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Lingen, Joan Kathryn

STYLISTIC AND ICONOGRAPHIC STUDY OF LOWER CENTRAL AMERICAN
STONE SCULPTURE

The University of New Mexico

PH.D. 1986

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STYLISTIC AND ICONOGRAPHIC STUDY
OF
LOWER CENTRAL AMERICAN STONE SCULPTURE

BY

JOAN KATHRYN LINGEN, BVM

B.A., Clarke College, 1961

M.A., University of Colorado, 1970

M.A., Arizona State University, 1977

DISSERTATION

Submitted in Partial Fulfillment of the
Requirements for the Degree of

Doctor of Philosophy in Art History

The University of New Mexico
Albuquerque, New Mexico

July, 1986

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June 23, 1986

Date

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ABSTRACT OF DISSERTATION

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STYLISTIC AND ICONOGRAPHIC STUDY
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B.A., Art, Clarke College, 1961
M.A., Art History, University of Colorado, 1970
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Ph.D., Art History, University of New Mexico, 1986

In this study of Pre-Columbian sculptures from Panama and Costa Rica, style and iconography were investigated with the purposes of determining relationships among the different archaeological regions of this area of Lower Central America, establishing geographic and time distributions of traits, and creating a relative chronology for both style and motif. Over 1400 volcanic stone sculptures were organized into the two primary categories of Ceremonial Objects and Figural Images. These were further divided on the basis of formal similarities. The major emphasis of this study has been an analysis and seriation of effigy grinding stones and standing human images.

Two major analytical methodologies were employed in the seriation. The first involved a visual analysis and grouping based primarily on formal qualities or visible traits. Over 60 traits were identified for each category. The second method of analysis was the coding of each sculpture for the presence or absence of these traits.

Various combinations of these traits were then submitted to Guttman Scale Analysis with the aid of an IBM computer.

The results of the Guttman analysis confirm that the groupings of sculptures developed by visual analysis is accurate. They also confirm that there is a developmental sequence from one group to another. Archaeological evidence suggests that the developmental sequence for both the effigy grinding stones and the standing human figures is from naturalistic to stylized, from crude carvings of varied imagery and size to technically advanced sculptures of more uniform size and motif.

These sculptural groups also argue for the existence of a single archaeological zone in the Atlantic Watershed/Central Highlands Region of Costa Rica which reached its greatest productive level during the late Stone Cist Period. The appearance of similar sculptures in other archaeological regions suggests relationships among these various areas of both Costa Rica and Panama. It appears evident that concepts, if not actual objects, moved in both directions influencing the sculptural output between AD 700 and 1500.

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CHAPTER I

INTRODUCTION

Numerous stone sculptures, many of volcanic material, have been found within the present borders of the Lower Central American countries of Costa Rica and Panama. In general, these sculptures can be considered to form two basic categories, figural images and ceremonial objects which may also have been functional, as in the case of the so-called "metate."

Research Problem

The purpose of this study is to investigate the style and iconography of these Pre-Columbian sculptures. Specifically, answers to the following questions are sought:

1. Are there relationships among the sculptured objects from the different archaeological regions of Costa Rica and Panama?
2. What specific similarities are there in the style and iconography of these sculptures?
3. What are the geographic distributions of individual styles and motifs?
4. Are these styles and motifs distributed in time as well as space?
5. Can these styles and motifs be placed in a relative chronology?

Lower Central America: Geographical Description

As a geographic region, the area known collectively as Lower Central America is located within the region defined by Willey (1971:254) as the Intermediate Area. According to Snarskis (1978:9) "the term Intermediate Area has both geographic sense and cultural connotations" as the area is located between the two most advanced Pre-Columbian cultures of the Americas, the Mesoamerican and Andean cultures.

Willey's geographic division included the Pacific coastal portions of Ecuador and Colombia, the Caribbean coastline of Venezuela and Northern Colombia, Panama, all of Costa Rica except the Nicoya Peninsula, most of Nicaragua and the northeastern half of Honduras. He is of the opinion that the northern and eastern boundary of this area is coterminous with the southern extent of Mesoamerica (1971:254). His definition contrasts slightly with that of The 1980 Advanced Seminar on Central American Archaeology. School of American Research, Santa Fe. Admitting that there was no clear definition of the term Lower Central America, the seminar participants agreed to define the area as extending from Honduras and central El Salvador to eastern Panama (Lange and Stone 1984:3). This study adheres to the Santa Fe Seminar definition of Lower Central America in which all of Costa Rica is included.

The area of Lower Central America is not homogeneous culturally nor environmentally. Despite its location in the Tropic Zone and its almost continuous volcanic mountain range from northern Costa Rica through Central Panama, it is characterized by "wide variety of

ecological niches" (Lange 1984:59). These natural settings are best described as the wet Atlantic and the dry Pacific coastal lowlands separated by the central highlands and their surrounding valleys and plateaus.

That such variability provided numerous opportunities for the potential development of diverse cultural groups is proven by the archaeological record. That same archaeological record also attests to the existence of cultural contact among the lowland coastal areas and the interior highlands. As Lange (1984:51) states certain areas of Costa Rica "offered routes of travel connecting the Atlantic and Pacific coasts. The access to both coasts has been demonstrated in the variety of cultural materials recovered in the central highlands of Costa Rica." He also suggests there was continual communication among these areas from the earliest times (Lange 1984:59). Such an assumption is based in part upon the short distances from coast to coast and the lack of strict barriers.

Archaeological Subdivisions

Within this several hundred mile stretch of land are a number of relatively distinct archaeological areas. The subdivisions of this region, as examined in this study, are derived from the several sources discussed below. In an attempt to analyze the artifactual materials within the context of what appear to be cultural areas, two regions of Costa Rica -- Atlantic Watershed/Central Highlands and Diquís areas -- and two regions of Panama -- the Chiriquí and Central areas -- are considered. These are specifically chosen to

demonstrate regional sculptural sequences and interregional contacts or influences.

Coe (1962b:173) divided Costa Rica into five major archaeological regions: Greater Nicoya, the Central Plateau, the Old Line, Diquís and Chiriquí. Greater Nicoya is the northwestern most region and includes the Isthmus of Rivas area of Nicaragua and the Nicoya Peninsula of Costa Rica. Despite Coe's bipartite division of the major portion of the country, in this study the Central Plateau and the Old Line regions were subsumed under the larger and more inclusive Central Highlands and Atlantic Watershed Area. Although geographically two separate areas, one lowland and one highland, the Central and Atlantic areas were treated as a single entity on the basis of their archaeological similarity (Ferrero 1977:159). This division includes the provinces of Limón, Cartago, Alajuela, Heredia and San José and extends from the Atlantic to Pacific coasts, from Nicaragua to Panama.

The archaeological region of Greater Chiriqui, which includes the Diquís and Chiriquí regions of Coe, crosses the present day political boundaries of Costa Rica and Panama. It includes all of the southeastern portion of Costa Rica around the Diquis River, the Osa Peninsula, and the western Panamanian province of Chiriquí. As described, this tripartite division of Costa Rica is close to that of Stone (1958) and coincides totally with Lothrop (1966:183) who distinguished three major geographical areas, the northwest, the northeast, and the south. Snarskis (1981:15) also identified the regions of Nicoya, Atlantic Watershed/Central Highlands, and Diquis

as the major zones of Costa Rica. These Costa Rican regions are best differentiated as three distinct cultural zones labeled, Guanacaste-Nicoya, the Atlantic Watershed-Central Highlands, and the Diquis areas. Each of these zones can be further subdivided ecologically (Snarskis 1981:16).

Panama has also been described as having several cultural and archaeological areas. In his writings, Lothrop (1937, 1942, 1950) divided the territory of Panama on the basis of differing ceramic styles and called these cultural areas: Darién, Coclé, Azuero, Veraguas and Chiriquí. Bull (1965:31) combined Azuero and Coclé, naming only four cultural areas.

Cooke's (1975, 1984) idea of three non-culturally designated areas is the most recent. He believes "it coincides better with the archaeological, documentary and ethnographic evidence for cultural and linguistic boundaries, territory formation and exchange networks than do earlier attempts to subdivide the Isthmus strictly according to the modern political divisions of Coclé, Azuero, and Veraguas" (Cooke 1984:265). His three divisions are Western Panama, encompassing all of the Chiriquí Province, Central Panama which includes the provinces listed above, and Eastern Panama or all the area east of the Canal Zone.

Archaeological investigations have been uneven in the subdivisions of Costa Rica and Panama. Where there are insufficient data it is impossible to compare the material artifacts from one area with those of another. For this reason, this study focused primarily on the volcanic stone sculptures of Costa Rica. Those regions of

Panama which have yielded similar artifacts or which have produced objects stylistically or chronologically related to those from Costa Rica were considered of value in this study. The Nicaraguan portion of Lower Central America was excluded from this study since the focus was Costa Rica and because of the paucity of sculptural remains other than columnar and related statues plus the lack of apparent relationships to the archaeological materials from the rest of Costa Rica and Panama. In addition, the Nicoya Region of northwest Costa Rica, eastern Panama and the Atlantic Watershed areas of Panama were not included in this study either because of lack of archaeological research and data or because the areas have not produced materials of a nature comparable to the major groups of sculpture considered in this paper.

Indigenous Cultures

In the sixteenth century the Spanish found Indians of the Chorotegan, Guetar and Brunka tribes inhabiting the three major archaeological zones of Costa Rica, the Nicoya-Guanacaste area, the Atlantic Watershed-Central Highlands, and the Diquís area. Since that time, the Pre-Columbian artifactual remains from these regions have commonly been attributed to those three cultural groups. Although this is still taught in most Costa Rican schools, there is sufficient evidence today to invalidate such assumptions. The Chorotega, Guetar and Brunka were the names of individual chieftains or tribes which the Spaniards mistakenly applied to whole geographical regions (Snarskis 1978a:39).

Most of the Pre-Columbian peoples of Lower Central America spoke similar languages (Baudez 1970:19). From Panama northward to eastern Honduras the languages of the native populations belonged to the larger Macro-chibchan group whose center was in the Colombian area of northern South America (Coe 1962b:170). Culturally distinct from these peoples were those inhabiting the Nicoya Peninsula area of Guanacaste. At the time of the Conquest they spoke Chorotegan languages related to those of Mesoamerica. Lothrop (1926:20-25) also noted small groups of Nahuatl speakers along the Atlantic and Pacific coasts from Nicaragua into Panama. These linguistic divisions and affiliations of the sixteenth century, however, are not necessarily nor likely to have had the same geographic distributions throughout the entire Pre-Columbian era. In fact, Coe (1962b:180) suggests a twelfth century invasion of Nahuatl peoples into northern Costa Rica. He bases this on the pervasive appearance of Mexican motifs on Nicoya Polychrome ceramics.

Whether northern or southern in its affiliations, most of Costa Rica shared a similar culture base in its early formative stages. Only after AD 500 do marked cultural differences take over. These differences are primarily recorded in the ceramic inventory but are also reflected in the stone sculptures.

By no stretch of the imagination can the region of Lower Central America be considered as a single culture area. Nevertheless, it does have cultural elements which have defied all geographical and cultural boundaries. The archaeological record attests to the existence of prehistoric contact among the peoples inhabiting these

regions. This is seen in the ceramics by the presence of scarified decoration on pottery of the earliest phases from northern Costa Rica to Central Panama. It is also visible in the volcanic stone sculpture throughout the region. Similarities of form and design in clay and stone have led to the hypothesis of communal interaction (Linares and Ranere 1980:137) and long distance trade networks (Linares 1968a:83).

In some instances objects of several areas are virtually identical. Linares (1968:87) explicitly states this in reference to the jaguar metates of the Chiriquí and Veraguas Provinces of Panama. Over fifty years ago Lothrop (1926:290) commented on these effigy metates saying the close resemblance between those of Central Costa Rica and those from Chiriquí made the objects indistinguishable. Mason (1945:221) concurred that "the type is, therefore, one that is characteristic of this entire region." Lothrop (1950:30) went so far as to postulate the existence of specific manufacturing centers from which sculptures radiated to various parts of Costa Rica and Panama.

Contributions of This Study

Knowledge about pre-conquest Lower Central America is meagre. Until recent years, few Pre-Columbian scholars have found it desirable or viable to focus their research efforts on this region. Those who have turned their attention to Central America have usually been concerned with the northern sector, the southern and eastern area of Maya settlement or influence, including part of Guatemala,

most of Honduras and the western half of El Salvador. As a result, the southern area of Lower Central America has appeared as the "country cousin" (Lothrop 1966:180) of the high civilizations to the north and south. Detailed and informative studies have been sporadic as seen in the works of Holmes (1888), MacCurdy (1911), Hartman (1901, 1907) and Lothrop (1926, 1937, 1942, 1950, 1963). However, this picture has changed somewhat during the last two decades as researchers have become more concerned with what Willey (1971:71) labeled the "Intermediate Area." As more evidence has been uncovered through archaeological investigations, the importance of this area as a crossroads and cultural meeting ground has been emphasized.

That this area is deemed important to the total picture of Pre-Columbian America has been emphasized recently by the seminar held in Santa Fe, New Mexico, in 1980. The most noted scholars on Central American pre-history assembled to share recent data and to review the body of information on this geographic region. Nevertheless, even at the present time, few definite conclusions can be made from the available material since much of the area is still "terra incognita."

There is little doubt that there were cultural similarities and connections among the peoples of Pre-Columbian America. Such relationships have been verified for Central Mexico, the Maya area and South America. Following Lothrop's (1966) and Stone's (1977a) references to basic stylistic similarities throughout the Intermediate Area, it is believed that a detailed comparative

analysis of the sculpture from this area based on style and motifs could suggest the existence of cultural interconnections or interchange.

To examine this art historical problem, a formal analysis of stone sculpture, within an archaeological context should give information on the dating and geographical distribution of both sculptural styles and motifs and will, therefore, provide some basis for establishing a relative chronology for the major archaeological areas of Costa Rica and Panama.

Specific types of sculptured objects and decorative motifs are considered in relation to their geographic location and, where known, the archaeological context. Where ceramic associations are available these are utilized to help establish the relative chronologies within archaeological regions. Sculptures are divided into groups on the basis of type and form. Traits are identified to assist in devising a similarity seriation. Rowe (1961:324) suggests that this method of seriation can provide as credible a sequence as stratigraphy since motifs and stylistic features are not random occurrences but normally have a distribution pattern in time and space. This method involves a study of the features and motifs associated on individual sculptures in order to arrange the materials into a possible chronological order. The method involved is similar to that most commonly applied to ceramic study and analysis but is not a type-variety system as the variations in the sculptures proved too numerous to categorize in this manner.

Although there are few Carbon 14 dates specifically associated

with these sculptures, the regions and general time periods can be dated on the basis of ceramic types. This study was greatly aided where excavation has been systematic, restricted and documented, such as Hartman's work in the Highlands (1901) and the Pacific Coast (1907) of Costa Rica. Unfortunately, a large percentage of the sculptures were recovered out of archaeological context or the associations were unrecorded. These sculptures also lack historical documentation as the Conquistadors were more concerned with gold objects than stonework. Thus descriptive references which enable the establishment of the styles contemporary with European contact are lacking. Nevertheless, since the technique of seriation by itself cannot distinguish the early or late ends of a sequence, those few pieces of sculpture whose archaeological contexts are known are of vital importance in determining the direction of this similarity seriation. In addition, since it is known that the most elaborately decorated objects are usually the most readily dated as there are more motifs to compare, the relatively simple figural images from Lower Central America are problematical. Analysis of necessity depends primarily on types of facial features, head ornamentation, limb position and body modeling rather than on elements of costume.

The distribution of objects was not uniform due to the normal archaeological problems of chance preservation, frequent destruction, local preferences, and lack of excavation and investigation in some areas. However, the sample of objects for analysis was large enough to overcome this deficiency and contribute to the reliability of the study undertaken.

It is felt that analysis of these sculptures provides clues for answers to other more anthropological questions concerning social, political, or religious elements of the societies from which they came. In addition, this investigation provides material for further study, both anthropological and art historical, and enforces the need for further archaeological excavation throughout the area under consideration.

Previous Studies of Lower Central America

Although Central America has not been the major focus of the majority of Pre-Columbian studies, an interest in this area of Latin America has existed since the arrival of the first European peoples.

Early Literature

Prior to the second half of the nineteenth century there were no written accounts pertaining primarily to the art and artifacts of Central America. The earliest notices are merely brief sketches based on testimonies of travellers, government agents, and huaqueros. The majority focused on Nicaragua, such as Carl Bovalius' Nicaraguan Antiquities (Stockholm, 1866), and Ephraim Squire's Nicaragua, Its People, Scenery, Monuments and the Proposed Interoceanic Canal (New York, 1853). At least two groups of these travellers extended their wanderings further to the southeast as attested by A Ride Across a Continent: A Personal Narrative of Wanderings through Nicaragua and Costa Rica (London, 1868) by

Frederick Boyle, and Dottings on the Roadside in Panama, Nicaragua and Mosquito (London, 1869) by Bedford Pim and Berthold Seeman.

Although their illustrations are inaccurate and therefore not suitable for analytic study, the accounts are of value in noting original locations for many of the larger sculptures.

Actual concern with the monuments themselves occurred about the same time that Americans and Europeans began amassing collections of objects, most of which were later sold or bequeathed to major museums throughout the Americas. In some cases there were descriptions of the objects or the tombs from which the objects reportedly came. One of the earliest was written by J. Merritt King about 1860, for the American Ethnological Society, entitled Report on the Huacals or Ancient Graveyards of Chiriquí (New York). This was followed by a second account, "The New route through Chiriquí," written by Thomas F. Meagher for Harper's Magazine (1861:XXII:198).

John F. Bateman, a companion of J. Merritt King, explored a number of huacas in the highlands of Panama near the Volcano of Chiriquí. His narrative, "Account of a visit to the huacas, or ancient graveyards of Chiriquí," was published in the first Bulletin of the American Ethnological Society (1860-61). The first systematic attempt to classify the ancient remains of Chiriquí was an illustrated pamphlet by A. de Zeltner, the French Consul in Panama. In his Note sur les sepultares du departement de Chiriquí (Panama, 1866) he described six types of Chiriquian graves. Alphonse L. Pinart wrote in 1885, in "Chiriquí: Bocas del Toro, Valle Miranda," in the Bulletin of the Geographic Society of Paris (7 series, VI),

that there were only two grave types which he described along with their contents.

The earliest monograph on Panamanian antiquities is the detailed study by William Henry Holmes, "Ancient Art in the Province of Chiriquí, Columbia," published in the Sixth Annual Report of the Bureau of Ethnology of the Smithsonian Institution (1888). Basing his study primarily on the objects of the McNeil collection in the Smithsonian Museum, he discussed the stone sculptures, goldwork and ceramics, giving considerable emphasis to the evolution of ceramic decoration. Although there are almost three hundred illustrations, only eight are of stone sculptures. Nevertheless, this early work remains of major importance to an understanding of the art of this region. Holmes had previously written an article on "The Use of Gold and other Metals among the Ancient Inhabitants of Chiriquí, Isthmus of Darién," in the Bulletin of the Bureau of American Ethnology, Smithsonian Institution (1887:3:1-27).

Shortly after the beginning of this century there followed a monumental volume on the artifacts of the Province of Chiriquí, Panama entitled A Study of Chiriquian Antiquities (Connecticut, 1911). This was written by George G. MacCurdy from an analysis of the collections at Yale University and collections formerly belonging to George G. Heye and Minor C. Keith, now in the possession of several major United States museums. It is a descriptive study with discussion centering on stone, clay and metal objects. His greatest contribution is in the development of a theory for the evolution of decorative motifs from animal forms in the ceramic ornamentation.

His discussion of some objects includes metates, stools, and figural images which are accompanied by a number of excellent drawings in which the salient characteristics can be readily discerned. From various early antiquarians he also assembled an account of the cemeteries, tombs, and the historic Indians from the Pacific area of Chiriquí.

Almost twenty-five years later, Cornelius Osgood restudied and altered the classification of Chiriquí ceramics previously established by Holmes and MacCurdy. His article, "The Archaeological Problem in Chiriquí," was published in American Anthropologist (1935:37:234-243).

The first published articles on Costa Rican artifacts came fifteen years later than that from Panama. It is interesting to note that before there were explorations of the region or ethnographic studies of the inhabitants, a group of art objects was sent from Costa Rica to London for an exhibition in 1875. Fox Pitt-Rivers reviewed these in "Exhibition of Articles from Costa Rica" published in the Journal of the Anthropological Institute of London (1875:4:363-364).

The first articles of a strictly scientific nature were those written about a series of objects collected by John Frederick Lahmann, the German Consul in San José, and sold to the Museum of Natural History in Bremen. These were "Bericht ueber eine Anzahl Steinsculpturen aus Costa Rica" (1881:VII:152-175) by E. Fischer, and "Bericht ueber die Sammlung Atlerhumer aus Costa Rica en Bremer Museum" (1883:VII:233-252) by Hermann Strebel. Both were published in

Abhandlugen, Naturwissen-schaftlichen, Verein zu Bremen , and dealt respectively with sculptured jade and ceramics.

The first archaeologist to conduct investigations in Costa Rica was probably John Francis Bransford whose account is concerned primarily with the collecting of jade objects in Guanacaste. These objects later became permanent possessions of the Smithsonian. His "Report on Explorations in Central America in 1881. Visit to Copan. Visit to Costa Rica," appeared in the Annual Report of the Board of Regents of the Smithsonian Institution (1882:803-825).

