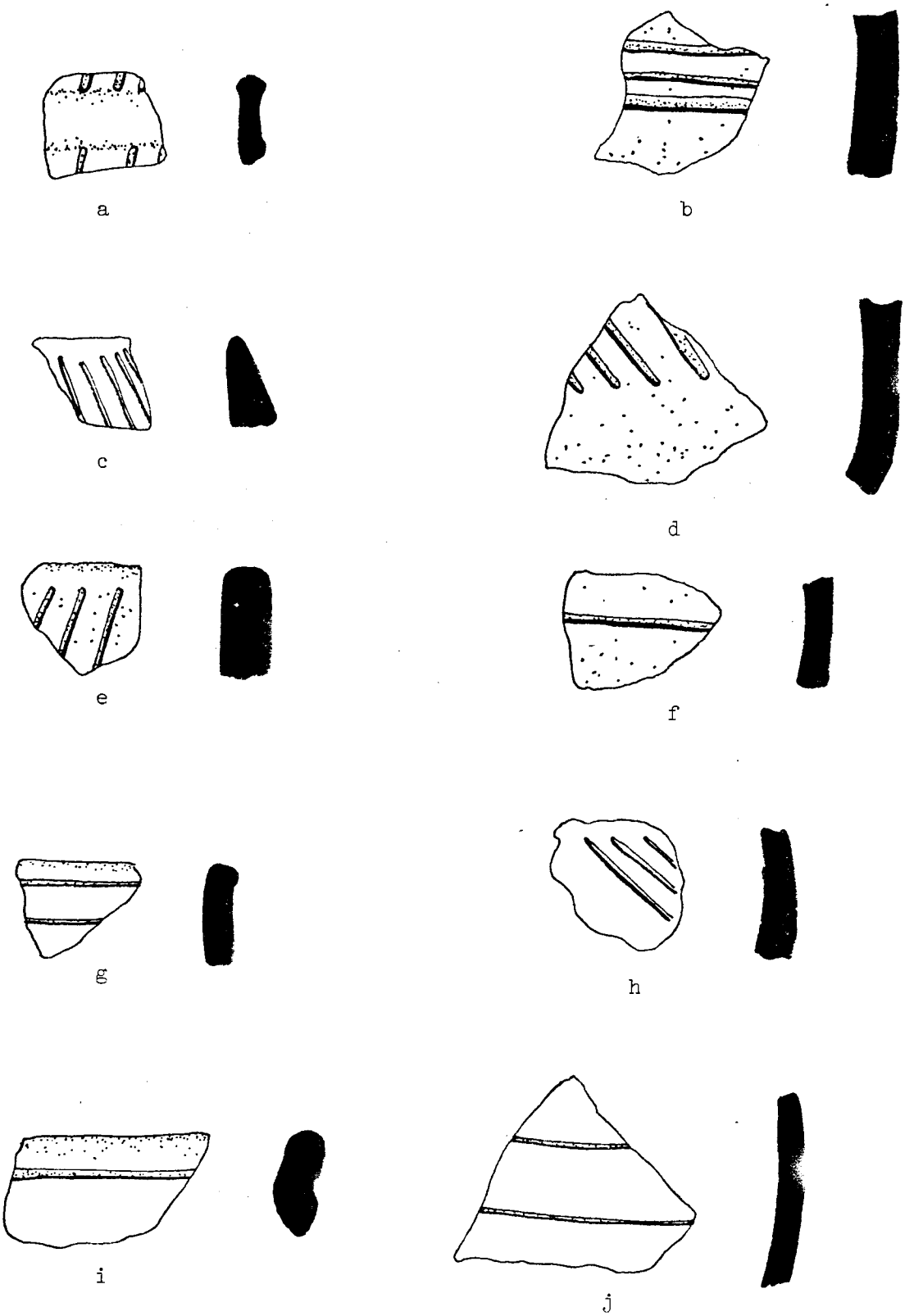


Figure 81 (a-j)
(actual size)