Since the late nineteenth century, numerous articles on a single object or a few related pieces in museum collections have appeared. In the Informe de 1899-1900 of the Museo Nacional de Costa Rica are two illustrated and descriptive articles on a large ceremonial altar found near San José. The first is "Comunicación de Don Tomás Povedana, acerca del monolito de san isidro. Mis Deducciones." The other was written by the then Director of the National Museum, Juan Fernández Ferraz, "Ompa-ontla-neci-tetl, o piedra transparente, mesa altar de piedra calada de San Isidro." Both describe the object in terms of its symbolic and/or religious elements.

In 1935, Jorge Lines published a short pamphlet on this same altar entitled Los Altares de Toyopan: Estudio hecho con motivo de la exposición de arqueología, de Octubre 1934 (San José). This was followed in 1942 by another short study by Lorenzo Vives B., entitled Lo esotérico en el arte indígena de Costa Rica (San José).

Early in this century two works of immense importance in the archaeology of Costa Rica were written by Carl Vilhelm Hartman. The

first, Archaeological Researches in Costa Rica (Stockholm 1901) is a report of his excavations in cemeteries in the Cartago Valley and the Línea Vieja Region of Costa Rica. The study gives detailed descriptions of each site and grave excavated, primarily at Las Mercedes, along with discussions of the artifacts. It is profusely illustrated with drawings and photographs. Hartman followed this with his monograph Archaeological Researches on the Pacific Coast of Costa Rica (1907), published by the Carnegie Institute of Pittsburgh as volume 13 of its Memoirs. His excavations this time focused on the Nicoya Peninsula, primarily at the site of Las Huacas. As previously, this volume gives an account of the contents of each grave investigated to which he added an extensive analysis of the stone objects purchased from Padre Jose Maria Velazco but originally excavated from the Las Huacas cemetery. This work illustrates more stone metates than any other analysis or account of Costa Rican antiquities. Hartman played a pioneering role in the history of Central American archaeology since his excavations are the first which can really be described as scientific. Careful excavation plus exact recording of locations and associations continue to make these essential reference works.

Recent Literature

Excavation reports from the different archaeological areas are important not only for their information on excavated stone objects but also for the associated burial or cache objects and the establishment of ceramic types and phases which aid in the

development of site and regional chronologies into which the sculptures must be placed. Among these are Haberland's "Excavations in Costa Rica and Panama," Archaeology (1957:10(4):258-263); several articles by Baudez and Coe on northwestern Costa Rica in the Proceedings of the 34th International Congress of Americanists (Vienna, 1962:348-373); a study on "The Scarified Ware and the Early Cultures of Chiriquí (Panama)" by Haberland, also in the Proceedings of the 34th International Congress of Americanists (Vienna, 1962:381-389); "Informe preliminar sobre excavaciones alrededor de San Vito de Java" by Laura Laurencich de Minelli y Luigi Minelli in the Proceedings of the 36th International Congress of Americanists (Seville, 1964:1:413-427); "Ceramic Phases for Chiriquí, Panama and their Relationships to Neighboring Sequences" by Olga Linares de Sapir, American Antiquity (1968:33(2):216-226); the reports on the Atlantic Coast excavations of Michael Snarskis "Excavaciones estratigráficas en la Vertiente Atlántica de Costa Rica," Vínculos (1975:1(1):2-17) and "La Vertiente Atlántica de Csta Rica," Vínculos (1976:2(1):101-114).

Two other articles by Coe and Baudez should be added to the list. In these the authors have established archaeological phases and periods for Costa Rica. In "In Costa Rican Archaeology and Mesoamerica," Southwestern Journal of Anthropology (1962:18(2):170-183), Coe dealt only with the three archaeological regions of Costa Rica which he fit into a five period scheme. In his article, "Cultural Development in Lower Central America," published in Aboriginal Cultural Development in Latin America: An Interpretive

Review, edited by Meggers and Evans (Washington, 1963:45-54), Baudez set up a six period scheme into which he fit Panama, Costa Rica and Southwestern Nicaragua.

Besides periodical length articles on excavations, there are a number of individual monographs based on field investigations.

Archaeological Investigations in the Parita and Santa Maria Zones in Panama by John Ladd (Washington, 1964) is based on the analysis of ceramic remains from five sites near the Parita and Santa Maria Rivers of western Panama excavated between 1948 and 1952 by Stirling and Willey. Although there were few stone objects located, sites are described and ceramics discussed at length. Reserches archeologiques dans La Valle de Tempisque, Guanacaste, Costa Rica (Paris, 1967) by Claude Baudez is based on excavations in the Province of Guanacaste from 1957-1960. The author reviews the information known from the sixteenth century about the area and its history but focuses on the site of Papagayo where ceramics from the Bichrome to Late Polychrome Periods were excavated. Linares' study, Cultural Chronology of the Gulf of Chiriquí, Panama (Washington, 1968), is a report of fieldwork carried out over a three year period of time as part of a program organized by the Institute of Andean Research. The purpose of the excavation was to find evidence of interconnection in regions of the Intermediate Area. Only four of the most important sites in the Gulf of Chiriquí are considered in this report. Although the study indicates this area was marginal to developments in the Chiriquí Highlands, it is important information for the region as a whole. Carlos Aguilar and the University of

Costa Rica conducted investigations in the Reventazon Area at Hacienda Guayabo at the site of Los Altares. In the early 1880s Troyo (Aguilar 1972:93) had excavated tombs in the same area and found several large sculptures now in the Museo Nacional in San Jose. The more recent stone objects found were like the earlier examples but were fragmentary. In his study, Guayabo de Turrialba (San José, 1972), Aguilar says the tomb furnishings indicate a highly developed cult of the dead. The Archaeology of the San Dimas Valley Costa Rica (Colorado, 1972) is a report of field research by Lange and Murray in the Sapoa River Valley of northwest Guanacaste carried out from 1969 to 1970. No intact stone sculptures were found at any of the thirty-seven sites located which spanned a time period from 300 BC to AD 1600.

Several studies by Samuel K. Lothrop give information on cultural aspects of Costa Rica and Central Panama. Although his earliest extensive work is not the result of his own field investigation, it is valuable for its ceramic discussions and profuse illustrations. The Pottery of Costa Rica and Nicaragua (New York, 1926) is the result of his examination of more than 35,000 ceramic vessels in European and American collections. His discussions, divided by archaeological areas consider all of Nicaragua and Costa Rica except the southern regions already studied by Holmes and MacCurdy. He traced the geographical distribution of types and studied decorative motifs and their relationships. The Appendices contain translations of important Spanish documents and manuscript notes on the 1916 northeastern Costa Rican excavations by Alanson

Skinner of the Peabody Museum at Harvard University.

Lothrop's two volume study of Central Panama, Coclé, An Archaeological Study of Central Panama (Cambridge, 1937-1942), is the result of his excavations in the Province of Coclé from 1930 to 1933 under the auspices of the Peabody Museum of American Archaeology and Ethnology of Harvard University. The main center of excavations was Sitio Conte. Less extensive excavations were also undertaken at Sitio Hector Conte and Loma de Los Muertos. Although Lothrop did not give a grave by grave report of the fifty-nine tombs uncovered at Sitio Conte, the work is of immense value for its description of grave types, burial customs and funerary offerings. The discussion concerns mainly metal and ceramic objects as these were the most abundant items recovered. Despite the fact that Lothrop's conclusions have been debated, restudied, and altered, his contributions to Central American studies are many. Besides the extensive number of drawings and photographs these volumes are particularly useful for the historic account of the inhabitants at the time of the Conquest and for the review of previous archaeological studies in Panama.

Several more recent studies on Central Panamanian cultures rely heavily on Lothrop's work at Sitio Conte. Two by Olga Linares are related in that they deal with the elaborate designs found on the ceramics and goldwork from Lothrop's excavations. "Animals that were bad to eat were good to compete with: An analysis of the Conte Style from Ancient Panama" in Ritual and Symbol in Native America (Oregon, 1976), develops the hypothesis that besides their original

mythological meaning the designs were social symbols to the Coclé peoples. The second study Ecology and the Arts in Ancient Panama: On the Development of Social Rank and Symbolism in the Central Provinces (Washington, 1977), is a synthesis and reinterpretation of Coclé art in the light of environment, a view of Coclé art as a product of human adjustments to differing environmental conditions. In the end, she argues that Sitio Conte was mainly a cemetery for high status burial from AD 500 to 900.

A study by Mary Helms, Ancient Panama: Chiefs in Search of Power (Texas, 1979) might well be considered a companion volume to the two studies by Linares. Although the author does not consider art, her focus is the early sixteenth century chiefdoms in Panama; these are clearly a reflection of the cultures which had previously existed in Central Panama and which are now known only through archaeology. Among the sources Helms used were the sixteenth century accounts of Gonzalo Fernández de Oviedo y Valdés, Historía general y natural de las Indias (Madrid:1852, 1853), Pascual de Andagoya, Narrative of the Proceedings of Pedrarias Dávila (London:1865), and a letter of Vasco Nuñez de Balboa in Colección de documentos inéditos, relativos al descubrimiento conquista y colonización de las posesiones españolas en América y Oceanía (1864). Helms also looked at contemporary ethnographic data for analogy and comparison as well as comparisons with Polynesian chiefdoms. She admits that she has made few firm conclusions but many inferences.

Lothrop turned his attention to the adjoining Province of Veraguas basing his study, Archaeology of Southern Veraguas, Panama

(Cambridge, 1950), primarily on the collections at the Peabody Museum of Harvard University. Although not as lengthy as his previous study, the format and method of treating the material from burials are nearly identical. Most attention is focused on the abundant ceramics and goldwork. Since no statues from Veraguas were known to him, the illustrations and his discussions of stone artifacts are limited to the elaborate metates of this region with comparative comments on those of Costa Rica and other areas of Panama. It is the most important source for information on archaeological sites and artifactual remains of this area because it is the only monograph dealing specifically with the Province of Veraguas. This volume like the previous Coclé study gives a good summary on the historical background and natives of Central America from the arrival of Columbus to the twentieth century.

In 1963, Lothrop published his excavation report on the banana farms of the United Fruit Company in the Diquis Delta channels. Although his work, Archaeology of the Diquis Delta (Cambridge, 1963) may not be among his most important studies as the excavations were poor in ceramic stratigraphy and, according to Baudez (1970) his ceramic typology is inaccurate, it contains an excellent discussion of the stone sculptures accompanied by illustrations. Lothrop concluded that the stone statues he located were peculiar to the area, a local type, yet one having stylistic links with Chiriquí.

The most recent contribution to knowledge about Lower Central America is the result of the seminar held in Santa Fe, New Mexico, in 1981. The Archaeology of Lower Central America (Albuquerque, 1984)

presents an up-to-date summary of archaeological information of the area from its northern frontier to its southern boundary.

Studies of Stone Sculptures of Costa Rica and Panama

Few studies have been primarily directed to the stone sculptures of Lower Central America. The only booklength monograph written on this topic is J. Alden Mason's study, Costa Rican Stonework. The Minor C. Keith Collection (New York, 1945), which is a descriptive presentation of stone objects from the central, eastern, and southern regions of Costa Rica. The study is further limited to ceremonial and figural sculptures. It does not consider the sculptures of the Nicoya Peninsula nor smaller ornamental objects found throughout the country. Of the almost 2000 stone items in the Keith collection, Mason illustrated and described about 250, including metates, stools, altars, grave markers, and, images. The study is valuable for its presentation of previously unpublished material. However, there are no excavation details recorded for any of the examples.

Besides Mason's detailed study, there are no other lengthy works on the Lower Central American sculptures. There are a number of articles in journals and periodicals plus short pamphlets published by the Museo Nacional in San Jose. Among these, two are outstanding for their aid in the present study. The first is Doris Stone's study of "The Stone Sculptures of Costa Rica" in Essays in Precolumbian Art and Archaeology edited by Lothrop (Cambridge, 1961:192-209). Stone surveys the various types of sculptures from the three archaeological regions of Costa Rica, making comparative statements

and pointing out Mesoamerican and South American influences. The other study is Haberland's "Stone Sculpture from Southern Central America" in the Iconography of Middle American Sculpture published by the Metropolitan Museum of Art (New York, 1973:134-153).

Haberland considers only large figural sculptures from Panama, Costa Rica and Nicaragua and establishes ten regional styles, plotting their distributions in space and assigning them to phases or periods of cultural development within the basic Central American chronology.

There are several articles and short studies on Central American sculpture written by Jorge A. Lines. One from the Revista mexicana de estudios antropológicos (1942:36-50), entitled "Estatuaria huetar del sacrificio humano", is concerned with images, stands, and metates which are related to the cult of human sacrifice and trophy heads. The figures and metates are grouped and typed according to form and motif. Another article by Lines, "Sukia: Tsugur o Isogro" in Revista de los Archivos Nacionales (1945:9[1]:17-43) is a study of statues he calls "fumadores" and their relationship to ethnographic data.

Doris Stone and Carlos Balsar collaborated on a study of "Grinding Stones and Mullers of Costa Rica" published in the Journal de la Societé des Americanistes (1957:46:165-179). Although considered, the emphasis is not the decorative aspects nor the ideas portrayed but rather the forms. They view the variations in these objects as indicative of different subsistence patterns.

One of the few considerations of a unique group of sculptures from western Panama is Haberland's "Las Figuras liticas de Barriles,

en Panama" in the Boletín del Museo Chiricano (1968:6:8-14). The Barriles site in the Chiriquí Province of Panama is important for its collection of large sculptured images and ceremonial items found in situ in the late 1940s. (See Chapter VI, for a discussion of these objects.) In the presumed chronological development of sculptural forms, these statues are problematical due to their extreme realism and early ceramic associations.

Survey Studies

There are a number of introductory or survey texts on Latin America, Central America, Costa Rica, and Panama. Of prime importance are three studies by Doris Stone. The first, written in 1958 and revised in 1966, is entitled Introduction to the Archaeology of Costa Rica (San José). Stone outlines elements such as grave types, burial offerings, stonework, metals, and ceramics for each region. Although it is limited to major examples, it is a good overview of the meeting of the northern and southern cultures in this area. Her second book, Pre-Columbian Man Finds Central America (Cambridge, 1972), is an introductory exposition emphasizing Lower Central America beyond the Maya region. Stone has a wide background in the art and archaeology of this area having lived in Costa Rica and having experienced most of her archaeology firsthand in the field. This has given her an extensive knowledge of adjacent areas which is evident in her comparisons of cultural manifestations. Her most recent text, Pre-Columbian Man in Costa Rica (Cambridge, 1977), is a companion volume to the previous study. Although based

on the geographical divisions of her introductory work on Costa Rica, the present study not only discusses physical aspects of the country and summarizes previously published archaeological studies, but also includes much unpublished data from the fieldwork of Michael Snarskis and Frederick Lange.

Claude Baudez's survey, Central America, Archaeologia Mundi (Geneva, Paris and Munich, 1970), covers northern as well as southern Central America. Baudez discusses the cultural remains within a zone of Mesoamerican Tradition and a zone of South American Tradition.

Although not limited to Central America, Willey's Introduction to American Archaeology. Volume 2: South America (New Jersey, 1971), contains a pertinent summary of archaeological data on the entire "Intermediate Area" (pp. 255-359).

One of the best studies of art based on the archaeology of the area west of Panama City is Art precolombino de Panamá (Panamá, 1972) by Reina Torres de Arauz. Her archaeological overview is based on the chronology of Baudez (1963). However, her discussions of ceramics, sculpture and metalwork rely heavily on the works of MacCurdy, Holmes, Linne, Mason, and Lothrop. The stonework portion is limited essentially to the sculptures of Barriles.

A survey with a slightly different emphasis is that of Molina de Lines and Jorge A. Lines, Costa Rica (San José, 1974), which deals with monuments of both the Pre-Columbian and Colonial eras, conquest history, and previous studies of these Costa Rican monuments. Its greatest value is a series of photographs of sculptures not illustrated elsewhere.

Other than Stone's (1977) study, the most recent work dealing with Costa Rica is Costa Rica Precolumbina (San José, 1977) by Luis Ferrero. It is a more in-depth study than Stone's and is extremely important for its summary of recent and on-going work in Costa Rica. The contents are a synthesis of most previous publications on Costa Rica including doctoral dissertations and papers presented at the International Congresses of Americanists. As with the Baudez study (1970), the discussion of artifacts is by sectors or regions of Mesoamerican and South American influences. Ferrero gives an ethnohistoric account for each region and discusses the aesthetics of the artifacts as well as the manufacturing techniques used.

Dissertations

Several dissertations have been concerned with the archaeology of Lower Central America. Frederick Lange (1971) directed his efforts to the Sapoa River Valley of Nicoya while Paul Healy (1974) concentrated on the southwestern Nicaraguan portion of Greater Nicoya, and Jeanne Sweeney (1975) analyzed the ceramics of coastal Guanacaste. Few dissertations have dealt with the central and Atlantic coast regions of Costa Rica. Kennedy (1968) centered his investigations in the Reventazon area while Snarskis (1978) excavated in the Atlantic Watershed Region. Ester Skirboll (1981) restudied Hartman's Curridabat ceramics from the Las Mercedes area. Olga Linares (1964) produced a cultural chronology for the Chiriquí Gulf of Panama while Richard Cooke (1972) focused on the province of Cocre and Alan Icon (1974) studied the Azuero Peninsula.

Exhibition and Collection Catalogues

A number of catalogues of Pre-Columbian exhibits are important for their illustrations and for information on original provenience for many of the sculptures. Among the earliest is one published by the Dirección General de Estadística, Catálogo de los objetos que han figurado en la exposición del 15 de septiembre de 1886, in which over 1500 objects were exhibited, 236 of stone. Several illustrated catalogues were published for the 1892 celebration of the discovery of America which was held in Madrid. Among these was that by Manuel M. de Peralta, Catálogo razonado de los objetos arqueológicos de la república de costa-rica en la exposición histórico-americana de Madrid (Madrid, 1893). In 1934, an exposition of indigenous art was compiled by the Ministry of Public Education in San José. A catalogue describing the objects was written by Jorge Lines entitled, Catálogo descriptivo de los objetos expuestos en la primera exposición de arqueología y arte precolombina. Inaugrada en San José de Costa Rica el 12 de Octubre de 1934 en el Teatro Nacional (San José). Besides short descriptions of each object, original provenience, if known, and present owner are listed. Of the 665 objects, over 100 were stone carvings belonging to the National Museum.

Two more recent catalogues, both beautifully illustrated, are Arte Precolombina: Costa Rica and Panamá, describing an exhibit in Rome in 1976, and Robert Stroessner's catalogue of Pre-Columbian Art of Costa Rica, The Mayer Collection (Denver, n.d.), in the Denver Art Museum.

The most important exhibit of Costa Rican artifacts and the most informative catalogue are also the most recent. In December 1981 an exhibit containing over three hundred works of Pre-Columbian art opened at the National Gallery of Art in Washington, D.C. Before its scheduled return to Central America, it spent over two years in the United States traveling coast to coast. Its catalogue, Between Continents/Between Seas:Precolumbian Art of Costa Rica (New York:1981), represents the most recent information derived from archaeological investigations in the various regions of Costa Rica. It has been an invaluable aid in writing this dissertation.

Previous Seriation Studies

In the original proposal for this study it was thought that Proskouriakoff's (1950) study of Maya sculpture could be heavily relied upon for methodology. This proved to be unfeasible because the rich selection of costume motifs and the temporal control device of carved inscriptions were not available for sculpture from Lower Central America. Pelliza (1975:76) found she was also unable to use Proskouriakoff's methods in her study of Olmec sculpture for the same reasons. Nevertheless, the Maya study offered valuable ideas and inspiration for a study based primarily on stylistic analysis.

Rowe (1962) seriated Chavín stone sculptures using a Paracas ceramic sequence as his primary aid. He considered similar motifs on sculpture and ceramics showing parallel or similar sequential changes.

Miles (1965) seriated stone sculpture from Chiapas and Guatemala

on the basis of stylistic analysis and archaeological context. She also correlated sculptured motifs with ceramic motifs having a known chronological placement. This is similar to Rowe's (1962) method and was a useful approach for Pelliza (1975) in her seriation of Olmec monumental sculpture.

Since the 1960s computer assisted analysis has been a valuable tool for archaeologists in the seriation of artifactual materials. The methodology employed is most frequently enlisted as an aid to statistical studies of ceramics. Among the earliest of these studies involving computer assistance is Brown and Freeman's "A UNIVAC analysis of sherd frequencies from Carter Ranch Pueblo, eastern Arizona," American Antiquity (1964:30:162-167). James Deetz (1965) also utilized the computer in his study, The Dynamics of Stylistic Change in Arikara Ceramics. More often than not, such computer studies are analyses of large sherd collections from single excavation units or sites. Because of the nature of ceramic materials, archaeologists often deal with numbers too large to calculate and study by visual methods alone. In these cases computers have provided information which would have been otherwise unavailable to the investigators. Similar studies of prehistoric stone tools have also been carried out by computer analysis. Among these are Christenson and Read's work "Numerical taxonomy, R-mode factor analysis and archaeological classification" in American Antiquity (1977:42(2):163-179) and Graham, Galloway and Scollar's article, "Modal studies in computer seriation," in the Journal of Archaeological Science (1976:3:1-30).

The kinds of problems involved in the less functional and less numerous stone sculptures have not often been subjected to mechanically assisted analysis. Nevertheless, precedent has been set in using such methodology on objects other than ceramics. Two such studies have been attempted on Pre-Columbian sculptured objects. The first was done by Charles Wicke (1971) on the Olmec stone heads and votive axes. The second study, by Oscar Fonseca and Richard Scaglione (1978), is an analysis of stone pendants from Las Huacas, Costa Rica. Both studies employed a technique known as the Guttman Scalogram. Results were significant in showing the existence of a developmental sequence for the objects investigated. In the case of the Las Huacas stonework (Fonseca and Scaglione, 1978) ceramic associations were utilized to establish an approximate chronology. Both studies revealed the existence of a set of attributes which changed stylistically through time. The use of the Guttman Scalogram provided a tool for the investigators to discover which features were of importance in determining the stylistic changes the objects underwent during specific time periods.

All of the above mentioned studies dealing with the seriation of archaeological materials, particularly sculpture, were invaluable to this dissertation. Each contributed to the methodology employed.

Methodology

This study was designed to look principally at free-standing sculptured objects carved from volcanic stone. The selection excluded objects of a primarily functional nature in the form of

manos, mullers, mace heads, and small objects of personal adornment such as pendants and beads, as well as celts and axes of jade or similar materials. Consideration was limited to what were considered the major and dominate groupings of volcanic stone sculptures. There was available a large body of material with diverse stylistic features which provided sufficient evidence for a seriation study. Selection also favored those free-standing sculptures which evidenced decorative surface carving of a geometric or realistic nature and objects which displayed motifs that appeared to be repeated through time and over geographic space. Many of the motifs found on the free-standing sculptures were also seen on objects of other media. Some of these relationships were made but a detailed study of these other media was not attempted.

The study focused on variations in the styles and motifs of these sculptures which furnished clues to the relative dates of the execution of the objects by discovering progressive changes that characterize the development of the forms and motifs depicted. Style is considered here as a manner of expression characteristic of and defined within a limited period of time. Motif refers to recognizable traits or details of an object whose geographic distribution can usually be determined. It is believed that a systematic examination of the known distribution in time and space of motifs and styles furnishes criteria for judgment of chronology.

At the outset, the number of pieces of sculpture available for study was not known because there were many which had not previously been published. From the initial reading, however, it was apparent

that there were at least several hundred extant sculptures of the proposed categories. Due to purposeful destruction of monuments and natural erosion, the extant specimens were not evenly distributed across archaeological regions. In some areas, artistic preferences did not include all types of sculptured objects. Scientific archaeological investigation is relatively new to Central America and even today some areas have been scarcely touched by archaeologists. These facts plus the inevitable truth that many of the samples are of unknown or undocumented provenience are a possible source of error in the attempt to seriate these sculptures and place them in a relative chronology. In addition, the work of huaqueros and collectors have made it virtually impossible to make associations with ceramics or other burial objects.

The general objective of this study is to produce a seriation of a sample of stone sculptures from Costa Rica and Panama. This sample is taken primarily from museums in the United States and Central America. By seriation is here meant "the arrangement of archaeological materials in a presumed chronological order on the basis of some logical principle other than superposition" (Rowe 1961:326). In accordance with Rowe's definition, the units seriated were individual specimens of particular kinds (grinding stones, stools, figures, and so forth) as opposed to units of archaeological association.

Ordering was achieved by analysis of style and iconography and by combinations and associations of features and motifs found on individual examples. Initially, the sculptures were divided into the

two major categories of figural images and ceremonial objects. These were further divided into related groups of sculptures on the basis of formal qualities such as human or animal subjects, full-figures or heads, standing or seated poses, male or female, plain or effigy grinding stones, simple or elaborate altars, round or oval stools or stands, bowls or vases, grave slabs or chacmools. After these formal groupings were established, the sculptures were subdivided by considering specific iconographic and stylistic traits. Lists of traits were compiled for each grouping. These included size, shape, facial features, overall body form and structure, degree of plasticity, as well as the type, placement and treatment of incised or low relief detail. Each piece was then considered in relation to its identified traits. On the basis of these, subgroupings were established within each category. Those pieces which showed stylistic similarities were grouped together. When the members of these subgroupings were placed end to end, they revealed the existence of a gradual progression or series. This resulted in a similarity seriation (Rowe 1961:326) based on the assumption that within the cultural traditions represented, change in style was a gradual process.

As is the case of any seriation, not all the objects considered fit equally well into the system devised. Some pieces were readily eliminated due to lack of visible and definable attributes. Others were eliminated because they appeared to relate to none of the established groupings. Despite the fact that they related to each other and formed independent groups, they lacked the associated

attributes necessary for inclusion in the sequence.

In addition to the visual analysis and groupings of these sculptures, the two major categories of objects, effigy grinding stones and standing human figures, were subjected to further study through the use of scale analysis. Although originally utilized in the realm of sociological and psychological research to deal with attitudinal or synchronic questions, the technique of scale analysis, as developed by Louis Guttman in the 1940s, has been applied to evolutionary or diachronic questions also (Carneiro and Tobias 1963; Wicke 1971; Scaglione and Fonseca 1978).

Scale analysis necessitated the use of a sample population and a selected list of traits or attributes existing in the objects or population chosen. The technique was based on the assessment of each object in regard to each trait. Although essentially analyzed on the basis of presence or absence of traits, the scale can be adjusted to accommodate degrees or types of presence. Each member of the sample was then coded with regard to the possession of each attribute and a chart, called a scalogram, was produced to indicate the frequency of these traits.

Not all visible traits or attributes of any population were significant nor scalable. Which traits were chosen for analysis was of prime importance. A sufficient quantity had to be selected to insure that no major characteristics were neglected. In the case of the sculptures being studied, attributes of size, shape, form, style, and motif were considered. These were the same characteristics considered when the sculptures were initially grouped and discussed

formally and stylistically to produce a similarity seriation. Originally lists containing as many as sixty-five traits were generated for each category or sculptural grouping (Tables 1 and 2, pp. 547-550). Every object was coded for the presence or absence of the individual traits. (This will be further discussed in Chapter III.)

Scale analysis can be hand calculated. However, when the list of traits and the number of items in the scale are large, this is cumbersome and time-consuming. For this reason, analysis on an IBM 4331 computer involving the use of a subprogram of SPSS (Statistical Package for the Social Sciences) was used. This program, called the Guttman Scaolgram, allows analysis on any set of predetermined variables. The technique utilizes interactive computer analysis to build scalograms and assess the reliability of these in measuring the degree of scaling by means of the coefficient of reproducibility and the coefficient of scalability. The coefficient of reproducibility considers the number of errors or deviations from a perfect scale and so measures the degree of predictability of the scale. The coefficient of scalability indicates the unidimensional and cumulative nature of the scale. Both coefficients are indicated by a decimal figure between 1 and 0. To be significant and valid, the coefficient of reproducibility must be at least .9 and that of scalability at least .6 (Nie et al., 1975:533).

Among the acknowledged uses of the Guttman Scale analysis is its ability to check the validity of a hypothesis (Goodenough 1963:240). In this study, the Guttman method was applied to the sculptures to

provide supporting evidence for the similariy seriation and thus uphold the hypothesis that the objects were placed in a relative chronological order by the original visual analysis. Additionally, it indicated the major changes in the sculptures through time, ordering the artifacts and showing the presence of gradual development or evolution in these Costa Rican and Panamanian stone objects.

Once the groups and subgroups were formulated using the visual and Guttman analyses, the chronology or order was established using available archaeological data. It should be noted that the available archaeological data was minimal.

Sculptural groups were established from the sample of volcanic stone sculptures from the largest archaeological region of Costa Rica, the Atlantic Watershed/Central Highlands area on the basis of formal and stylistic characteristics. Most of the volcanic sculptures from the Nicoya and Diquis Regions were not included in the analyses because their forms and styles appeared to represent different cultural traditions. However, several small groupings of images from Panama were included as both style and archaeological evidence suggested some relationships with the Atlantic Watershed/Central Highlands area of Costa Rica. Where possible, these are fitted into or associated with the sculptural chronology for central Costa Rica.

The sample of sculptures analyzed was taken primarily from museums in the United States and Central America (see Appendix A, p. 303 for complete list of museums). Objects from private collections

were considered if it was felt that the sculpture made a substantial contribution to the study (see Appendix A, p. 304 for a complete list of private collections). Over 1400 individual pieces were photographed and studied. It was assumed that these sculptures represented a random sample of the range of objects produced by the indigenous peoples of the area and encompassed works in which a developmental sequence can be demonstrated. It seemed apparent that the art styles of Costa Rica and Panama evolved over a fairly long period of time with few abrupt changes in style and iconography. It was, therefore, felt that the systematic analysis of visible features revealed the temporal development of both style and iconography.

Seriation of objects by similarity or continuity of features by itself is not sufficient to determine the direction of change which took place. To produce a valid chronological progression necessitates knowing at least one end of the sequence. However, the meagre written documentation was of little value in chronologically seriating the sculptures in the sample studied. Archaeological association was the only key to finding the direction of the sequence in verifying the developmental scheme produced by the similarity seriation. In this case the investigations of numerous archaeologists have been considered and the greatest degree of confidence was placed in the information provided by Hartmann (1901, 1907), Baudez (1967), and Snarskis (1978). Since the majority of the sculptures have no known archaeological associations and in many instances even lack regional provenience, the chronological ordering of the groups rested on the presence of a few sculptures whose

archaeological contexts are known. These objects were placed in groups on the basis of the degree of similarity shared with those sculptures having no known contexts. As Pelliza (1975:80) noted, when archaeological data and stylistic analysis are combined, it should be possible to seriate a much larger body of sculptures than either method allows independently. In this study, known ceramic associations, although few, gave dating information unavailable by any other means. In a few instances ceramic forms and motifs are also important when they share these features with the stone sculptures.

Milbrath (1979:7) noted the problem of using sculptural material from geographically dispersed sites when she studied the Olmec monuments. This situation introduces the possibility of regional variations. In reference to the Central American sculptures, some regional variants are evident. As previously mentioned, these objects were considered separately or were not included in the study. Other variations suggested the movements of sculptural concepts and motifs from one area to another. In these instances, archaeological information such as ceramic associations and C14 dates were used to substantiate the movement or influence. It was generally felt that the changes in style and iconography were gradual and can therefore be of value in determining the sequence of development throughout the region being studied. The end product of this study was a sequencing of volcanic stone sculptures from Costa Rica and Panama which can be attributed to Periods IV, V, and VI of the 1980 Santa Fe chronology (AD 0 to 1500). (See Fig. 3, p. 345, for a chronology.)

CHAPTER II

SERIATION OF THE MAJOR SCULPTURAL GROUPS

Seriation has long been recognized as a legitimate tool in archaeology. In the late nineteenth century Sir Flinders Petrie successfully applied this theory to the ordering of prehistoric Egyptian ceramic vessels (1899). Underlying the concept of seriation is the assumption that artifactual materials can be arranged in a chronological order. What must be considered in this sequencing are the systematic changes in the visual qualities of the objects being studied. This suggests that absolute dates need not be known to order artifacts. Relative dating, the category to which seriation belongs, acknowledges that artifacts originate at a specific time and place, develop, become popular, and gradually decrease in frequency, eventually disappearing (Brainerd 1951:304). In effect, seriation proposes that changes in artifacts are related to time.

Similarity seriation appears to be the most useful of the relative dating tools. As its name implies, it is based on the existence of similarities and differences in the objects being studied. Underlying the concept is the basic assumption that change within a culture or artifact assemblage is gradual and orderly, that unless external events such as trade or migration occur, most change is consistent and systematic (Rowe 1961:326). In his study of the Chavin style, Rowe (1962:5) refers to change as a universal trait of

art styles and says "by determining the order of these changes we can establish a scale which will enable us to determine which monuments are earlier and which are later."

The success of similarity seriation depends upon the choice of artifacts to be studied and the significant traits to be considered. To be meaningful, these traits should be abundant, have diversity and a relatively long existence (Meighan 1959:203). Such attributes may deal with size, shape, color or design, observable and measurable characteristics of the artifacts. Once the traits for study are selected, their pattern of occurrence must be determined. Any single trait of a class of artifacts can be arranged in some order. An ordering based upon size or color or shape alone will likely tell no more than simply the extent of the variation in that particular attribute. The ordering of attributes becomes meaningful for seriation only when combinations or associations of these attributes can be identified. When successful, the sequencing of objects on the basis of several traits results in a similarity seriation in which those objects which resemble each other most are at one end of the continuum. To do this necessitates studying a large enough grouping of traits and objects that patterning will emerge. It then seems logical to suggest that the more items considered and the larger the number of attributes analyzed, the more reliable the emergent sequence will be (Rowe 1961:328).

In this study, the two major groupings of sculptured objects from the Atlantic Watershed/Central Highlands area, effigy grinding stones and standing human figures, were seriated. Additionally,

sequences were established for two related groups from the same archaeological region, seated figures and individual heads, grinding stones from the Nicoya-Guanacaste region and figural images from the Diquis region. Other groupings of sculpture were discussed but no further seriations were attempted either because of too few objects or lack of variation in the attributes.

The initial grouping of the objects was accomplished by a consideration of the whole artifact. In the case of the standing figures, repeated sortings of the photographs were undertaken until it became obvious that there were several ways to group the sculptures, most of which cross-cut previous or other groupings. In this process the overall appearances of the figures were considered. Among the determining elements were imagery, pose and total form. Groups consist of male, female, and hermaphroditic figures. Males represent warriors, prisoners, masked men or deities. They stand with hands at their sides, overhead, on the torso, or asymmetrically placed. Females formed fewer groupings and most of these were related by arm and hand placement. In the end, these trial groupings proved to be insignificant and were discarded.

The second approach to grouping the figural sculptures was to consider the individual attributes of the pieces. This attribute grouping was attempted initially on the basis of facial features. When this was tried, unique clusters of sculptures began to emerge. It became apparent that eye, ear, nose, and mouth traits were related. Additionally, these same sculptured pieces were grouped considering only body characteristics. Again clusters of objects

occurred. However, a visual inspection of the groupings indicated that there was an apparent relationship between facial and body traits as the clusters of sculptures established by the two previous methods of grouping were nearly identical.

As Pelliza (1975) found in studying the Olmec sculpture, size does not seem to have been a factor differentiating the stylistic groups. The range in size within a single group is frequently quite large and some nearly identical sculptures are found at both ends of the range.

Finally, a list of visual attributes was compiled and each individual sculptural image was categorized on the basis of fifteen groups of traits (Table 1, pp. 547-548). In most cases, the attributes within the groups were mutually exclusive (eye, nose, ear, and mouth shapes), while in a few instances (various head and body traits) a figure might possess none or any combination of those listed. When these attributes were considered, three major groupings of figural images were established. Further study revealed differences within these groupings. Therefore, subgroupings were formed in which one or more traits varied from the norm.

The other major category of stone sculptures from the Atlantic Watershed/Central Highlands area, effigy grinding stones, was divided in a manner similar to the figural images. Initially the overall appearances of the objects were considered and the photographs placed in groups accordingly. The determining elements were size, imagery, and total form. Groups consisted of pieces under twelve inches or over twelve inches and represented feline, crocodilian, and

unidentifiable animals. Grinding plates were rectangular or oval, flat or concave, having raised rims or none at all. Effigies were double or single headed, with or without tails and legs joined or free standing. As was the case with the standing figures, these trial groupings also proved to be insignificant and were discarded.

The second approach to grouping the effigy grinding stones was to consider individual attributes of the pieces. This attribute grouping was initially attempted on the basis of facial features. As was true of the figural images, when this was tried, unique clusters of sculptures began to emerge. It became apparent that eye, ear, and snout traits were related. Additionally, these same sculptured pieces were grouped considering leg, tail, and decorative surface characteristics. Again clusters of objects occurred. When these two diverse ways of grouping the sculptures were joined, there appeared to be a relationship between facial and other traits as the separate methods of grouping gave nearly identical results.

In the end a list of attributes was also compiled for these effigy grinding stones and each object was categorized on the basis of twenty groups of traits (Table 2, pp. 549-550). In some cases the attributes were mutually exclusive while others combined in patterns. The traits considered were overall size, and grinding plate shape, structure and form of the legs, presence and size of the feet, shape and placement of facial features. Snout shape, length, and surface decoration as well as location and shape of necks and tails were observed. Degree, kind, and placement of surface incising, plate rim patterning, and animal imagery all have some effect upon placement

within groups. Considering these characteristics, three major groupings of effigy grinding stones were also established. As was true of the standing figures, these major groupings were further subdivided. Additionally, seated figures and independent heads were also arranged in three groupings. All other sculptures were analyzed and a relationship to one of the major groups was suggested.

The Major Sculptural Groups

The chronology of Costa Rican and Panamanian stone sculpture has never been systematically studied. A general chronological outline based on materials from the various archaeological regions has been recognized by Ferrero (1977), Snarskis (1978a) and Stone (1977a). This was reiterated at the 1980 Santa Fe Seminar and is visually demonstrated by the objects in the "Between Continents/Between Seas" exhibition (December 1981-January 1984). However, no attempt has been previously made to seriate the sculptures assigned to each of the chronological periods. A critical study of this sculpture is an essential element in understanding the cultural relationships and development of the peoples of Lower Central America.

There are few pieces of Costa Rican and Panamanian sculpture which can be dated by archaeological context. It is, therefore, essential that some additional method be used in a seriation study. Pelliza (1975:73) demonstrated this necessity in her study of Olmec sculpture while Proskouriakoff (1950:12) approached the problem of Maya reliefs from the opposite direction noting that stylistic analysis alone is not sufficient evidence for chronological

seriation. Both concluded that chronological controls combined with stylistic analysis provided the most reliable approach to the seriation of sculptured objects. Many of Pelliza's comments regarding Olmec monumental sculpture can easily be applied to this study. "Since the data will provide only hints as to the chronological position of a limited number of sculptures, the majority of the sculptures would remain outside the seriation. But, if stylistic analysis of the monuments were employed along with the other evidence, it might be possible to seriate a much larger number of sculptures" (Pelliza 1975:80).

Distinct stylistic groups of sculpture from the three major archaeological areas of Costa Rica are evident. But among these groups there are obvious interrelationships which can best be recognized by a careful analysis of their formal qualities and motifs. These same qualities and motifs can also be seen to exist within and across the previously acknowledged categories of objects such as metates, stools and figures. Because of this, the sculptures are first divided into the two obvious formal categories of ceremonial or functional items and figural images. They are further divided according to their formal characteristics and finally placed into groups on the basis of sculptural modeling, surface detail, facial features, overall shape or bodily postures.

As with any classification or group of objects there is a range of variation which seems to be within the possible limits considering the probable number of individual artists associated with these sculptures. The differences or the range of variation can be

accounted for by individual preferences and need not be attributed to other extraneous causes such as space or time. With few exceptions, this explanation can be used to account for the variations within each grouping.

Ceremonial Objects: Costa Rican Effigy Grinding Stones

For hundreds of years grinding stones have been among the material remains of prehistoric and historic peoples. These have varied in material, size and shape according to the geographic location and availability of resources, the economy and agricultural situation, the group's aesthetic development and the primary use of the objects. For example, the differences between hunting and gathering peoples who consumed numerous tubers and roots and agriculturalists who cultivated grain crops is reflected in their artifactual remains. Tubers and roots require basin type metates or at least grinding stones with raised rims while grains can be prepared on flat rimless stones. As such, these primarily utilitarian objects can silently communicate information to us.

Besides these basically simple and functional items, the archaeological inventories of most Pre-Columbian peoples included more elaborate and artistically satisfying objects such as the effigy grinding stones from Central America. Commonly known as metates, these are volcanic stone objects consisting of relatively thin plates supported on four animal-shaped legs and bordered on the ends by a projecting feline head and a long curved tail. It is this grouping of sculptural objects which forms the basis for much of the present

study.

All grinding stones with effigy features are considered in this category. No definite distinction is made between "metates" and "bowls" since there is no established criteria for differentiating them. Mason (1945:222) said he was generally unable to distinguish bowls from metates as there is a gradual gradation between them. For this study an attempt was originally made to designate those effigy examples under 30 cm as bowls and those over 30 cm as metates. Such a distinction proved unreliable and unusable as identically designed objects existed in both groupings. A second attempt was made using 25 cm as the magic number but, again, it was unsuccessful. Similarly, other criteria such as the presence of relatively high raised edges or depth of concavity of the grinding surface were also used. Neither gave satisfactory results. The solution was to delete the word "metate," substitute the term "grinding stone" and reserve the word "bowl" for a distinctly different type of artifact.

Three major groups of effigy grinding stones were established on the basis of overall morphology (shape) and other stylistic attributes such as location and type of surface decoration, facial features, basic leg shape and position, feet size, tail shape and position, and imagery. Within these major groups are a number of subgroups so placed because their features relate to the primary groups but appear to continue a development somewhat distinct from the first groups. (See Appendix B, pp. 305-311, for Effigy Grinding Stone groupings.) The complexity of surface decoration developed in the subgroups caused Mason (1945:221,229) to speculate that the

highly stylized elaborate examples were from the period closest to European contact.

Group 1

The grinding stones of Group 1 are consistently the smallest in size of all the groupings. In general, the plate surfaces are shallow concave shapes supported on the most muscular and heavy legs of any grinding stones. As a rule, they give the most naturalistic appearance with their flexed but divergent positioning. Feet are commonly present but not emphasized. Facial features are relatively uniform with oval eyes, erect ears and open mouths. Snouts vary from short and wedge-shaped with simple flattened nasal areas to a longer more angular form with a low but outlined nose having nostrils and whiskers. N-shaped canines are the rule as is profuse surface ornamentation. Zigzags, diamond and diagonal patterning are consistent. In most instances, the animals represented are jaguars whose necks and tails originate from the external surface of the plate rims or edges. Despite the appearance of a number of relatively unique features, such as joined legs, scalloped rims and cheek designs, there is an overall unity displayed by the sculptures in Group 1.