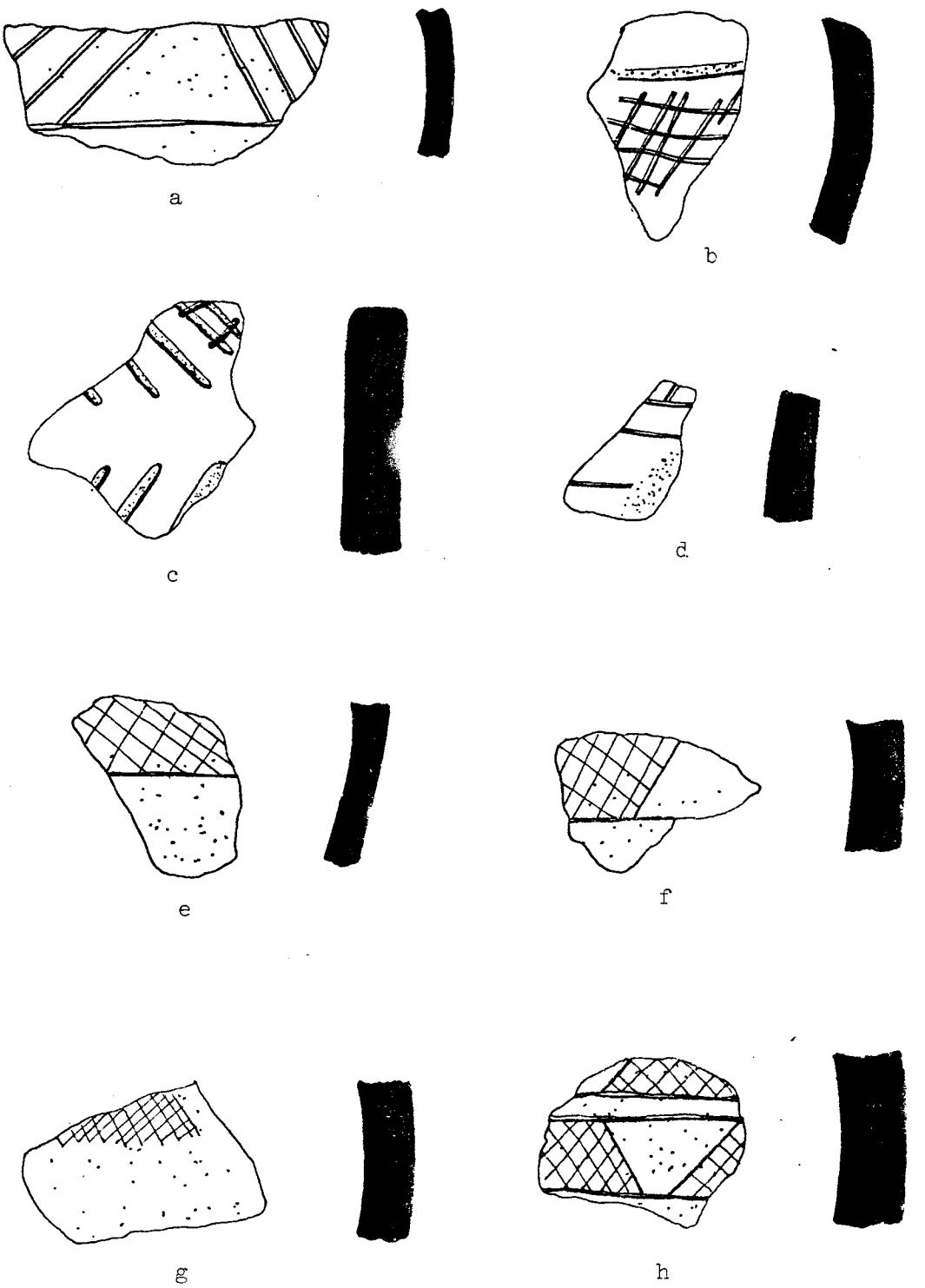
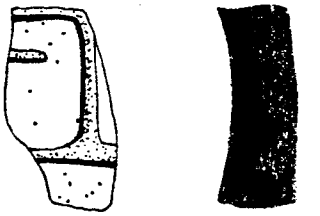