Subgroup 1a

All the sculptures in Subgroup 1a are relatively small ranging in size from approximately 20 to 28 cm in length. Their concave grinding surfaces, although shallow, are closer to bowl forms than

metates (Fig. 4). The animal represented is clearly feline, probably jaguar, and represents one of the most naturalistic groupings of these objects. All have fleshy legs which attempt to show anatomical structure. The slightly flexed and divergent legs reveal muscles and joints. In all but one instance feet are small yet visible. Heads are slightly under natural size with necks of average length. The short and almost flat wedge-shaped snouts are extensions of the foreheads. Noses are outlined and nostrils raised. Likewise, all have open jaws, some with teeth and/or N-shaped canines visible. Ears are on the top of the head and erect. Heads and tails project from the rim or sides of the bowl and are turned downward. Surface detail and decoration are uniform, geometric and rectilinear with incised zigzag patterns on the rim, diagonal or diamond interlace on the legs and diamond patterns on the head and/or neck and twill or diamonds on the tails. A distinguishing feature of the neck and tail designs is the lack of constraining outlines.

Three of the examples in this group were classed by Mason (1945:223) in his Group 2 on the basis of their material alone, reddish vesicular lava (Fig. 5). It was his belief that the common stone types and other similarities in size, form and surface motifs indicated the group was homogeneous and probably had similar origins in terms of place and time. His analysis works in part but not completely as other examples of his Group 2 do not totally fit the above characteristics and have been placed in other subgroupings.

Subgroup 1b

Objects placed in Subgroup 1b are closely related to those of Subgroup 1a but are slightly larger, measuring between 22 and 32cm in length. All have small heads and facial features like Subgroup 1a. Eyes are rimmed ovals, ears are upright, snouts are short and nearly flat with double outlined nasal areas and nostrils and mouths are open with N-shaped canines. Heads and tails come from the bowl sides and grinding plates are concave ovals as in Subgroup 1a. Legs are divergent and flexed like those of the previous group. Rim surface decoration consists of zigzag patterning or diamond interlace, developed from combining two zigzag patterns. The diamond or interlace neck pattern may be outlined (Fig. 6). One example which may foreshadow temporal changes, has slightly thinner, less fleshy legs without incising and larger feet (Fig. 7). This same piece is a double-headed effigy with diamonds incised on one head and neck and concentric circles on the other. All except this example have an interlaced diamond pattern on their tails which are attached to the right rear leg.

Some grinding stones introduce another new concept, that of joined legs (Fig. 8). At least two examples have the front and rear legs on each side joined by a horizontal bar on which rests a monkeylike figure. Besides the joining of legs and the introduction of circles as a surface design motif what differentiates the grinding stones of this subgroup from those of the previous subgroup is that all have some type of design element incised on the effigy head cheeks.

Mason (1945:224) placed two of these examples in his Group 2 despite the fact that one of them is of dark lava and not the reddish type he previously identified as the major criteria for inclusion within the group. In regard to the metates with side legs joined, Mason (1945:236) considered them to be "intermediate or transitional between the simpler forms and the true jaguar metates." Nevertheless, he considered them all to be from a similar cultural period.

Subgroup 1c

The sculptures in this subgroup display greater variety among themselves than is true for any other subgrouping of Group 1 grinding stones. Despite the range of variation they possess many traits in common with each other and with the group as a whole. There are clear relationships with Subgroups 1a and 1b. The legs of all are related on the basis of shape in which anatomical structure is depicted with muscles and joints evident. Many have a very fleshy appearance. All have divergent, flexed legs and many have enlarged feet.

The subgroup includes both oval and rectangular plate or bowl shapes. Oval examples are commonly larger than those in subgroups 1a and 1b but retain the depressed plate or concave profile. Rectangular examples are almost always larger, usually longer than those with oval plates. Although there is great overall similarity between the oval and rectangular grinding stones, the oval ones usually have necks and tails coming from the sides of the plates and

level with the upper edge of the rim while the rectangular ones have necks and tails originating from the plate surface but extending onto the plate rim or side. The result is often a thicker and longer neck with a distinct curve. In almost all cases the muzzle or snout of the head is directed downward as opposed to outward (Fig. 9).

Heads are related to those of Subgroup 1a and 1b with several almost identical. In a few instances the heads appear somewhat larger in proportion to the bodies. The wedge-shape head, common to Subgroups 1a and 1b, is modified into a larger somewhat rectangular version (Fig. 10). In most instances the snouts appear longer and more pronounced, although the nasal area remains low and nearly flat with a double outline. There is, however, a very clear distinction between forehead and snout area. Almost all the examples have a raised area to the sides of the nasal area representing whiskers. This is quite evident due to the striations or incised lines on the muzzle area. Ears are all erect on the top of the heads as in Subgroups 1a and 1b. With few exceptions the eyes are large ovals with double outlines, many of which extend onto the nasal area. Mouths are open wide with prominent N-shaped canines. Most examples have incised designs on the cheeks. These are usually composed of horizontal parallel lines bordering a simple zigzag pattern. A few replace the zigzags with diamonds.

The new element introduced with Subgroup 1c is the scalloped or notched rim. In several instances the lower edge of the perimeter of the grinding plates have been modified into a consecutive series of small notches which may be the prototype of those metates, stools or

tables with rows of stylized trophy heads along the rim edges. This scalloping or notching appears on both rectangular and oval plates but is limited to those having a zigzag pattern incised on the rim edges.

The most common rim decoration of the subgroup is a horizontal row of simple zigzags between two parallel lines. In some instances these zigzags are accompanied by the serrated or scalloped lower edge. A few have more complicated rim designs such as the interlaced diamond pattern found in some Subgroup 1b examples.

The most common leg decoration is a pattern of interlaced diamonds or diagonal lines. Several have no leg decoration and one has concentric circles. Head, neck and tail decoration is also a variation of Subgroup 1a and 1b with interlaced diamond and diagonal patterns, some of which are rather complex and finely carved. A few even have concentric circle designs but all have parallel outlines retaining this decoration.

Subgroup 1c-Cluster 1

It is likely that Subgroup 1c can be further subdivided on the basis of a few unique features. One important element seen in Subgroup 1b but not in 1a is the joining of front and back legs on each side by means of a bar on which is placed an animal figure. This characteristic is carried over to Subgroup 1c and here can be identified as an unique trait cluster. The figure is most often the representation of identical simians on each side. In one instance the two sides are not alike, one exhibiting a monkey and the other an

unidentified double-headed quadruped (Fig. 9). In another example there are two upright felines in atlantean postures. This iconographic element appears to reach its height of development in Subgroup 1c sculptures and is rarely seen in later effigy grinding stones. The most unique example in this cluster substitutes four squat atlantean figures for the animal legs. All other characteristics such as its small head with long neck, multiple zigzag rim pattern, rimmed oval eyes, upright ears, N-shaped canines and linear cheek designs, seem to indicate its placement within this subgroup.

The examples in this cluster seem clearly related, a number of them quite similar. Some appear to be unfinished, especially in rim design where a multiple line zigzag pattern is only just begun or monkeys between the legs lack facial features (Fig. 10). The sculptured forms are merely blocked out giving a very rectilinear appearance as opposed to the majority of the other examples where bodies and features are rounded and curvilinear. Some are related by having identical designs of concentric circles and triangular zigzags on their heads and necks while others are related in surface design but have stiffer more flattened legs.

Subgroup 1c-Cluster 2

Some grinding stones, although related to this subgroup, are more like each other than any of the previous examples. They have nearly identical heads but instead of the horizontal line and zigzag cheek pattern, each has concentric diamonds on the sides of the head

directly behind the eyes. All have concentric circles in low relief on their foreheads and necks, rimmed oval eyes and open jaws with large canines. One example is double-headed (Fig. 11) while the others have long arched tails attached to the right rear leg and decorated with the same concentric pattern as seen on the faces and necks.

Two of these have rims with multiple line zigzags (Fig. 12) while another has a poorly executed version of an angular guilloche pattern. In addition, the first two have fleshy legs without surface ornamentation while the third example has a series of concentric circles on thighs and calves. This last piece differs considerably from the others in the decorative treatment of the rim and leg area as well as between the legs.

As previously noted, front and rear legs may be connected by bars with animal figures. Although partly missing, the figure on one appears to have been a reclining monkey with all four legs resting on the bar. That on another is more jaguar-like and stands upright. The facial features of this small figure are quite similar to those of the main effigy figure of the sculpture. A feature not frequently observed is the foot markings on this last example. From the side a semi-circular line seems to represent the arch or to differentiate the pad of the foot from the upper portion. The toes are also incised. All have feet larger than those previously seen in Subgroups 1a and 1b.

Subgroup 1c-Cluster 3

Although sharing a number of characteristics with those sculptures of Subgroups a and b, the effigy examples in this cluster are distinguished by one unique trait. In nearly every case the lower edge of the plate rims are scalloped or notched. With one exception the rim surfaces are incised with a multiple line triangular zigzag pattern between two parallel horizontal lines (see Fig. 13). All have cheek designs of parallel lines and zigzags similar to the rim edges. Oval as well rectangular examples have long necks and tails which rise in arcs from the plate surfaces.

Despite these similarities, there are some differences. One effigy has plain, bulbous, fleshy legs much like earlier examples. Another has front legs and rear legs joined by a bar with a monkey figure. The example with the most profuse surface decoration consists primarily of diamond and diagonal interlace (Fig. 13). This piece also seems to be the most carefully carved. Like all effigies of this cluster, it has large incised oval eyes with double outlines.

Two of the examples in Subgroup 1c were found by Lothrop in the Diquis Delta (Fig. 14). They are, however, clearly related to those of the Atlantic Watershed and Central Highlands region and may have been imported into southern Costa Rica. Like the previous pieces, they have divergent flexed legs with necks and tails from the sides of the plates.

One example seems to vacillate between subgroups (Fig. 15). Its facial features relate it best to Subgroup a as it has the same large oval eyes and short snout with whiskers which are characteristic of

those effigies in the previous group. Its plate decoration of the single horizontal line and multiple zigzag lines and its surface leg ornamentation of diagonal interlace are like motifs on early examples of Subgroup 1c. But the diamond pattern on the legs and the high rising neck are more like later examples. Nevertheless, the simian figures on the bars between its legs are unlike any of the previous examples in posture or features. The fact that it came from the same archaeological site as Fig. 9, however, makes its inclusion in this subgroup probable.

Group 2

Group 2 effigy grinding stones are distinguished from those of Group 1 primarily on the basis of leg shape. Those examples included in the earlier group possess more naturalistic legs in which thighs are bulbous and heavy giving the impression of fleshy appendages with muscle and joint structure emphasized (Fig. 16). Group 2 legs are thinner, less fleshy and bulbous, flatter and narrower with less emphasis on musculature and joint structure. With few exceptions, there is little to distinguish front from back legs. They appear to be mirror images of each other and not even surface decoration can be cited to differentiate them. Feet are usually large and extend forward and backward equally. There are few instances in which toes are marked.

While the legs of all grinding stones in Group 1 are considered to be flexed, the majority of those in Group 2 are straight. The result is that when viewed from the side, the legs of the former

group are divergent, extending forward and backward. On the other hand, the majority of those in the latter group are parallel to each other and perpendicular to the surface on which they stand. However, they are not perpendicular to the lower surface of the grinding plate as the interior bone structure of the thigh is at an angle to the torso and the calf of the leg. The result is that the upper portion of the leg is at an angle to both the plate and the lower leg. The overall impression is one of naturalism despite the inaccurate anatomical structure displayed by the figures. A symmetry not existing in nature is sought and achieved by the artist. Instead of portraying true anatomy or limb structure, the sculptures of Group 2 exhibit a mirror imagery in the sense that front and rear legs are exact opposites.

Statistically, the size of the majority of Group 2 examples fall within the same range limits as the former group with extremes ranging from 26 to 56 cm in length and 10 to 20 cm in height. Nevertheless, there are fewer small concave plate grinding stones and more bowl-like forms, most of which appear to be taller and longer than those of Group 1.

Subgroup 2a

In several ways Subgroup 2a closely resembles Subgroup 1c. Surface ornamentation is profuse with incised decoration covering plate edges, legs, tails, necks and heads. The most common motifs are diagonal and diamond interlace patterns. There is a preciseness and exactness which pervades the carving, whether it be purely

decorative or morphological. The appearance is one of a highly developed skill as opposed to the experimental, less developed nature of many of the former examples in Group 1 (Fig. 17). With few exceptions this surface ornamentation and the overall handling of the stone is highly accomplished.

Examples are both oval and rectangular with flat plates, some slightly concave or with rims raised enough to be classified as bowls regardless of their original function. In all the rectangular examples of this subgroup necks and tails originate from the plate surface and are gently arched with the tails being attached to either rear leg. As with those of Group 1, where the plate is oval, deeply concave, or with a raised rim, the neck and tail are attached to the sides or edges of the bowl or plate. Only in a few rare instances do these come from the plate surface or bowl interior.

Facial features have a consistency. Eyes are nearly always large ovals (sometimes almost circular) with encircling rims. These rims may take any of several variations in spite of their overall similarity. There are single or double rims, rims extending down the nasal area, half rims, rims with flattened bottoms and rims with extensions onto the cheek area. A few pieces have circular eyes but no rectangular examples show up in this subgroup. As with Group 1, ears are commonly erect facing forward or toward the sides of the head. In some cases the ears are lowered and emerge from the sides of the heads rather than the top. Mouths are open wide and are primarily V or U shaped with large N-shaped canines, incisors and molars carved in low relief. Teeth are clenched as if the animals

were growling or snarling.

Snouts are moderately long with nasal areas usually represented by a slightly raised surface with single or double incised lines defining length and width. These lines are often extensions of the eye rim and cheek design and are commonly two or more parallel lines from the outer corner of the eye to the jaw bone. Nostrils are frequently circular projections at the end of the snout on the sides of the central nasal area. Some few show whiskers in low relief or the surface of the upper lip is raised as if in a snarl.

Subgroup 2a-Cluster 1

Within the subgroup are several clusters of grinding stones. Some of the pieces are related because of their rim edge decoration of diagonal interlace and their legs of similar elements forming a diamond pattern. A few of those with diagonal or diamond leg designs have rims with intertwined guilloche strands. Among these sculptures are some of the most precisely carved and technically beautiful pieces from Costa Rica (Fig. 18).

The examples in this cluster differ from those in other clusters primarily in terms of facial features. All have large oval eyes with encircling rims continuing onto the nasal areas. Snouts vary from narrow and short to wide and long, these last having larger and more deeply carved teeth. All have raised nostrils but some more prominent than others. In addition, all have diagonal interlace design in low relief on head, neck and tail. With one possible exception, all have parallel line cheek designs extending from the

eye rims to jaw bones. Those with the most prominent nostrils are also the most elaborate of the group in terms of facial features (Fig. 16).

Only one example has a raised rim. It and one other have legs flush with the plate edges. All have necks and tails springing from the plate surfaces. With the possible exception of one piece the tails extend to the right rear leg. Although feet are emphasized, they are not identical. Some, as in the smallest example, seem to be slightly pronounced extensions of the legs. Others are flattened ovals on which the legs rest. The remainder are relatively thick rectangular pads.

Four pieces from this cluster are from the Atlantic Watershed/Central Highlands Region while two are from southern Puntarenas. This similarity of material items tends to support the hypothesis of a single culture area throughout the Costa Rican lowlands and highlands.

Subgroup 2a-Cluster 2

The second cluster of sculptures in Subgroup 2a is placed together primarily on the basis of surface ornamentation. In each example the bowl sides have a pattern of interlaced concentric diamonds which are very carefully carved (Fig. 19). All can be said to have a raised rim either due to sufficiently deep concavities or edges perpendicular to the grinding surface. They range in size from 22 to 40 cm in length and stand a mere 10 to 12 cm in height.

Facial features are very similar and clearly related to the

previous cluster. The diagonal interlaced leg decoration of some relates to the former examples, that of others continue the diamond pattern of the bowl surfaces or plate edges. As has been true of several examples of Group 1 and Group 2 effigy grinding stones, the necks are long and the heads disproportionate to the rest of the animal.

Subgroup 2a-Cluster 3

The grinding stones of this cluster have some but not all the characteristics of the previous examples. Their range of variation is such that they do not form independent clusters of objects but share motifs or features with one or more pieces. The most commonly shared attribute is the incised surface ornamentation. With one exception all these examples have the diagonal/diamond interlace pattern on the legs. However, there does exist a wide range of variation in the design and the quality of its execution. The most crudely carved of the pieces has parallel diagonal lines slashed across the surface with little regard for placement and precision in the design (Fig. 20). It may be a transitional piece between Group 1 and Group 2 as its rim design is the simple zigzag typical of the first pieces discussed. It also shares an incised zigzag motif on the forehead above both eyes with an example previously placed in Subgroup 1b. Its leg surface pattern may also be a carry-over from Group 1 examples but its thinner, less bulbous and fleshy leg shape and prominent feet are more akin to effigy examples in the Group 2 classification. The oval eyes with flat bottoms and parallel cheek

lines are not found among features of the former grouping.

Another example from this cluster shares a number of the above characteristics, especially the lack of refinement in surface ornamentation (Fig. 21). Flattened oval eyes and parallel cheek designs as well as large feet relate the piece to Group 2 sculptures. Although part of the Troyo Collection and presumably from the Central Highlands, its flattened ears resemble several grinding stones from southern Costa Rica. A small section of the edge decoration at the sides of the neck contains a series of horizontal lines recalling those found on others pieces in this cluster.

Very few effigies have a double outline around the mouth emphasizing the largeness of the feature and the prominent teeth. One example from El Maiz, an Indian reservation in the Diquis Region, has this feature (Fig. 22). It is one of the rare examples whose designs cover more than the outer surface of the legs.

Some of these last examples have the least shapely legs of the entire group showing little differentiation between thigh and calf. They have in common the diamond/diagonal interlaced surface ornamentation but differ in rim design ranging from a curvilinear zigzag to horizontal lines to chevrons and angular frets. Mason placed one of these in his Group i on the basis of its material, light gray felsite (Fig. 23). In material it is related to another in this cluster, both of which Mason feels may be from Paso Real or Euenos Aires in southeastern Costa Rica where this material is common. As Mason states (1945:223) the decorative motifs of "parallel straight lines intersecting in angles and forming

rectangles or diamonds" is consistent with the examples in his Groups 2 and 3. These have already been described as belonging to Group 2 of this classification. The addition of other design elements and the differentiation of leg shapes imply the presence of another variable which possibly is time.

In general, these examples of Group 2a relate to the stone fragments Lothrop excavated at Farm 5 in the Diquis Delta Region. These broken jaguar grinding stones had leg shapes similar to those discussed above. More importantly, the surface designs and facial features repeat those of Group 2a examples.

Subgroup 2b

Sculptures in this grouping conform to the range of designs previously established for Group 2. However, a distinctive feature of Subgroup 2b is a raised nasal area with a rounded and fleshy upper lip. If the carvings were not so weathered it would be possible to say with certainty whether this represents nostrils or the upper lip raised as if in a snarl. The latter seems certain in a few instances (Fig. 24). Such a feature did not appear in any of the sculptures placed in Subgroup 2a. It becomes a common motif at this point and is seen throughout the rest of the sequence. It is even noted in some of the most highly stylized and presumably late examples. Mason showed this feature in several examples of effigy stones classed in his Groups 1, 4, and 5. When he referred to this motif (1945:270) he described it as a "hemispherical knob, with three concentric semi-circular rings" and considered it to be the result of the lower

canine forcing the lip upward (Fig. 25). Regardless of how logical such an explanation may seem, this cannot be true for the case in question since the semi-circular area is directly above the root of the upper canine and not the point of the lower canine. Thus, the markings would not result from pressure of the lower tooth. A more probable explanation can be arrived at by examining the fleshy upper lip area of any member of the wild cat family (Fig. 26). When the mouth is open exposing the teeth, the flesh rises in an arc similar to that portrayed on the feline sculptures. This feature will hereafter be referred to as a snarl in order to best describe the nature of the lip area. It is found on late Subgroup 2b and 2c examples.

Subgroup 2b-Cluster 1

Included in this grouping is a cluster of small bowl-like forms. They range from 16 to 26 cm in length and 6 to 10 cm in height. Considering that the length measurements include heads and tails, these are truly miniature grinding stones (Fig. 27). They are grouped together primarily because of their overall morphology as few have any surface decoration. There are five ornamented examples, four of which have geometric diagonal interlace on the legs. In the fifth, the design is extremely shallow and crude and contained within outlines, a feature not yet encountered but one associated primarily with elaborately carved and highly stylized examples (see Subgroup 2c sculptures). The incised chevrons on the head and neck and the sigmoids on the tail are design motifs which also seem to occur later

in the sequence. It may be that this piece should not be placed with those of Subgroup 2b but with a group presumably later in the sequence.

Subgroup 2b-Cluster 2

The sculptures placed in this cluster are related to each other primarily through the sharing of very similar facial features. Most have elongated heads with simple incised oval eyes and a low tapered nasal area defined by a single line. Ears are upright at the top toward the sides of the heads. Mouths are open, U-shaped, and filled with well defined teeth. With few exceptions, all the sculptures have semi-circular markings on the upper lip to the sides of the nasal area. In some cases these are simple, single, incised lines (Fig. 28). Only one sculpture lacks these markings but the rest of its facial features correspond to those of this cluster.

Twelve of the fourteen examples in this cluster have semi-naturalistic undecorated legs with shapely thighs and calves (Fig. 29). All but one also have plain undecorated heads, necks, cheeks and tails, a feature which becomes increasingly more common. Most have ornamented rim edges, scallops, or fringelike carving, simple horizontal incised lines or a wavy zigzag pattern in low relief. This last motif is a return to the earliest surface ornamentation of the grinding stones but here its style is quite different. The early examples were somewhat crudely incised designs whereas this is a rounded, carefully rendered low relief. Those with the fringe-like border relate to non-effigy oval stools.

Two of the examples in cluster 2 differ considerably from the others with the exception of facial features. One has short tapered rectangular legs and a flat tail incised with concentric diamonds (Fig. 30). Such legs are not characteristic of any group in this analytic scheme but flattened, patterned tails seem to appear toward the end of the sequence and are usually accompanied by flattened, rectilinear heads and may even be associated with an animal other than the jaguar. The other two examples have legs joined by bars as found in Group 1 sculptures.

The last member of this cluster is also the most elaborate and stylized (Fig. 31). Technically its surface ornamentation is like that of other pieces in the cluster but stylistically it relates to none of the examples. Originally belonging to the Keith Collection, Mason (1945:228) referred to it as the "finest of all the general jaguar metate shapes." He placed it in his Group 5 which he considered to be comprised of those sculptures with the "maximum of artistic development and the finest technique." Mason went on to suggest that since these pieces were of dark vesicular lava they possessed a common origin in place and time. However, not all examples of his Group 5 are equally elaborate and stylized. Nor are all the ornate sculptures classed as Group 5. Since Mason labeled all these examples as having come from Mercedes, they may all be related in time and space despite the lack of homogeneity in materials.

An examination of the surface ornamentation of several examples in this cluster shows them to be superbly carved in low relief using

motifs or combinations of motifs not seen previously such as angular interlaced links on the rim, narrow bands of intertwined zigzags and sigmoids on the head, or tail surfaces covered with concentric circles and zigzags (Fig. 28). In some examples short but shapely legs recall the naturalism of Subgroup 2a sculptures but now are flattened and carved with designs far removed from the simple diagonal weave of the previous sculptures.

Subgroup 2b-Cluster 3

Another cluster of nine grinding stones shows a wide variety in size, shape, decoration and material. Nevertheless, there is a thread which relates these pieces and brings an underlying unity to them. Anatomically they are some of the most naturalistic of the effigy grinding stones. Four of these have heads turned toward the side as if directing their gaze to the viewer (Figs. 32, 33).

Three of the four have a number of stylistic similarities (Figs. 32, 33). All have the neck rising from the grinding plate with sigmoid, fret and diamond motifs. Rim decoration consists primarily of sigmoids. In one instance they seem worn yet crude and imprecise. On another they appear to be in higher relief and more curvilinear. While these are quite similar facially, their legs are very different. In one example they are almost cylindrical with feet joined by bars on the sides while in another instance the legs are short and bulbous with large feet.

Other examples in this cluster are extremely low bowl-like forms which rest on the lower surfaces of the grinding plates as the legs

are splayed outward from the bowl sides (Fig. 34). In these cases the legs are knob-like projections which hold curved bars leading to the mouth or tail. They are related in concept to other examples with ropelike bars uniting tail, legs and head.

Mason (1945:229) placed several Costa Rica examples in his Group 5 because he considered them to exhibit the height of artistic development. In fact, he suggests that among them are those which typify the latest and most developed art style of the area. Like some smaller and less elaborate pieces, legs are joined to the head by rope-like appendages and to the back of the plate by flattened bifurcated tails. Surface carving of angular sigmoids relates these examples (Fig. 35) to Mason's Group 4 pieces while the feet and toes indicated recall pieces in his Group 5. Besides the angular sigmoid design, the flattened tails and flat plates with rims relate to many of the more developed and presumably later examples.

Subgroup 2c

The final characteristic of importance to Group 2 sculptures is the hollowed out mouth and jaw area. This trait is found on only a few examples (see Mason 1945:pl. 21C). If Mason's hypothesis relating this feature to late examples is true, then these last sculptures may belong to Group 2c of this classification. In such cases, late characteristics would be: hollow jaws or mouths, sigmoid designs as opposed to diagonal or diamond interlace, flattened tails rather than those with cylindrical cross sections, and low relief designs as opposed to incised designs.

Transition from Group 2 to Group 3

One of the characteristics which serves to differentiate many of the Group 3 grinding stones from those of the previous stage, is the presence of more blocky and rectangular heads. A good example of what might be thought of as a transition piece is a small double headed bowl-like form with short plain legs (Fig. 36). This last feature is also typical of Group 3 sculptures. Rim design is divided between the more common angular fret and sigmoid motifs. Heads will have differing stylistic features. One feature is the common oval head with long neck and erect ears. Another is an angular head without a neck which has flat ears on the sides extending from the mouth. Eyes, nasal areas and mouths may be similar except for the raised orbital area on some. Flattened foreheads, flat ears, and necks from the plate surfaces are more typical of Group 3. These heads may actually represent different animals as the angular examples seem more reptilian than feline.

Also included in this grouping are other small bowl-like objects, some of which are double-headed and are ornamented with curvilinear zigzag or wavy line rim designs (Fig. 37). Mason (1945:226) referred to such examples as representing tapirs because of their long ridged noses. Stylistically they have much in common with those described above because of their neckless heads, small ears erect at the sides of the heads and large circular eyes. On the basis of material, not style, Mason placed these in his Group 4.

Related to the previous examples is a small oval bowl-like grinding stone slightly more elaborate than the others (Fig. 38).

Although single headed, a short tail projects from the opposite end as in the double-headed objects. Legs are trim and erect ending in small feet with incised toes. Surface motifs range from a single angular zigzag on the rim to chevrons on the tail and legs to concentric circles on the head. The neckless, flattened birdlike head and outlined leg designs are more like Group 3 than Group 2 of this classification.

Mason (1945:227) placed another example which morphologically resembles the above pieces in his Group 4 yet it appears more crude and less skillfully executed (Mason:pl. 18C). It has the more angular head, round eyes, flat ears, tail, and square jaw of the Group 3 sculptures in this study. With the exception of a single curvilinear sigmoid motif on the tail, the curvilinear surface design is not typical of Group 3 ornamentation. Nevertheless, its features are more like the latter grouping than they are like the sculptures of Group 2.

Group 3

Grinding stones of Group 3 are the largest and most streamlined of the examples known. More pieces from southeastern Costa Rica (Diquis Region) are included within this grouping than in all the others combined. Grinding surfaces of the majority are flat with slightly raised edges. In most cases the necks and tails do not extend over nor spring from the plate. Heads are longer with raised nasal areas and the snouts are clearly differentiated from the foreheads. Upper lips are often raised as if in a snarl. Ears are

frequently low or flat on the top or, if on the sides, extend from the jaw. Eyes are more commonly circular, often accompanied by a raised orbital rim. It is not unusual that jaws are large with square outlines and prominent teeth.

Subgroup 3a

The sculptures of Subgroup 3a retain many of the characteristics of Group 2 and anticipate those characteristics which become common with the grinding stones of future groupings. The majority of the Group 2 sculptures are elaborately ornamented with incised or low relief surface decoration. These designs are usually rectilinear, composed of interwoven parallel lines forming diagonal or diamond patterns. Curvilinear elements are few and uncommon. Group 3 grinding stones as a rule have less surface decoration and are more plain than those of previous groupings. However, those from the Diquis Delta Region are more profusely ornamented than those of the Atlantic Watershed or Highlands area (Fig. 39).

Subgroup 3a-Cluster 1

The most elaborate of the Group 3 examples form this cluster. Of the seven Group 3 sculptures from the Diquis Region, only two do not have surface designs on their legs. These are ornamented only on their rims with a flattened zigzag pattern. All have rims raised with a slight ridge evident on the perimeter of the plate surface. None of the other surface patterns can be clearly perceived, as the incising is extremely shallow. The remainder of the examples in this

cluster show rim designs from simple parallel horizontal lines to multiple line zigzags to angular frets and diagonal interlace (Fig. 40). One piece has rather irregular sigmoids which seem squeezed and cramped into the space.

Legs are shapely but far removed from the fleshy anatomy of Group 1 and early Group 2 examples. They are becoming thinner, taller, more streamlined and simpler. Where Group 1 legs are divergent and Group 2 legs are mostly parallel, Group 3 legs are normally convergent toward the center of the plate giving the animal a bow-legged appearance. Although several have legs partially missing, the remainder testify to the importance of feet. Most are medium to large oval appendages without marked toes.

Eyes are still large ovals without encircling rims. Nasal areas lack the incised surface ornamentation common throughout Groups 1 and 2. Ears are low and oriented toward the sides of the heads while mouths are a rectangular U-shape. Mason (1945:222) placed one of these in his Group 1 purely on the basis of its material of light gray felsite as it has no stylistic relationship to other members of his group (Fig. 41).

Subgroup 3a-Cluster 2

A second clustering of sculptures of Subgroup 3a is primarily from the Atlantic Watershed/Central Highlands region. One exception is an example from southeastern Costa Rica which seems to anticipate the style of Subgroup 3b primarily because of its facial type. It is grouped with these sculptures because of its surface decoration.

Four of the sculptures are under 50 centimeters in length and share morphological as well as ornamental features. The smallest and simplest has surface ornamentation on the tail only. It is likely that the piece is incomplete as the facial features are extremely simplified and the mouth not even outlined. The most poorly carved of the group still corresponds well to the style in having circular eyes, squared mouth, and curvilinear sigmoids on the neck and rim areas. The most typical of the cluster are from the Keith and Hartman Collections (Fig. 42). They are similar in size (slightly over 35 cm long) and have nearly flat plates whose interiors slant gently upward at the edges. Legs are simple and plain with small oval feet. Tails are long, circular, and attached to the right rear legs. Heads are well shaped and in good proportion to the body with fairly long necks originating from rims but extending onto the plate surfaces. Eyes are large and circular while ears are erect at the sides of the heads. Nasal areas are slightly raised with snarl marks on the upper lips. Rim designs are well carved in low relief with zigzag or fret motifs.

Despite its difference in size (61 cm), another grinding stone of this cluster is almost identical to the Hartman example (Fig. 43) and is therefore related to the rest of the large examples in Group 3a which are between 60 and 90 cm long and 20 to 23 cm high. Although these seem quite individual in terms of decoration, they are closely related stylistically. As with those from southeastern Costa Rica, they are all oval with rim designs ranging from parallel lines to diagonal or diamond interlace to curvilinear sigmoids. Legs are

plain or with ornamentation consisting of concentric circles or interlaced patterns. Tail and neck designs are similar with curvilinear and angular elements. Most have incised cheeks and all have snarling upper lips.

A single example of an oval grinding stone without head or tail but with animal legs is clearly related to these sculptures of Subgroup 3a (Fig. 44). It is identical in morphology and design to effigy pieces in this grouping. Although originally belonging to the Troyo Collection and coming from the Central Highlands, there is no stylistic difference between it and effigy examples and, therefore, can be assumed to have been contemporary with them. The most unusual examples of this cluster anticipate Subgroup 3b (Fig. 45). They have flat grinding plates with extremely low rims and curvilinear sigmoids in relief. Flat scroll ears come from rectangular mouths and flat surfaced tails extend from the rims. Despite the overall similarities, there are facial differences among them varying from large oval eyes and a flat nasal area to recessed circular eyes and raised nostrils. All have an angular geometric feeling which may be related to different animal representations. Presumably, they represent either a jaguar or a crocodile. The flatness of head and tail features may be related to iconography as well as style (flat tails may be indicative of a change in imagery).

Subgroup 3b

This subgrouping of Costa Rican grinding stones is one of the most homogenous of any of the groups. Seven of the examples are so

uniform that they could be thought of as being products of the same local group of artisans. All have flat or nearly flat oval grinding surface with minimally raised rims (Fig. 46). The largest is 43 cm in length and 20 cm in height. With the exception of one, all have slim, converging legs without surface ornamentation. Rim designs are slightly curvilinear versions of single zigzags, intertwined zigzag motifs or frets forming a guilloche band. They are in low relief as opposed to the incised surface decoration of previous types.

Heads are neckless, elongated and angular with flattened foreheads and squared jaws. Ears are flat scrolls or volutes against the sides of the heads and are continuations of mouth and jaw features (Fig. 47). Eyes vary between circular and oval shapes, are raised and encircled by orbital rims. Teeth are prominent with large canines, incisors, and molars within a rectangular outline. Most tails are flattened with the longitudinal edges notched by a series of parallel lines. Mason interpreted these as scallops representing reptilian scales. In reference to one example he said "There can be little doubt that this represents a crocodile or an alligator, rather than a jaguar" (Mason 1945:226; Fig. 47 of this study). If such is true for one example, it must also be the case for the other members of this grouping. It seems likely that these may represent animals other than felines as not all the effigy sculptures of Group 3 are angular or flattened like these examples. It is probable that representations of new and different animals appeared alongside those of jaguars at the time this style was prevalent. The existence of two distinctly different animals in the repertoire of the artists is

illustrated by two heads now in the Keith Collection of the Smithsonian Institution, but originally from the site of Las Mercedes (Figs. 48, 49). One is oval and curvilinear, the other is rectangular and angular. The curvilinear example is feline with long projecting canines and raised whiskers on the upper lip. The angular example with its flattened forehead and nasal area has long canines projecting from the upper and lower jaws. However, they do not form the N-shape typical of the felines but are separated with smaller teeth between them as in crocodiles. In place of the feline whiskers there are two semi-circular projections on the upper lip, probably representing the external nares of members of the Crocodilia family (Crocodylidae).

It is impossible to know if this dental pattern which is characteristic of crocodiles and related species is present in all the examples of this grouping since the analysis was done primarily from published illustrations in which details of the teeth are not visible. In addition, previous authors make no reference to the mouth structures. Mason (1945:226) laconically states that the tooth pattern and the large canines of one of these examples "are well displayed". Another similar head broken from a grinding stone is now in the Stockholm Museum. It was found by Hartman during his excavations in the central Costa Rican Highlands at the site of Orosi (Fig. 50).

The largest effigy grinding stones in this study belong to this grouping (Figs. 51, 52). They measure 188 and 126 cm in length and were originally part of the Keith Collection from Las Mercedes. Both

have thin, flat plates with an extremely low but raised rim measuring only 1 cm wide. Eyes are large, nearly circular ovals with raised orbital rims. Mouths are extremely large with long pairs of canines separated by smaller teeth as in those examples previously described and thought to represent crocodiles. One is further distinguished by having the lower jaw hollowed out so that the teeth are separated by open spaces (Fig. 52). Mason (1945:234) referred to an example in the Brooklyn Museum with this same feature and said it was a "rare and probably late developed feature...." There are few examples from Central or Atlantic Costa Rica in this study or in museum collections with hollow or excavated jaws. It appears to have been a common characteristic of late effigy metates in the Nicoya Region but not generally throughout Costa Rica and Panama.

Other facial features such as flat ears in the shape of heads, raised circular nostrils or nares and flat tails also relate these two examples to the smaller sculptures within Group 3. Mason (1945:233) referred to one of these as having a "stylized jaguar head" and the other as being "crocodilian". Considering the great similarity of these two pieces in terms of style and features, it seems unlikely that they represent different animals. In view of their relationships to other examples and the crocodilian attributes, it seems highly probable that both represent members of the reptile family.

Among the most important traits of one of these large examples is the series of small animals appended to the lower edge of the grinding plate. This is similar to motifs on some of the grave slabs

or the "great stone altars" (Mason 1945:234). (See Chapter V for a discussion of these sculptures.)

Subgroup 3c

A number of small bowl-like grinding stones have one or more stylistic attributes which suggest they are related to the examples included in Group 3. All have flat plates with raised rims, simplified, undecorated, nearly cylindrical converging legs with small feet. Tails are flattened and heads are angular. Necks overlap the rim edge and rise from the plate giving the appearance of being extremely long (Fig. 53). However, when compared with examples of Groups 1 or 2, necks are relatively short from rim to back of head. Although the legs are plain, all have some surface markings on the tails. Only one example has neck and head ornamentation.

Several have rim designs in low relief consisting of variations of the fret or guilloche motif. All have squared jaws with rectangular shaped mouths, large prominent teeth, round eyes with raised orbital rims and flattened laterally placed ears. In a couple of cases, the ears are continuations of the jawline while others have an ear type found on a number of human images from the Atlantic Watershed Region (Fig. 55). The remaining sculptures have small triangular shaped human heads for ears (Fig. 54). These apparently are a late characteristic and may be restricted only to Group 3 examples. One has the recessed mouth also seen in a few late examples (Fig. 55). The entire group gives the impression of being as carefully carved and sculptured as the larger examples.

A single example, although not conforming totally to the general set of traits listed above, is clearly related to the grouping (Fig. 56). Like them, it is small and rectangular with little surface ornamentation. Legs are broken but seem to share the same characteristics as the others. The greatest differences are in the facial shape with its more oval and curvilinear form, oval eyes and short but erect ears. Such characteristics relate it to the larger effigy stones of Group 3. Its major importance here is its provenience having been excavated by Hartman in the small cemetery of Santiago in the Central Highlands of Costa Rica. Baudez (1967:203) considers these tombs and their contents to be from the Late Polychrome Period (AD 1200-1550) on the basis of a Jicote Polychrome figurine found in tomb 16.

The last few examples of this subgroup are problematical in that they possess many of the characteristics of the cluster of small grinding stones in Group 3c but deviate from them in other features. All are small, flat, rectangular and bowl-like with raised rims (Fig. 57). All have stylized, flattened or cylindrical converging legs and elongated snouts. However, in no other aspects do they all comply with the characteristics of Group 3c examples. With one exception, all have necks and tails overlapping the rim edges and originating in the bowl interior (Fig. 58). Surface decoration is more pervasive, covering rims, legs, tails and necks. Design motifs consist of zigzags, circles, diamond interlace and sigmoids which are best described as being incised rather than carved in low relief. Facial features include circular eyes, with and without rims, raised and

flattened ears, squared and oval mouths, raised nostrils, whiskers and snarling lips. Despite the variety of individual features, as a group these sculptures belong more to Group 3 than to any other category.

Panamanian Effigy Grinding Stones

Although the Panamanian effigy grinding stones were placed in groups according to the same traits established for the Costa Rican effigy grinding stones, none of those from Panama parallel the Costa Rican examples placed in Group 1 of this study. There are no known Panamanian pieces with the fleshy and bulbous legs of the presumably early effigy sculptures from Costa Rica. In no instance is there anything comparable to the emphasized musculature and anatomical structure of the Costa Rican pieces. The earliest known Panamanian examples exhibit a different structure.

Group 2

From the provinces of Veraguas and Chiriquí in western Panama come a few grinding stones which relate to examples from Costa Rica on the basis of overall form, leg shape and position as well as surface decoration. However, they are generally less refined and elaborate than those from the Atlantic Watershed/Central Highlands Region of Costa Rica. The lack of precision as well as the decorative motifs suggests these sculptures may be early Group 2 examples.

A single piece in the collection of the Museo del Hombre Panameno from Veraguas has some of the least typical facial characteristics of these sculptures (Fig. 59). The rim design is a

common multiple line zigzag while that of the legs, head and tail is the usual diagonal and diamond interlace pattern. In contrast with the Costa Rican examples, the head and neck interlace is carried onto the nasal area obscuring facial features except for the unusual raised circular eyes with indented pupils. As was true of early Costa Rican sculptures, the surface design is rather carelessly executed and is incised not carved in low relief, as in the more elaborate pieces.

In the McNeil Collection of the Peabody Museum at Yale is an equally crude piece from Chiriquí (Fig. 60). Its extremely eroded surface makes identification of decorative motifs nearly impossible. Nevertheless, the rim seems to have had a zigzag design while the legs were covered with an incised interlaced pattern. Facial features are unusual and crudely carved with irregular rectangular eyes with indented pupils, flat T-shaped nose and rather uneven flat ears.

The most common and consistent characteristic of Group 2 sculptures is the presence of large upper legs with rounded thighs and thin, almost cylindrical lower legs with large feet. As in the Costa Rican pieces, the legs are mirror images of each other with the thigh at an angle to the plate bottom and the lower leg. In a majority of the cases the lower legs are parallel to each other rather than splayed as in Group 3 examples. Legs are usually decorated with a diagonal and diamond pattern as if woven. This is seen on bowl-like forms as well as on flatter metate-like grinding stones.

Subgroup 2a

Several small carvings from Chiriquí exhibit most of the physical characteristics of the majority of Group 2a grinding stones from Panama (Fig. 61). They are rimless with plates flush or nearly flush with the legs, tails curved to rear legs, feet present, and short necks overlapping rim edges to rise from the plate surfaces. All have small upright ears and oval eyes. One has no surface decoration, one has a crude fret and sigmoid design lightly incised on the rim and another has uneven parallel line zigzags on the rim and diagonal or diamond woven patterns on the legs, neck and tail. All are rather crudely executed.

Subgroup 2b

A few examples, about 40 cm long and rather low, conform to many of the same features as the smaller carvings. Three have incised diagonal and diamond patterns on the legs, head and tail (Fig. 62). Edge designs vary from diamond and irregular frets to multiple line zigzags to groups of parallel horizontal and vertical lines. Eyes are oval with rims and parallel cheek lines, nasal areas are low, ears are on the top of the heads and mouths are open with canines and other teeth visible. Feet and necks vary from short and thin to long and massive while plates are all rimless.