Figure 82 (a-h)
(actual size)

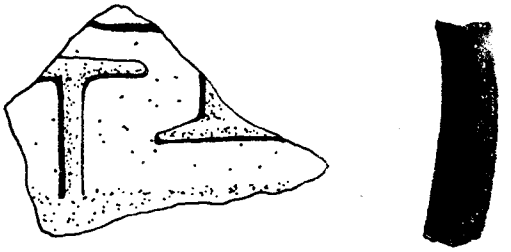
a

b

c

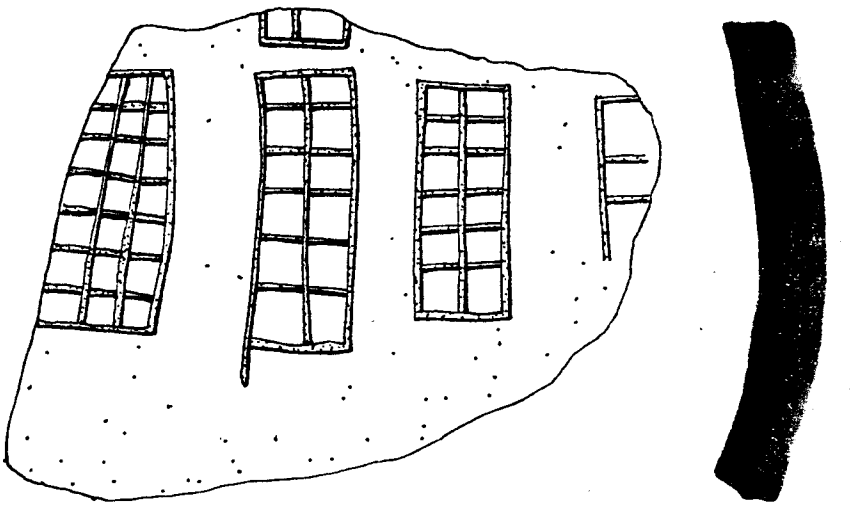


d

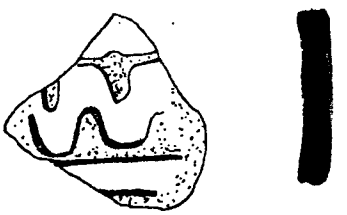


e

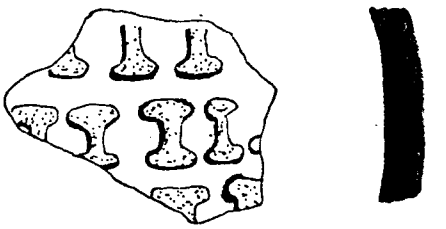
Figure 83 (a-e)
(actual size)



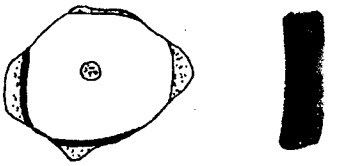
a



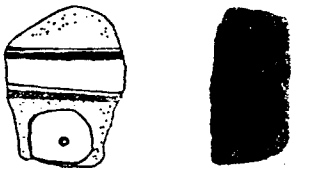
b



c



d



e

Figure 84 (a-d)
(actual size)

Figure 85 Stone figurines from Real Alto

Figure	Provenience
85a	North 345-347/West 65-68; 90-100 cm
85b	North 345-347/West 65-68; 90-100 cm
85c	North 345-347/West 65-68; 90-100 cm
85d	North 343-345/West 62-65; 80-85 cm
85e	North 341-343/West 59-62; 70-80 cm
85f	North 341-343/West 62-65; 70-80 cm
85g	North 345-347/West 65-68; 70-80 cm
85h	North 343-345/West 59-62; 60-70 cm
85i	North 343-345/West 59-62; 50-60 cm
85j	North 343-345/West 59-62; 40-50 cm
85k	North 343-345/West 56-59; 50-60 cm
85l	North 341-343/West 62-65; 40-50 cm
85m	North 343-345/West 62-65; 40-50 cm
85n (*shëbenantai*)	North 343-345/West 62-65; 85-90 cm
85c (corn effigy)	North 343-345/West 62-65; 85-90 cm