These examples are related to a number of larger and excellently worked sculptures from Veraguas and Chiriquí. The parallel horizontal and vertical line rim design on one example is repeated on

a larger scale in one from Las Palmas, Veraguas while one from Chiriquí exhibits only horizontal lines and another shows horizontal lines with short vertical notches (Figs. 63, 64). These are among the largest examples from Central America and measure from 60 to 90 cm in length. Despite the different proveniences of these two pieces, they have more in common with each other than they have differences. Both have a diagonal/diamond interlace pattern on the legs, tails, necks and heads. Necks and tails spring from the grinding plates yet cover the edges of rimless, convex surfaces. A third example differs in having a more haphazard diagonal leg interlace, neck and tail coming from the plate edge and a low raised rim (Fig. 65). All have rather long, slightly raised muzzles, ears erect on the top of the head, and wide open mouths with large canines and other teeth. Large eyes with encircling rims are the rule; two are incised ovals while the other is a recessed circle. All have incised cheek designs comprised primarily of parallel lines extending to the jaw bones. As with examples of Group 2 from Costa Rica, the lip areas are raised with nostrils, whiskers or snarl marks.

One of the most elaborate and unusual sculptures of this subgroup is a deeply concave example from the St. Andres Mountains near Bugabita, Chiriquí (Fig. 66). The bowl and legs are covered with an angular guilloche and diamond design, the head with a rosette and triangles. The length of the tail is split with a groove bordered by a row of triangles, toes are marked, and eyes are large, recessed and rimmed circles. Other facial characteristics are those most common to this group.

Subgroup 2c

Nine sculptures of this group form a subgroup sharing most morphological and ornamental features. They range in size from 30 to 55 cm in length and 13 to 23 cm in height. All are well executed with regularized surface carving. This subgrouping is somewhat more homogeneous than the others in Group 2. All examples are oval with heads projecting from one end and tails from the other. In six instances they are attached to right rear legs and in three instances to the left leg. Most have only slightly depressed plates while a few have very low raised rims (Fig. 67). The majority have necks and tails overlapping rim and plate surfaces.

With the exception of two examples which have circular eyes, all have oval eyes, one simple incised ovals, the rest rimmed. Only one is devoid of cheek ornamentation. These designs vary from simple parallel-line eye extensions to geometric motifs bordered by lines from the outer eye edge to the jaw (Fig. 68). All have forward or side facing erect ears. Most nasal areas are relatively low extensions of the forehead and are framed by double outlines from the eye rims. Only three are rounded and fleshy. Several have raised nostrils and a couple have the upper lip raised in a snarl. All have V-shaped open mouths with canines and other teeth exposed. The most common rim edge design is a diagonal interlace, angular fret or a diamond pattern. Two are similar in having a sectional pattern of horizontal lines and zigzags alternating with parallel zigzags or chevrons (Fig. 69). The least complex design consists of a

continuous curvilinear zigzag. With two exceptions, all have diamond interlace pattern on legs, tails, necks and heads. Three are nearly identical with pairs of diagonal lines interlaced to form large diamonds. Another has a similar but more precise design in low relief formed by intertwining sets of triple diagonal lines (Fig. 70). One example has a most compact diamond pattern as if in imitation of tightly woven textile (Fig. 71). Diamond patterns caused by intertwining two angular zigzag lines or by placing a horizontal guilloche on a vertical surface are found from the top to the bottom of the legs of two of the sculptures. Curvilinear or circular elements combined with parallel line interlace are also found. However, the most unusual leg design consists of two stars with circular rims (Fig. 69).

Miscellaneous Group 2 Sculptures

In several respects, one of the most beautifully carved pieces from Panama is also the most unusual (Fig. 72). It has the common oval plate, semi-naturalistic legs with large feet and interlaced diagonal/diamond leg and tail designs which wrap around the appendages. On the neck and plate rim is a series of triangular-shaped heads like those on Costa Rican examples and those seen on the circular stands or stools. The facial features of the effigy head are unlike those on any other Panamanian or Costa Rican grinding stones. They consist of irregular rectangular eyes with depressed pupils, flat T-shaped nose, upright curled ears and large canines within a deeply recessed mouth. This last feature, the

recessed mouth, is uncommon and seen only in a few presumably later examples.

Two other carvings meet all the criteria for inclusion within Group 2. Both have semi-naturalistic legs with large feet and have surface designs of the most commonly repeated patterns. One of these has an angular fret rim band and interlaced diamonds on its legs, tail and neck. The other is covered with a continuous small diamond pattern on the bowl sides and large concentric diamonds on the legs, head and tail. Both have long snouts and raised nostrils. One also has the raised and snarling lip. Mouths are open wide with large incised teeth. Both have oval eyes, one with a simple outline, the other with raised rims. They differ from the other examples of Group 2 in having small faces attached to the sides of the heads in place of ears. This feature becomes more common with the Group 3 examples having more rectangular heads.

A single piece from the Baru district of Chiriquí is large and thus relates in size to several examples previously described from Western Panama. However, its decoration is almost worn beyond recognition and its legs, which are normally mirror images, are identical in this example. The leg designs of concentric circles and less than angular diamonds relate the pieces to Group 2 as do its facial features.

Group 3

Grinding stones classified as Group 3 are the largest and simplest of the effigy metates from Panama. There are no

characteristics or traits of these sculptures that are not also found on those from Costa Rica.

Subgroup 3a

Panamanian effigy grinding stones classified as Subgroup 3a are almost identical to those from Costa Rica in size, shape and surface ornamentation. Examples from Chiriquí and Veraguas are similar enough to suggest the existence of a single culture area or a long distance trade route from the Atlantic Watershed of Costa Rica through Western Panama to the province of Veraguas. With few exceptions, descriptions of Costa Rican sculptures of this type can be applied to those from Panama (Fig. 73). Mason (1945:225) refers to a specimen from Costa Rica as being typical of the Chiriquí type with broad flat plate and thin legs. However, he says this example is without a raised rim while three of the large oval grinding stones from Chiriquí placed in this grouping have extremely low but raised rims (Fig. 74). In describing the example, Mason referred to large circular eyes, an open mouth with large canines, snarling lip, upright ears, cheek decoration, plain legs and a border design of guilloche motifs. These characteristics are also found on three of the Panamanian examples (Fig. 75). Two of these are from Chiriquí and one from Veraguas. Such examples are not encountered as frequently in Veraguas as in Chiriquí or throughout most of Costa Rica. In fact, Lothrop (1950:30) said the typical Veraguas metate is a plain rectangular four-leg type, very angular and without decoration of any kind.

A single example from San Andreas, Chiriquí, is slightly variant having flat ears as extensions from the mouth and a notched rim. However, all the other characteristics referred to above are present. One other severely eroded example from an unknown area of Panama possesses some but not all the stated attributes. Its rim design is a crudely carved multiple line zigzag pattern rather than one of guilloche or sigmoid motifs and its ears are flat on the top of the head as opposed to upright. By virtue of its overall form and size, it seems to relate better to this grouping than to any other.

Subgroup 3b

Large effigy grinding stones in the same style as those from Costa Rica have also been found in both the Chiriquí and Veraguas provinces of Panama (Fig. 76). Since there is so little difference between those from the two countries, it is logical to suggest the possibility of there having been a single center of manufacture.

Five related Panamanian pieces in this subgroup range in size from 75 to 120 cm in length and 20 to 40 cm in height. All are oval and nearly flat with grinding surfaces slightly concave. Only one shows a definite but very low raised edge. It is also the only example in which the neck and tail rise partially from the plate surface. Legs are tall, erect and streamlined with upper and lower legs differentiated and feet more like hooves than paws (Fig. 76). Three of these have plain legs, while two have a very low relief pattern of diamond interlace. Heads, tails and rims are all in low relief. Rim designs are single zigzag elements or double zigzags

interlaced to produce a guilloche motif. Only one differs from the norm with its vertical and horizontal lines (Fig. 77). It is also the only example with a perfectly cylindrical tail. All others are flat on the top as was true of the Costa Rican sculptures.

Four of the five heads are closely related. They have flat foreheads, long snouts, rounded eyes with raised rims, large nostrils and raised semi-circular areas above the large upper canines. This last feature is like the snarling lip marks on previous examples. What such markings indicate here is problematical as the effigies are most likely crocodile images. This is further suggested by the separation between the canines in at least two instances. Such a feature is a definite characteristic of members of the crocodile family.

In addition to these characteristics, when external ears are visible, they are flat and laterally placed. Finally, they all possess squared jaws with exposed teeth (Fig. 78). There is an obvious uniformity of style, even if there is not a uniformity of iconography. Four examples seem reptilian and one appears feline.

Subgroup 3c

Besides the large grinding stones of Subgroup 3b, there are several small examples. In shape they vary from oval to rectangular, some with flat or slightly concave plates and others possessing bowl-like forms with raised rims. All have plain, thin legs with small feet. As seen in previously discussed sculptures, necks and tails project from rim edges overlapping onto the grinding surface.

Flattened tails are the rule and all but one have single or double zigzag rim bands. Three have flattened rectangular heads with flat ears, square jaws, large circular eyes with raised rims and snarling lips (Fig. 79). Although they are suggestive of the crocodile images they have canines which close in the N-shaped pattern typical of felines not of reptiles. The remaining two examples have more oval-shaped heads and, therefore, may represent different animals (Fig. 80).

Difficult-to-Group Grinding Stones

There are a number of Costa Rican grinding stones which are difficult to place within groups and subgroups but which seem related to sculptures in the major groups. Among these are some of the most complex and unusual examples as well as some of the most abstracted and stylized of the zoomorphic grinding stones. At the same time they appear related to those with more naturalistic features.

Mason (1945:232) placed several of these in his Group 7, which he said "present the maximum variation from the norm." These have a peculiar stylized treatment of the head and legs, nearly flat and rimless rectangular plates and unusual carved ornamentation (Fig. 61). Plate edges are commonly serrated or scalloped having incised zigzag and horizontal lines above the serrations much like some examples in Subgroup 1c (Fig. 13). These scalloped edges may also be modified to resemble the fringe-like design of oval stools or anthropomorphic faces similar to those of the great stone altars and circular pedestals. The nature of these triangular-shaped heads

likely indicates these pieces have a kindred origin with the larger more elaborate ceremonial objects (Fig. 82).

Legs resemble the bulbous nature of Group 1 images but are flattened with geometric designs carved in a champléve technique (Fig. 83). Most have massive, neckless, rectangular-shaped heads with squared jaws and large teeth. Ears are flattened to the sides or top of the head while eyes may be raised ovals or deep nearly rectangular depressions. There does not appear to be any stylistic difference between the single and double-headed examples. Neither does size seem to have played an important role as some are twice as large as others with a range from 26 to 55 cm in length. Variations of these sculptures include those examples with oval plates encircled by a ring of triangular-shaped heads (Fig. 84) and others with joined legs and small simian figures.

Another small group of grinding stones consists of oval depressed plates resting on short, flexed, and, at times, naturalistic legs (Fig. 85). Again these vary in rim or edge ornamentation from a single encircling and incised line to a rim with small triangular-shaped heads appended. Within this group are single and double-headed examples, some of which have a more human than animal appearance. In these instances legs act more like arms, flexed and resting on their elbows with hands supporting the heads at the chin (Fig. 86).

Related to the two previous clusters of effigy images are some small deeply concave examples which appear to be bowls or mortars. In each example the legs are simplified yet flexed and divergent like

Group 1 sculptures. However, their faces have little resemblance to most of the effigy examples, having squared, hollow jaws and flattened scroll-like ears. They may be late in the sequence if the hollow jaw area and the highly stylized features are any indication of age (Fig. 87).

Besides these Costa Rican pieces there are a few examples from the Baru district of Chiriquí in western Panama which are also difficult to classify. They are relatively small, 33 to 40 cm in length, with flat oval plates. Because their surfaces are so worn and eroded it is impossible to place them in the seriation by surface decoration or facial features alone. By their form, they are related to Group 2 sculptures having semi-naturalistic legs with large thighs and tapered calves ending in small but visible feet. Heads are neckless coming from rim edges but overlapping slightly onto the grinding surface (Fig. 88).

Other examples are more blocky and heavy but also give the appearance of being incomplete. Although in some sculptures the tails are flat and the legs converge inward like Group 3 pieces, facial features are closer to Group 2 definitions. Head and tail slightly overlap onto the grinding plate while the sides of the raised rim are lined with a series of trophy heads. Features such as these last two are found in two different groupings. The pieces seem to be a cross between Group 2 and Group 3 as they have the characteristics of both.

On the basis of the highly stylized nature of these pieces they may be best considered as late examples of the art of Panama just as

the most unconventionalized sculptures from Costa Rica may also belong to the late period (Period VI of the Santa Fe Chronology). As already noted, Mason (1945:233) referred to several pieces he illustrated as belonging at the end of the developmental sequence for Costa Rica. This may also be true for these Panamanian examples since they have no known visual counterparts and no known archaeological contexts.

Figural Sculptures: Standing Human Images

One of the largest and most diverse groupings of Costa Rican stone sculpture is that of free-standing human images. These sculptures range in size from a few centimeters to over lifesize. They include males and females as well as hermaphrodites. Male figures represent warriors, bound prisoners, masked men and probably deities. Females are more limited in attributes and may all be fertility and deity figures. They are also less variable in pose than the male figures and carry no identifiable objects in their hands. Frontality and symmetry are stressed in all the figures. However, many are equally as detailed on the back side as on the front side. With few exceptions, they face forward having heads erect and arms at the sides. Hands may rest on the hips, abdomen or chest. They may also be raised overhead, held behind the back or hanging free. When arm positions are not identical, they are usually balanced with the aid of hand-held objects such as trophy heads, axes or small containers. Males and females alike are shown nude. The only clothing consists of patterned woven textile belts or armor around the midriff, hats, caps, crowns or elaborate hairdos. A few

wear jewelry around the neck and some have ear plugs. Many have pierced ears and probably had earrings of metal or semi-precious stone. The only other distinguishable attribute is the presence of skin markings which likely represent body or facial tattoos. Based on body forms and facial features, the images can be divided into three major groups. (See Appendix C, pp. 312-319, for Standing Human Image groupings.)

Group 1

The first group consists of images with exceptionally heavy legs and large squared feet. Torsos are rounded and full and have a rather realistic appearance. Male genitals are pronounced while females are portrayed with distinct vaginal grooves and large breasts. Fingers and toes are incised, knees are rounded and bulky, ankles are projecting knobs and chest muscles and rib cages are delineated. Backs as well as fronts show physical attributes. Buttocks are fleshy and rounded while spines are incised and shoulder blades are visible. Heads are generally in proportion to the bodies but ears are large and project from the sides of the head. Eyes are raised quasi-rectangular shapes with central slits or concentric ovals. Mouths are also rectangular with protruding and slightly separated lips. Noses are long and low and composed of narrow extensions from the low foreheads.

Several figures discussed in this group appeared in the Costa Rican exhibit and were dated to Late Period V, c. AD 700-1000 (Snarskis 1981:211,212). Stylistic similarities suggest that all the

males figures described in this grouping are contemporary pieces and should also be given a Late Period V date.

Subgroup 1a

Figures in this subgroup are differentiated from others because of facial features. These images have semi-rectangular to rectangular eyes while those of Subgroup 1b have oval or almond shaped eyes.

Subgroup 1a-Masked Figures

Iconographically, the figures in Subgroup 1a are similar to those of Subgroup 1b except for the images of masked figures in Group 1a (Fig. 89). Nothing similar to these masked images appears in any of the subsequent groupings. These figures wear alligator masks (Snarskis 1981:212), similar to the ones known from the "flying panel" metate figures and Africa Tripod ceramics of the La Selva Phase as well as statues and stone seats from Nicoya. With few exceptions, these are the only stone figures that wear jewelry other than ear ornaments. As there are no known examples of gold jewelry of similar design, it is likely that these are representations of bead necklaces, presumably of jade (Snarskis 1981:212). All known examples are males with tall double or triple tiered headdresses (Fig. 90). Usually they stand erect with hands on hips or abdomen. Other than a small one only 13 cm high, they are very homogeneous in size, ranging from 27 to 37 cm tall. All come from the Atlantic Watershed zone.

Subgroup 1a-Warrior Figures

Another of the most frequently seen images in Subgroup 1a is that of a warrior with one arm freed from the body, raised upward and holding a weapon, probably representing a stone axe blade hafted onto a wooden or bone handle. The opposite arm is drawn inward, attached to the mid-torso and holds a trophy in its hand (Fig. 91). In one example the shrunken head is attached to the figure's wrist while in another it hangs from a rope on the back. In rare instances warrior figures lack trophy heads. Many wear wide belts around their torsos which may represent bark or cloth armor (Snarskis 1981:214; Fig. 92 of this study). In others the belt seems much too narrow to play a protective role.

Most display elaborate coiffures or caps. As there are references to Costa Rican Indians having body painting or tattooing (Fernández de Oviedo 1959:III:324), it seems likely that the body markings on some of these figures represent tattoos. As would be expected, all warrior figures are male (Fig. 93). However, several have long hair descending in parallel striations down their backs in a manner usually associated with feminine hairdos (Fig. 94).

Although the figures do not display equal skill in carving, stylistically they share enough body and facial features to be considered as products of a single era. Like the masked figures, these axe bearing images are from the Atlantic Watershed area. Unlike the masked figures, however, their range in size is enormous, varying from 15 to 158 cm in height.

The most muscular and finely carved male figure is a warrior with one arm raised brandishing a weapon (Fig. 95). The other arm, also freed from the body, holds a cylindrical object instead of a trophy head. It lacks the textile belt of the warriors but wears a similarly patterned band around the top of its head. Like the figures in Group 1a, the torso is broad with chest and spine marked; legs are solid with modeled knees, ankle knobs and large feet. With its raised oval eyes and protruding nose it fits into Subgroup 1b. However, its ears are large, projecting and pierced, and this sculpture may represent a transition between Subgroups 1a and 1b.

Although brandishing neither axe nor holding trophy head, one sculpture is clearly related to the warrior images. It holds a small vessel and what may be some type of ritual object (Fig. 96). The figure nonetheless possesses facial and bodily characteristics identical to those of the warriors. Its size, 129 cm tall, and its provenience, Las Mercedes, also suggest its relationship with this group.

Subgroup 1a-Prisoner Figures

A less common image is that of the bound prisoner. These prisoners are all males, standing erect with arms raised overhead, hands crossed and tied at the wrist (Fig. 97). Each wears a belt or textile band similar to that on the warrior images. Rib cage, spine and toes are incised and visible while knees and buttocks are rounded and modeled. Heads may be bald or carefully carved with decorative hairdos like the warriors (Fig. 98).

Subgroup 1a-Figures with Trophy Heads

Some male figures hold trophy heads with both hands on their chests (Fig. 99) although Snarskis (1981:212) says this is a rare pose. Other than these small trophy heads and the headdresses or hairdos of the main figure, there are no other items of identification. These pieces are related by body posture, proportions and facial features. All have low brows, long narrow noses, rectangular or semi-rectangular eyes with horizontal slits and large projecting pierced ears. The similarity of these figures with the masked males, the warriors and the prisoners is obvious.

Subgroups 1a-Miscellaneous Figures

Not all male figures carry axes or trophy heads or represent prisoners (Fig. 100). Some hold no objects and display no obvious characteristics which allow for interpretation (Fig. 101). They may wear conical caps like the Barriles figures of Panama, be bald, or have hair pulled upward in a high coiffure (Fig. 100). Arms may be asymmetrically placed on the chest and abdomen or the forehead or hip. They may also be rigidly symmetrical with arms straight at the sides. All have rather stocky legs and full muscular chests. Facial features retain the rectangular eyes and mouths, flattened triangular noses and large projecting ears.

One figure is so similar to one of the warrior figures that they are likely products of the same artist (Figs. 102, 103). They stand within 6 cm of each other, measuring 152 and 158 cm in height. With

the exception of the raised left hand of the warrior, its axe and trophy head, the figures are identical in pose and style. Both stand on bulbous legs and large blocky feet. Facial features are also identical except for the pierced ears of one. The most distinctive element is the presence of markings on the arms and torso which may well be tattoos.

Subgroup 1a-Female Figures

Like the male warrior figures with prominent sex organs, female figures displaying prominent breasts appear to be present throughout the entire central Costa Rican sculptural sequence. The standard pose is symmetrical with the figure erect, elbows at sides and hands on chest holding the breasts between thumb and forefingers (Fig. 104). Slight variations include those with one arm free at the side or both arms at the sides. Poses are frontal, rigid and immobile. Usually they are robust and fleshy figures with broad torsos, substantial legs and large feet (Fig. 105). Frequently the head seems large in proportion to the body. Even the most carefully carved figure is less skillfully rendered than many of the male images, especially the largest examples. Nevertheless, they possess most of the bodily and facial characteristics of the majority of the figures in Subgroup 1a. Hairdos are elaborate; eyes and mouths are slit rectangles; noses are flattened triangular shapes with nostrils to the sides and ears are large and protruding. Unlike the male figures, ears are not pierced. Several do have the arm and chest markings of tattoos as seen on some of the male sculptures (Fig.

106). With the exception of one from the Central Highlands and another from southern Costa Rica, all are said to be from the Atlantic Watershed. The majority are small, c.30-60 cm in height. Only a rare few are exceptionally large. Their stylistic similarity with the majority of the male figures is indicative of contemporaneity and thus a date in Late Period V.