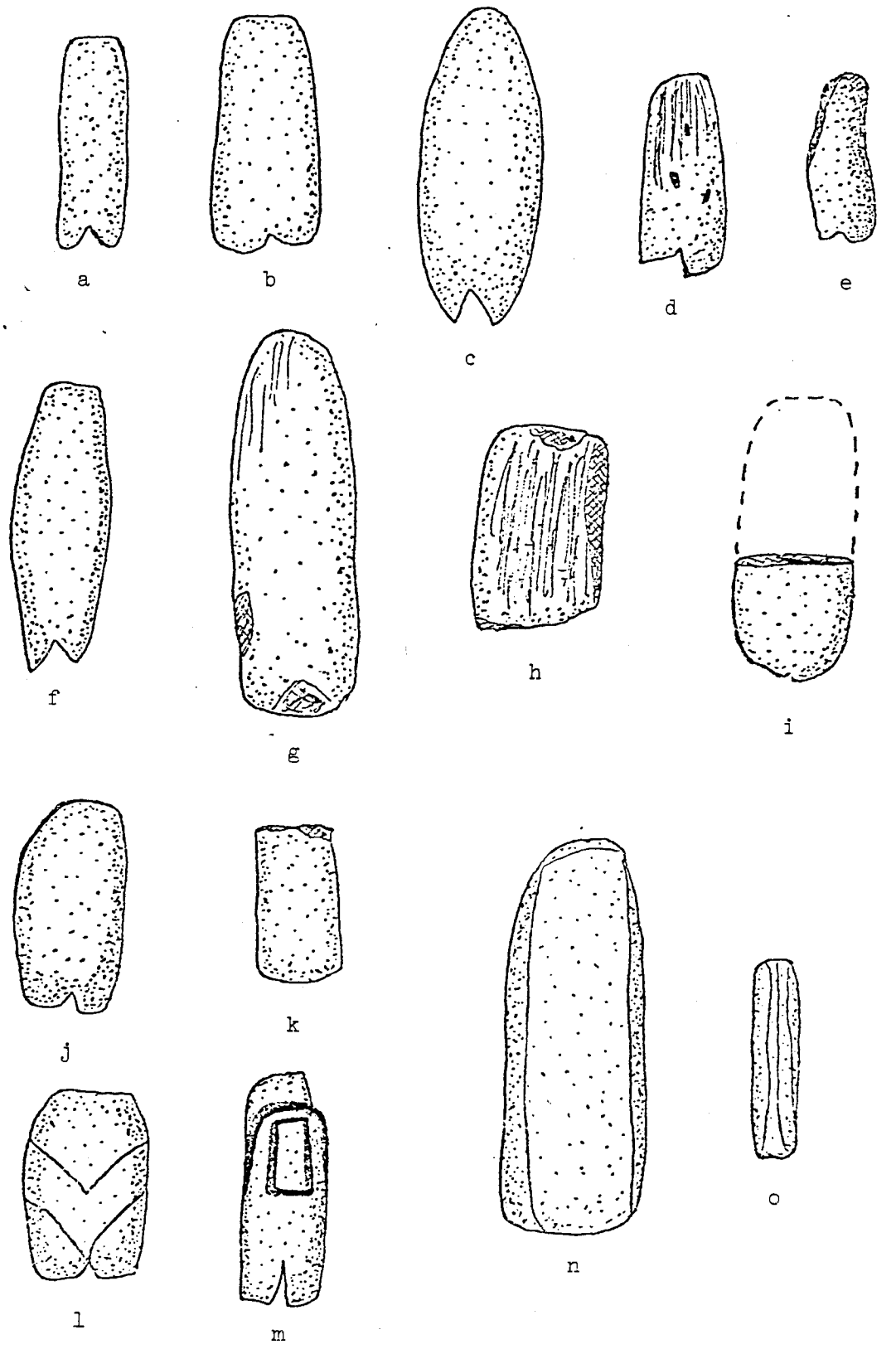


Figure 85 (a-o)
(actual size)