Subgroup 1a-Figures with Arcs

Two small figures share pose and features with each other and with most of the sculptures in Subgroup 1a. Although one is male and the other female, they appear to represent an identical activity (Fig. 107). Each stands frontally holding a double-headed band which curves in an arc and rests on the figure's head. Both have the same stocky body with muscular legs, modeled knees and large feet. Facially they possess all the characteristic features of the other figures in Subgroup 1a and, therefore, must be contemporary.

Subgroup 1b

Figures in this subgroup are differentiated from those of Subgroup 1a principally on the basis of facial features. All have concentric oval eyes and less flattened noses. Ears are still large and projecting but few are pierced. Mouths vary from rectangular to quasi-oval and most are pursed. All have hairdos, caps or headdress/hair combinations and are portrayed in many of the same poses as the figures of Subgroup 1a (Fig. 108).

Subgroup 1b-Male Figures

The most numerous are warrior figures with axes and trophy heads. The majority of these have the usual posture with one arm raised holding a weapon and the other flexed clutching a severed head to the chest (Fig. 109). One grasps a rope slung over its back to which the trophy head is attached. The most unique example is a pair of warriors with arms joined. One of these holds a trophy head and the other an axe (Fig. 110). Related to this are single figures with or without the weapons and some holding a trophy in each hand. Most wear wide belts with geometric patterns representing woven textiles.

Despite the similarities, none of these warrior figures are as beautifully carved as those of Subgroup 1a. Most have lost the massive body quality and have thinner, less bulbous legs and less ample torsos. Fingers and toes are still incised; chest muscles and spines are depicted; knees are modeled and ankles have knobs.

Subgroup 1b also contains prisoner figures. One has arms raised and tied over the head in the same pose as bound figures in Subgroup 1a (Fig. 111). Another prisoner figure is the largest in the group, standing almost 150 cm tall (Fig. 112). Although it has a weapon in its belt, its arms are drawn back like a prisoner bound at the elbows. Its facial features are similar to those of Subgroup 1b figures but its body lacks many of the sculptural refinements. Nevertheless, its legs are columnar with knees marked and its feet are rectangular blocks with incised toes.

Subgroup 1b-Female Figures

Female figures of Subgroup 1b are rather crude in comparison with most of the male figures. The largest is in the typical bilaterally symmetrical pose with hands holding its breasts (Fig. 113). On its head is a knobbed crown with engraved circles and around its neck is a strange necklace which bears no resemblance to the bead jewelry seen on the masked figures.

The next largest figure is less than half the size of the above example, measuring only 45 cm in height (Fig. 114). However, its stocky, heavy body and limbs are deceiving, making it appear to be a massive figure. The crudity of its carving is apparent in its broad shoulders, ill-proportioned arms and massive and blocky hands.

The smallest female figures in this grouping measure only 19 and 33 cm in height (Fig. 115). Nevertheless, they conform to the standard female pose with hands holding breasts.

Subgroup 1c

The most unusual group of figures consists of standing images which combine animal and human characteristics. Several of these sculptures are extremely large and were originally collected by Minor C. Keith from Las Mercedes and the surrounding area. They are grouped together not only because of their composite nature, but on the basis of pose, body structure and facial features.

Subgroup 1c-Female Figures

The only female figures stand with arms flexed but unlike those

of Subgroups 1a and 1b, have hands on the abdomen not holding their breasts (Fig. 116). Torsos are rounded and relatively realistic like the previous images but breasts are small in comparison. Like other Group 1 female figures, there is a pronounced vaginal groove. Legs are, however, more slender and less muscular but knees are still evident. Feet and hands are blocky with fingers and toes incised. Eyes are large recessed circles, ears are more human than animal but the nasal and buccal areas possess animal traits. Mason (1945:255) suggests that one example represented a deity with avian features (Fig. 117). The most striking characteristics of these female figures are the incised ornamental bands on arms and legs. These may be tattoos, a feature previously seen on Group 1 figures.

Subgroups 1c-Hermaphrodites

The largest of these sculptures are all hermaphrodites, having both female breasts and male genitals. Their size is further emphasized by the massive nature of their legs and torsos and their large grotesque heads. The most spectacular piece comes from the Jimenez River near Las Mercedes (Fig. 118). Its head is that of a crocodile with a long and broad snout and large prominent teeth. Conceptionally, this figure and the other human-animal images of this group may relate to the masked figures of subgroup 1a. However, they are differentiated from them by their size, being three to four times larger, and by their more anthropomorphic appearance. In the first group the figures wear masks, while in this group there is a fusion of animal and human traits. Like the female figures, its arms and

legs have low relief bands of geometric interlace probably representing tattoos. Its severed head and raised arm relate it also to the large warrior images.

Other large hermaphrodite figures, although displaying very different heads, are clearly related in spirit as well as in style (Figs. 119, 120). Their bodies are deformed with spinal curvature on one and a withered shoulder and upper arm on the other. These deformities extend to the facial area as one figure has its nose and mouth twisted and pulled to one side. Another has a monstrous face with a large nose and a mouth with prominent teeth.

Subgroup 1c-Male Figures

Keith collected a piece in 1882 which seems related to these grotesques by size, pose and body structure (Fig. 121). It is not hermaphroditic but a warrior with one arm raised and an incised band across its chest, perhaps having supported a trophy head.

The strangely distorted and grotesque face of the large hermaphrodite figure is repeated verbatim on a figure Hartman found at Las Mercedes (Fig. 122). Although a warrior with an axe in its right hand, it lacks the typical trophy head. Its body, however, conforms to the massive, bulky nature of sculptures in this group. This may be an unfinished piece as its legs have not been separated.

Another composite figure from Santa Clara de Upala near the Nicaraguan border has large circular recessed eyes, projecting ears with plugs, a prognathous face with squared jaw and large teeth recalling the enormous figures from Las Mercedes (Fig. 123). Like

them, this sculpture appears to be a warrior holding a severed head and displaying a malformed right arm.

A few small figures from Las Mercedes are iconographically similar (Fig. 124). They have the right arm flexed with the hand drawn inward toward the torso. They also have deformed left shoulders and arms. The face of one figure is similar to that of the Upala sculpture.

These figures are related to each other by their composite nature since all possess human and animal characteristics. Several also have body and/or facial deformations. As a group they relate to the other sculptures of Group 1 when their overall structures and shapes are considered. No other group of images displays the massive legs and torsos characteristic of the majority of these figures. The rounded fleshy feeling is unique to this group. It is felt that these human/animal creatures were products of the same age and environment as those of Group 1.

Group 2

The sculptures of Group 2 can also be divided into subgroups on the basis of facial features. Unlike the figures of Group 1, these are more standardized in pose and less varied in iconography. All females stand erect with arms flexed and hands holding their breasts (Fig. 125). Males are all warriors. Some hold weapons or severed heads, others hold both. The most common male pose is similar to that of the females with arms flexed to chest or abdomen. A few have one arm freed from the body and raised. In contrast with the figures

in Group 1, those of Group 2 are smaller, thinner, less muscular, less dynamic, and less variable. It is as though the figures were mass produced in imitation of a workshop model. Bodies are nearly shapeless and are supported on two columnarlike legs.

Subgroup 2a-Female Figures

Female figures range in size from 16 to 53 cm tall (Fig. 126). Although basically similar to Group 1, they lack the unifying features. Some are more carefully and skillfully carved than others. They have long striated hair in parallel lines down the backs or wear small skull caps. Some have slight indications of knees and ankles but all have long fingers and toes and an incised vaginal groove. Most have the spine marked. Facial features, although somewhat varied, are related. Eyes are always rectangular with a medial groove and usually abut the nose on both sides. In most examples, noses are triangular and project slightly. Mouths are quasi-rectangular with central openings. Without exception, ears project from the sides of the head but are generally smaller than those of Group 1 figures.

Some hermaphroditic figures are placed within this grouping as they possess enough of the specific characteristics to be included (Fig. 127).

Subgroup 2a-Male Figures

All the male figures are warriors and hold a severed human head (Fig. 128). In some instances the head is suspended on the back by a

rope or hangs from the hair of the warrior. Two are similar to Group 1 in holding the trophy head and a weapon. Others hold the severed head with both hands against the chest (Fig. 129).

Stylistically, these figures can be described exactly as the female sculptures and may be products of the same workshops. Besides the facial features found on the female figures, one of the identifying characteristics of Group 2 sculptures is the presence of hands with extremely long fingers, at times rigid and blocky and at other times awkwardly wrapped around breasts or supporting trophy heads (Fig. 131). They lack distinctive body modeling and are severely simplified and anatomically streamlined. In some cases they also have deformed arms (Fig. 130).

The majority of these male figures have flat caps or simple hairdos sometimes similar to those on the female images. One example wears what appears from the front to be a pointed conical coolie cap but when viewed from the side and back appears to be hair wrapped around the crown of the head in concentric circles with the ends hanging loose down the back of the neck (Fig. 132).

Subgroup 2b

This group is differentiated from Subgroup 2a by the presence of flat incised noses, rectangular eyes with medial grooves and small mouths with short horizontal slits. They are more homogeneous than Subgroup 2a figures. None are very large, the tallest being 57 cm, the shortest being 29 cm. All stand in exactly the same position with arms akimbo; males holding axes and/or severed heads, and

females holding their breasts (Fig. 133). With one exception, they wear simple skullcaps. The only decorated image has been interpreted as a hairdo with a diamond patterned alligator or jaguar symbol (Fig. 134).

Group 3

Sculptures of Group 3 bear close resemblance to those of Group 2 with the most noticeable differences in the facial features. All examples in Group 3 have oval eyes, some plain and others with medial grooves. Ears vary from slight projections to flat but very realistic renderings. Mouths change from the protruding lips common to sculptures of Groups 1 and 2 to tiny openings which at times are small and narrow oval indentations. Noses are long and broad, and like other features, change from a highly stylized concept to a more human size and shape. Toward the end of the sequence, eyebrows and laugh lines make their appearance. The result is a figure with more human features than those previously. At the same time the figure is stylized and abstracted with the feeling of being an ideal type. A few turn their heads in a very human gesture, but the majority remain erect and stiff in the same standardized poses established at the beginning of the sequence.

Subgroup 3a

As has been true of all the groups, the majority of the pieces in Group 3 are said to have come from the Atlantic Watershed zone. However, those from the Central Highlands show no marked differences.

It is, therefore, unnecessary and impossible to establish separate categories for the imagery of these two areas. The prevailing style is that most common to the Linea Vieja area and especially to the site of Las Mercedes.

Subgroup 3a-Female Figures

All female figures stand with arms at their sides and flexed with hands holding their breasts (Fig. 135). Generally hair covers the crown of the head and descends down the neck or onto the back in a series of carefully carved parallel lines (Fig. 136). The exceptions to this have a plain beanie-like cap or no head covering at all. Most have small and low or widely separated breasts. As a rule there are no vaginal markings.

Tattoos were a common occurrence in Group 1 figures, less frequent in Group 2 and rare in Group 3 images. One example from the Linea Vieja region has raised diamond pattern sleeve-like markings on the shoulders and upper arms and seems to be the most variant sculpture in Group 3 (Fig. 137). Besides the body tattoos, it has vaginal markings, well developed knees, spirallike fingers and facial patterns which may also represent tattoos. These features tend to suggest a placement in an earlier group but its overall structure and facial features relate it more to Group 3 figures.

Other variant examples may be the product of the same artisan as they are nearly identical, having only minor differences (Figs. 138, 139). They are thinner with longer torsos than the other figures in Subgroup 3a and have slightly flexed but nearly shapeless legs.

Hands grasp the breasts which have a somewhat deformed appearance. They have marked vaginal areas, spinal columns and fleshy buttocks. One also has a groove down the center front which is interrupted at the abdomen by a narrow belt. Another displays bands of markings across the torso which may be scarification (Snarskis 1981:216). Facial features combine elements from Groups 1, 2, and 3 with others not previously observed. The long slim nose seems to extend from the hair. Eyes are oval but raised not incised. Ears and mouths are of the type belonging to Group 3 figures. These figures may be transitional pieces or show the deliberate reuse of old motifs on Group 3 sculptures.

One of the largest figures is a hermaphrodite, having both male and female characteristics (Fig. 140). Its only outstanding feature is the bar which joins both legs at the ankles. All other characteristics place it in Group 3.

Subgroup 3a-Male Figures

The iconographic attributes of the male figures are few in number (Fig. 141). Images either have their hands on the chest or abdomen, clutch a rope from which a trophy head hangs or hold a weapon (Fig. 142). A few figures have long hair extending down the back like the female forms (Fig. 143). Others wear a small cap on the top of the head (Fig. 141). Several of these are peaked, the rest are like skull caps but may be plain or have some incised geometric design.

Stylistically the males are identical to the female figures. It

may even be possible to suggest certain pieces having been produced by the same craftsmen as in the case of a female figure from the Museo Nacional in Costa Rica and a male figures from the Brooklyn Museum (Figs. 135, 145).

That the practice of body tattooing still existed can be seen on a figure Skinner found at Anita Grande (Fig. 146). From shoulder to wrist each arm has a series of incised scrolls. These are similar to those on another female figure (Fig. 147). She also has the blocky hands and columnar legs of this grouping, but her pose with the right arm flexed upward grasping a long braid of hair is out of keeping with the other figures of the group. Her concentric oval eyes, extremely large ears and stance suggest a placement early in the sequence, but the leg shape and overall body proportions tend to place it in a later grouping.

Facial features are important to figures of Subgroup 3a. The major trait which differentiates these sculptures from those in Group 2 is eye shape. All images in Subgroup 3a have incised oval eyes. With few exceptions they also have a medial groove. A few have simple oval or concentric oval eyes as in the tattooed female (Fig. 147). Ears may still project but they are usually smaller, somewhat flatter and frequently quite human. Noses are triangular with nostrils and are slightly raised. All mouths are small horizontal slits or openings. In rare instances the legs are still joined by a support base at the ankle or lower foot. This trait existed throughout the entire sequence and, therefore, does not seem to have any chronological significance.

Subgroup 3b

In general, the volcanic stone sculptures of Subgroup 3b are more stereotyped and standardized than those of all the previous groups. In no instance are the arms of any figure totally freed from the body. Gone is the typical warrior pose with trophy head and weapon. Trophy heads still appear but are either held in front of the warrior with both hands or are grasped toward the side in one hand while the other hand rests on the opposite hip. In most cases, figures stand erect with arms at the sides, flexed and drawn inward with hands resting on the hips, chest or abdomen (Fig. 148). Rare poses are those with arms overhead, hands behind the back or one hand on the abdomen and the other on the back (Fig. 149). One fragment which Hartman found at Chircot shows a figure with both hands on the chest but asymmetrically placed.

The more common female pose now is identical to that of the males (Fig. 150). A few still grasp their breasts but these are in the minority. A frequent trait is a male figure grasping an object in each hand. Stone (1977a:200) interprets these as rattles while Snarskis (1981:217) simply calls them barbell or cylindrical shaped objects. A number of figures holding these unidentified objects have arms pressed tightly against the body eliminating the open or negative spaces between torso and limbs. This feature is also true of other figures in this group.

There are several other distinguishing traits of Subgroup 3b sculptures (Fig. 151). Oval eyes are consistent, some plain, others

with a medial groove. Ears are stylized but carved to depict the folds and recesses of the external portion of the human organ. They are relatively large, flat against the head (except for a large figure Hartman recovered from the surface at Las Mercedes; Figs. 152, 153 of this study) and positioned toward the back of the head. Mouths are narrow slits or slightly opened ovals. Noses are the most human yet seen. They project outward, are triangular and fleshy with raised nostrils. Many have incised eyebrows and laugh lines which also increase the sense of realism.

A few still have the long spidery fingers of earlier figures but most have very squared hands with all fingers the same and held together as if immobile. Feet are thick but not extremely large and toes are delineated. Ankle knobs are rare but supporting bars between the feet are common.

On the whole, these figures are more rounded and fleshy and somewhat more robust than those of other groups (Fig. 154). In Group 1 legs and hips were broad but torsos narrow, while in Group 2 figures were quite shapeless with legs merely continuing in a line from torso to feet. In Group 3 there is something of a return to traits of Group 1, such as knees and more shapely bodies. By description, a number of these figures might be thought to possess characteristics of the so-called Capelladas or Las Pacayas style (to be discussed later). Stone (1977a:210) describes these latter as being chubby figures with heavy limbs and without interstices between arms, legs and torso. Such a description would appear to fit a number of Subgroup 3b figures but a comparison with any of those

illustrated by Mason (1945:Figs. 29, 30) is proof of the opposite (Fig. 155). Most important is the fact that the Pacayas or Capelladas style is limited to a small area around Volcan Irazú while most of the Subgroup 3b figures are from the Línea Vieja area. Since the Capelladas style is considered to be a regional manifestation of a miniscule portion of the Central Highlands, it is unlikely that any of the figures placed in Subgroup 3b belong to it. The robust nature of both groups, however, may be an indication of contact and/or contemporaneity.

Subgroup 3b-Female Figures

The majority of the female figures conform to the general description of sculptures belonging to Subgroup 3b. A few hold their breasts. All others have their forearms held horizontally with hands on hips or abdomen (Fig. 156). Most have long hair flat on the crown and pulled back behind the ears onto the shoulders. One has it twisted or braided and another wears the common coolie cap. One example may be hermaphroditic. This is also the largest sculpture in the group (77cm). The smallest is only 16 cm high and lacks many of the characteristics of the group (Fig. 157). Despite the extreme size range, the majority of the figures are between 30 and 40 cm tall.

Subgroup 3b-Male and Asexual Figures

Since many of the male figures are fragmentary, it is impossible to give an average size for the members of this subgroup.

Nevertheless, they do range in size from 26 cm to 185 cm. Males are more varied in pose than females as besides the usual hands on torso position, figures also hold cylindrical objects or trophy heads (Fig. 158). Hands may be overhead, behind the back or asymmetrically placed (Fig. 159). In further contrast with the female figures, the males wear conical or skull caps and have hair confined to the top of the head or are bald.

Except for the large figures from Las Mercedes, male sex organs are not emphasized. They are small or in some cases absent. This is an obvious contrast with figures of other subgroups where both male and female attributes were of extreme importance.

Subgroup 3c

In no previous grouping was it common for figures to have their heads turned in any way other than directly forward. There are several small stone carvings in Group 3 in which the image looks over the right shoulder (Fig. 160). Examples measure between 10 and 16 cm tall and are thus the smallest of the volcanic stone sculptures of full bodied standing figures. These figures are both male and female and possess all the facial and bodily characteristics of the larger figures of Subgroup 3b having slit oval eyes, inverted V-shaped projecting noses, horizontal mouths with laugh lines and large flattened but patterned human ears. Several hold the rattle or cylindrical objects of the larger images (Fig. 161). In one instance a female figure grasps a long braid of hair. Like the previous sculptures, it is not unusual to have the feet joined by a narrow bar

of stone.

Other small figures with heads facing forward are clearly related to these in size, pose and facial features. These may also hold the cylindrical objects or as in one case have the palms turned outward (Fig. 162).

Summary: Effigy Grinding Stones

Group 1

This group of effigy grinding stones contains the most naturalistic of the sculptures. An attempt was made to transfer the visual appearance of living animals to stone. At the same time, the sculptures of this group are the most poorly carved and executed pieces.

Subgroup 1a

Here are the smallest and most bowl-like of the metates. All have rounded, bulbous, fleshy legs in which musculature is emphasized and joints are obvious. Heads are small with short wedge-shaped snouts and flattened but outlined nasal areas. Oval eyes, erect ears, and open mouths are the rule as are cylindrical tails attached to hind legs. Feet, although usually present, are rounded but small and inconspicuous. All tails are circular in cross-section. Surface incising on legs, tail, rim, and neck is a simple multiple line zigzag or diamond interlace. These might almost appear to be modeled in clay rather than carved from stone.

Subgroup 1b

These sculptures are slightly larger and surface decoration more elaborate, more profuse, and more carefully rendered. The same diagonal interlace design predominates but zigzag lines are less common while curvilinear elements and cheek designs begin to appear. With the exception of these characteristics and joined legs on some sculptures in this subgroup, the effigy grinding stones exhibit few differences from those in the previous subgroup.

Subgroup 1c

Subgroup 1c sculptures also stress the naturalistic qualities of legs and facial features but snouts are longer and slightly raised nasal areas differentiate the muzzle from the forehead. In addition, incised lines represent whiskers. The large oval eyes are commonly rimmed with double outlines. The most obvious distinguishing traits of this subgroup are the presence of rim notches or scallops and heads and tails which project from the grinding plate surface rather than the rim.

Group 2

Group 2 sculptures differ from those of Group 1 primarily on the basis of leg shape. Legs are thinner and although fleshy and bulbous place less emphasis on muscular and joint structure. In most instances legs are straight, erect, and parallel as opposed to flexed and divergent as in Group 1. In short, these effigy grinding stones display a less naturalistic appearance than the previous group.

Subgroup 2a

The sculptures of this subgrouping are more refined and precisely carved than those of Group 1. Although ornamentation is profuse, the common diagonal and diamond interlace patterns are now accompanied by intertwined guilloche strands, chevrons, or angular frets. As was true for some examples in Subgroup 1c, when grinding plates are flat, necks and tails originate from the plate surface. Eyes are large ovals or circles with extremely varied rim designs which continue onto the nasal area and form parallel line cheek designs. Most have erect ears as in Group 1 but are positioned more toward the sides of the head rather than the crown. Nostrils are common but few display whiskers.

Subgroup 2b

Although there are some sculptures within this grouping which seem extremely naturalistic in pose, all the examples placed here display flatter, less naturalistic legs as supports. Surface decoration is more in relief than incised and generally has decreased in quality. The most distinctive feature is the introduction of a rounded upper lip which is raised as if in a snarl. With the exception of the open mouth as if in a U-shape now, the only other change of importance is the presence of flattened tails instead of rounded ones.

Subgroup 2c

Some few pieces of Group 2 sculptures have hollowed out mouths and jaws. Although Mason (1945:234) felt this was a late feature, there is no archaeological evidence to support this theory. Nevertheless, these same examples have other traits thought also to be late characteristics of the grinding stones. Among these are flattened tails, sigmoid surface designs, and low relief carving instead of incising.

Group 2-3 Transition

Sculptures of this group possess characteristics of both Group 2 and Group 3. Group 2 examples usually have oval-shaped heads with erect ears while Group 3 examples have blocky rectangular heads and flattened ears. Double-headed grinding stones in this grouping display traits of both Groups 2 and 3 and have, therefore, been referred to as a transition group.

Group 3

Sculptures of Group 3 are the least naturalistic of all the effigy grinding stones. Besides being the largest examples, they are also the most streamlined and stylized. Among the primary traits differentiating this group from the previous groups is the presence of less shapely, more geometric legs which have little relationship to natural form. Generally Group 3 sculptures are carefully carved and finished artifacts.

Subgroup 3a

While legs are convergent, taller, and thinner than those of sculptures in the previous groups, other bodily and facial characteristics are in keeping with previously seen examples. Eyes may be oval or circular and mouths are opened with rectangular-shaped jaws. Ears are toward the sides and flattened usually in the form of scrolls. Nasal areas have snarls and are raised with long snouts clearly differentiated from the forehead. This more angular less realistic appearance may indicate a change in the animal being represented. Perhaps reptiles have replaced felines.

Subgroup 3b

The sculptures of this subgrouping are rather tall, long, and extremely uniform. Facially they are similar to all Group 3 examples being neckless, elongated and angular with flattened foreheads and squared jaws. Their distinctions are in the form of dental pattern differences, flattened and notched tails, and ears in the shape of small heads. Finally, there is the presence of small animals attached to the lower edge of the grinding plate, a characteristic also of grave slabs and circular stands.

Subgroup 3c

These examples have most of the attributes of Subgroup 3b but are considerably smaller. Simplified, undecorated, shapeless, converging legs are the rule. Tails are flattened and heads are angular with elongated snouts and snarling jaws. Eyes are round and

ears are flattened and placed at the sides of the head.

Summary: Standing Human Figures

Group 1

Figural images of this group are characterized by a rather realistic style with an emphasis on rounded, bulky, and stocky body forms. Legs are heavy with modeled knees, large squared feet and projecting ankle knobs. Torsos are full, many having chest muscles and rib cages depicted as well as pronounced sexual characteristics. Although conceived frontally, backsides are carved showing spines, shoulder blades, and large buttocks. The group includes most of the known iconographic representations, masked figures, warriors, prisoners, females holding their breasts, hermaphrodites, and zoomorphic images.

Subgroup 1a

The majority of the figures in this subgroup are male. The few female images included here conform to all the stylistic features of the males. Most are bilaterally symmetrical with arms flexed and hands on chest or torso. Deviations from this posture are seen in warrior figures which hold weapons and grasp trophy heads. Masks, belts, and decorative body markings such as tattoos are relatively common. Facial features are extremely homogeneous consisting of rectangular slit eyes, large projecting pierced ears, long and low triangular noses, and rectangular mouths with protruding lips. The greatest amount of variation within the subgroup can be seen in size

where the range is from 15 to 158 cm in height.

Subgroup 1b

Imagery and poses of these figures are nearly identical to those of the previous group. The greatest differences are found in the facial features. Eyes are rectangular or concentric ovals, noses less flattened, ears projecting but solid. Mouths vary from rectangular to nearly oval in shape. Although most retain the bulky and rounded nature of Subgroup 1a sculptures, torsos may be less full and legs thinner and more columnar. In addition, the size range is virtually the same as that of the previous group, 17 to 150 cm in height.

Subgroup 1c

This subgrouping exists primarily on the basis of imagery as most are hermaphrodites or zoomorphic representations. Poses differ slightly as female images do not hold their breasts. Most retain the massive body structure and large legs giving a fleshy and bulky appearance. Several figures have grotesque deformed characteristics with varied facial features. Their size range is slightly less extreme, 39 to 155 cm.

Group 2

Group 2 figures can readily be distinguished from those of Group 1. They are less massive in appearance, with thinner, less muscular bodies, and less shapely columnar legs. Poses are more standardized

and less dynamic while imagery is less varied.

Subgroup 2a

Males, females, and hermaphrodites make up this subgroup. All males are warriors with trophy heads and all females grasp their breasts. Facial features consist primarily of grooved rectangular eyes, triangular projecting noses, and quasi-rectangular mouths. Ears, although considerably smaller, still project from the heads. Fingers and toes are extremely long and may be rigid and blocky or curvilinear. All lack the body modeling and details of the previous figures and can be described as anatomically streamlined. Size range is considerably less with the extremes of 12 to 68 cm in height.

Subgroup 2b

This small subgroup is extremely homogeneous and has distinct facial features with flat incised noses and small slit mouths. Whether male or female, the postures of all are identical with arms flexed to the torso. The size range is small, 29 to 56 cm.

Group 3

Group 3 figures can be distinguished from those of Group 2 on the basis of facial features. All have oval eyes and small slit mouths. Noses take on a more human shape while ears are flatter and highly stylized. Details are more frequently seen in the form of incised eyebrows and laugh lines. Most are in the rigid standardized poses. At first glance these might appear to be the most

naturalistic group but in reality they are the most generic group with idealized yet conventionalized features.

Subgroup 3a

Figures in this subgrouping are extremely stereotyped with females holding breasts and males in nearly identical poses with hands placed on the chest or abdomen. Most have some head decoration either as incised hair or small caps. The majority range between 30 and 60 cm in height.

Subgroup 3b

The majority of the figures in this subgrouping are even more stereotyped and standardized than the previous group. Males and females stand erect with arms flexed on the torso, hips, or abdomen. No figure has arms totally freed from its body. Although bodies have more substance than those of Group 2, they also seem more perfect. This does not imply a style closer to reality or naturalism but rather a style in which all body parts are equated with strict geometric shapes. For example, mouths are simple slits with no indication of lips; legs are thick and columnar; hips may be broad but flattened not the shapely fleshy features of Group 1 figures. The fact that little emphasis is placed on sexual characteristics seems to say that the goal was to produce technically beautiful sculptures but anonymous, generic images.

Subgroup 3c

These few pieces have been placed separately because of the extremely small size of the figures, 10 to 16 cm in height. Although stiff and rigid images, several have their heads turned in a human pose. These and a few related frontally facing figures hold small cylindrical objects. They have all of the facial and body features of Subgroup 3b images. It is primarily their size that distinguishes them.

CHAPTER III

SCALOGRAM ANALYSIS OF THE MAJOR SCULPTURAL GROUPS

Visual attribute analysis is not the only classificatory means used by archaeologists. Kroeber (1940) long ago considered the application of statistical methods to artifactual classifications. His procedure was based upon the presence or absence of various culture traits. He saw the value of statistical calculations as a means of checking errors in intuitive interpretations and to clarify and summarize the results of classificatory studies.

Other statistical analyses have also been used with anthropological and archaeological data. Among these is the Guttman scale technique. Like the previous methodologies, scale analysis, as developed by Louis Guttman (1944) is a technique for quantifying qualitative data. It allows the researcher to work with large collections of items having innumerable attributes. These attributes are analyzed and presented in the form of a scalogram which shows their multivariate distribution. Although originally applied to sociological data, Guttman (1944:142) believed that "scaling analysis is a formal analysis and hence applies to any universe of qualitative data of any science obtained by any manner of observation."

Carneiro and Tobias (1962, 1963) were the first to apply the Guttman scaling technique to diachronic studies in which the goal was to measure change through time. They specifically applied scale

analysis to the study of cultural evolution. In their first study only nine societies and eight traits were considered while in a second study 100 societies were analyzed for the presence or absence of 354 culture traits. Of these, 50 were presented in the form of a table arranged by the frequency of appearance. The 50 traits were scalable as they formed a stair-step pattern. These two studies present one of the major values of Guttman scale analysis by demonstrating the existence of relationships between certain cultural phenomena, that there is a "fixed order to the appearance of certain kinds of (cultural) traits" (Goodenough 1962:247).

Charles Wicke (1971) was the first to apply the Guttman technique in the analysis of style in art. Although an anthropologist by training, his study is an exciting contribution to the discipline of art history. Originally, he set out to test Kubler's (1962:67) theory regarding the chronological ordering of the Olmec Colossal Heads. Additionally, he sought to develop an order for Olmec votive axes. Wicke established his sequences by considering the visible changes of three or four sculptural traits and their relationship to each other. In both instances he constructed scalograms to show these relationships. His success in utilizing scale analysis lies in his demonstration that "changes in art are similar to changes in any realm of culture, that they are regular and constant, not haphazard and capricious" (Wicke 1971:64).

Wicke was able to apply the Guttman scale analysis manually as he was working with few artifacts (11 and 18) and a limited number of variables (3 and 4). As Fonseca and Scaglione (1978) show, when

either or both artifacts and variables increase in quantity, the faster and more accurate method is to employ the SPSS Guttman Scale Subprogram (Nie et al, 1975) for complete analysis of the data. Like Wicke, their research demonstrated gradual stylistic change through time for groups of artifacts. Unlike Wicke, they worked with larger populations (105, 45, 30) and more traits (5, 6, 5). They also applied the statistical measures of coefficients of reproducibility and scalability to each scalogram to substantiate their conclusions concerning the chronological ordering of stone pendants and mace heads from the burials at Las Huacas in the Nicoya Region of Costa Rica. Fonseca and Scaglione were able to suggest not only relative dating for the artifacts but also approximate calendrical dates for the stone pendants on the basis of ceramic association (1978:297).

More recently discussion has centered around the value of utilizing the computer to assist in the analysis and classification of artifacts. Programs such as that of Ascher and Ascher (1965) and Kuzara, Mead, and Dixon (1966) were developed specifically for the chronological ordering of archaeological materials. These programs are based on the Brainard-Robinson method (1951) of similarity seriation of artifactual collections and are particularly helpful when large quantities of data are involved.

Results of Guttman Scale Analysis

As stated at the outset, one of the major objectives of this study was to arrange several groups of sculpture into possible chronological sequences. Since the Guttman Scaling technique had

previously been successful in establishing relative chronologies for Olmec sculpture (Wicke 1971) and jade pendants (Fonseca and Scaglione 1978) it was thought to be a useful tool for ordering the stone sculptures from Costa Rica and Panama.

The same traits identified in the formal analysis of the sculptural pieces were used in the Guttman Scale Analysis (Tables 1 and 2, pp. 547-550). Since the Guttman technique operates on a presence or absence system, each sculpture was coded 1 if the trait was present and 0 if the trait was absent. In cases where it was not possible to determine the nature of a specific trait, it was coded 2, using the Guttman Scale option of undetermined. Various combinations of traits for the different sculptural types were submitted to the SPSS (version 9.1) Guttman Scale Subprogram on the Clarke College IBM 4331 computer. The SPSS program generated a scaleogram and coefficients of reproducibility and scalability for each set of variables tested. As previously noted, in order for a scale to be valid the coefficient of reproducibility must be greater than .9 and the coefficient of scalability must be greater than .6 (Table 3, p. 551).

Ceremonial Objects: Effigy Grinding Stones

The same 61 traits identified in the formal analysis of the 205 Effigy Grinding Stones were used in the Guttman Scale Analysis (Table 1, pp. 547-549). In addition, the same procedure as used with the Standing Human Figures was followed here. Different combinations of four or more characteristics were tested using the Guttman Scale

Subprogram.

Facial Traits of Effigy Grinding Stones

The initial scales considered only facial characteristics of the images. These dealt with eye shape, ear placement, nasal area development, snout shape, upper lip, and mouth area.

Facial Trait Scales for Group 1 Sculptures

Since the sculptures had previously been divided into three groups by visual analysis, it was decided to first test the scales using these separate groupings. One-hundred forty-four different scales were set up and the data of the 32 Group 1 sculptures were used. Thirty-six of these scales had perfect 1.0 correlations. In addition, 23 other scales showed significant results for both the coefficients of reproducibility and scalability. However, only five of the remaining scales had sculptures with the four specific attributes of oval rimmed eyes, erect ears on the top of the head, slightly raised nasal areas, and curvilinear snouts (Table 4, p. 552). The other significant scales had examples with only two or three facial traits in common.

An additional 32 scales were then calculated by increasing the number of traits in the scales to five or six. The addition of lip and mouth traits produced 12 significant scales. The most important of these (Table 5, p. 553) confirmed that all the sculptures of this grouping had open V-shaped mouths.

Facial Trait Scales for Group 2 Sculptures

Since the visual analysis had shown that only a portion of the facial traits originally identified for the sculptures were related to Group 2 examples, many of the scales calculated for Group 1 sculptures were not utilized with the data from the Group 2 pieces. Only those variables which were obviously represented on the effigy images of Group 2 were placed into scales. As a result, 24 of the original scales were utilized. In every instance there were significant coefficients of reproducibility of at least .9. However, only 15 had significant coefficients of scalability. One of these revealed a close relationship between a specific ear, nose, and mouth type. As demonstrated (Table 6, p. 554), 65 of the 98 sculptures in Group 2 have erect ears, slightly raised nasal areas, and curvilinear snouts.

Facial Trait Scales for Group 3 Sculptures

Twenty-four scales were also calculated with the facial data of the 58 sculptures in Group 3. Using the same eye, ear, nose, and snout variables as used with Group 2 examples, only two scales yielded significant results. Their value rests in demonstrating a relationship between circular eyes, flat ears, raised nasal areas, and rectangular snouts (Table 7, p. 555). An additional six scales were calculated adding lip traits. Four of these were significant but all showed the major relationship was a raised nose and a snarling upper lip (Table 8, p. 556).

Facial Trait Scales for All Groups Combined

The data relative to facial traits of eyes, ears, noses and snouts for all three sculptural groups were then combined and 24 scales calculated for all 205 examples. Twelve of these showed significant coefficients of reproducibility and scalability. The strongest relationship was again that between a slightly raised nasal area and a curvilinear snout. These were then scaled with oval rimmed eyes or circular eyes and erect ears (Table 9, p. 557).

Facial and Body Traits Combined for Effigy Grinding Stones

Fifty scales were then calculated for a random combination of facial and body traits. None of these scales were significant nor meaningful for all 205 sculptured pieces. Neither were they meaningful for any of the groups of sculptures separately. In both instances the traits were too varied to scale. This set of scales was discarded as it gave no relevant information.

Although the original traits as identified for the effigy grinding stones were less narrowly defined than was true for the standing human images, there were two eye types and two ear types which should have been grouped together. At this point plain oval eyes and rimmed oval eyes were aggregated and erect ears, whether toward the top or toward the sides of the head, were also combined. Forty-six scales were then calculated with these eye and/or ear traits plus several other face and body attributes. Twelve of these scales were significant, having both necessary coefficients. Two of these scales proved important to the process of selecting facial and

body traits which would scale not only for the entire group of sculptures but also for each of the three major groups of the grinding stones identified in the formal analysis. One of these represented the traits of Group 1 sculptures, oval eyes, flat nasal areas, wedge-shaped snouts, and naturalistic legs (Table 10, p. 558), while the other represented the traits of Group 2 sculptures, erect ears, slightly raised nasal areas, curvilinear snouts and naturalistic legs (Table 11, p. 559).

These same 46 scales were calculated with the data from each of the three groups. Those scales of greatest value were those which contained the same combination of traits found important for the total grouping of sculptures. These included three facial characteristics (eye, nasal area, snout) and one body characteristic (leg shape). The only other relationship established was that of tail shape to leg and facial traits. The other combinations of traits combined at random had little or no value and so were discarded.

Since several of the previous scales having four traits showed significant results, it was decided to increase the number of variables to five and to establish scales containing various combinations of these traits. As a result, 54 scales were set-up and the data of all 205 sculptures were submitted for analysis. Only one of the scales with significant results was of further value (Table 12, p. 560). It showed a relationship between oval eyes, erect ears, slightly raised nasal areas, wedge-shaped snout, and naturalistic leg shapes. However, the traits combined related only to Group 1

sculptures.

It was then determined that those pieces of sculpture which were incomplete or eroded so heavily that the features were neither discernable nor codeable should not be processed with examples having all traits coded as the missing variables were counted as errors in the computer program. As a result, the group was reduced to 200 pieces. At the same time the combinations of characteristics were increased to six, seven, or eight. These included eye, ear, nose, snout, mouth, leg, and tail traits. Of the 64 scales generated, only two met both coefficient requirements. Not surprisingly, the traits of both scales related primarily to the sculptures of Group 1 (Table 13, p. 561) and combined five facial traits (oval eyes, erect ears, slightly raised nasal areas, wedge-shaped snouts, V-shaped mouths) with one body trait (naturalistic legs). Although the remainder of the scales did not meet the tests of significance, many were in the range of .85 to .89. They nevertheless showed specific relationships between facial and body traits which were of value in future scales.

The next step was to delete from the analysis those sculptures classified in the formal analysis as Difficult-to-Group since they had many questionable traits. This removed 17 sculptures from the total bringing the group to 183 pieces. This time 14 of the 32 scales gave significant results. Eight of these related to Group 1 sculptures, two to Group 2 sculptures, and four to Group 3 sculptures. All reinforced the already demonstrated relationships among facial characteristics and leg shapes. However, one scale showed a correlation among six traits, four facial (oval eyes, erect

ears, flat nasal areas, wedge-shaped snouts), one leg trait (naturalistic legs), and one tail trait (cylindrical tails) (Table 14, p. 562). Another scale showed an eight trait correlation (Table 15, p. 563). This latter scale combined six facial characteristics with leg and tail traits (circular eyes, flat ears, raised nasal areas, rectangular snouts, snarling lips, U-shaped mouths, stylized legs, and flattened tails).

Facial and Body Trait Scales for Group 1 Sculptures

The same 82 scales as above were calculated with the data from each of the three sculptural groups. Of the 82 scales, 66 showed significant results for Group 1 sculptures. More importantly, 26 of the scales specifically generated using Group 1 data had correlation coefficients greater than .9 and .6. The most meaningful scale for this data related seven traits, four facial, one leg, and two tail traits (oval eyes, erect ears, flat nasal areas, wedge-shaped snouts, naturalistic legs, cylindrical tails, and tails originating from the rim edge) (Table 16, p. 564).

Facial and Body Trait Scales for Group 2 Sculptures

When the data of the Group 2 sculptures were used with the same scales, 22 gave significant results. However, not all of those specifically generated for use with Group 2 data had the needed coefficients of reproducibility and scalability. The major cause of this appeared to be a problem with ear traits. In every instance the ear variable had the greatest number of errors, a fact which tended

to lower the coefficients to less than acceptable levels (Table 17, p. 565).

Facial and Body Trait Scales for Group 3 Sculptures

The 58 Group 3 sculptures produced 20 scales with significant coefficients of reproducibility and scalability. Those scales containing combinations of traits related to Group 3 grinding stones had reproducibility coefficients greater than .9 and scalability coefficients greater than .6 (Table 18, p. 566). As was already demonstrated for the sculptures of Groups 1 and 2, what remained important here was a combination of facial and body traits (circular eyes, flat ears, raised nasal areas, rectangular snouts, and stylized legs).

Face and Body Trait Combinations: Select Scales

The final step in selecting those traits which would scale was to use only those characteristics which were valid not only for the entire grouping of sculptures but also for each of the three individual stylistic groups. Since the ear traits appeared too varied and unscalable for the largest group of sculptures, those of Group 2, it was decided to eliminate that category of traits from all the scales. The aim was to establish the same categories of traits for each of the three groups. Therefore, since ear traits did not scale in one grouping, it was eliminated from all groups.

Facial and Body Trait Scales for All Groups

Twenty-four scales were then generated using eye, nasal area, snout, mouth, leg, and tail traits. Nine of these related to the sculptures of Group 1, six to Group 2, and nine to Group 3. When the data for all the sculptures were calculated, eleven scales had significant coefficients of reproducibility and scalability. All dealt with traits specific to Group 1 and 3. The greatest number of traits to scale using all the sculptures assigned to Groups 1, 2, and 3 was six. In one scale these traits were: oval eyes, flat nasal areas, wedge-shaped snouts, V-shaped mouths, naturalistic legs, and cylindrical tails (Table 19, p. 567). The other scale combined circular eyes, raised nasal areas, rectangular snouts, U-shaped mouths, stylized legs, and flattened tails (Table 20, p. 568).

Facial and Body Trait Scales for Group 1

When these 24 scales were calculated using Group 1 data, eleven scales again had coefficients of reproducibility greater than .9 and coefficients of scalability greater than .6. Of primary significance here were those scales specifically relative to Group 1 sculptures. These contained the same combinations of traits as those which proved significant for the entire collection of effigy grinding stones (oval eyes, flat nasal areas, wedge-shaped snouts, V-shaped mouths, naturalistic legs, and cylindrical tails; Table 21, p. 569).

Facial and Body Trait Scales for Group 2

Ten of the 24 scales were significant when calculated for Group 2 sculptures. Since the sculptures of this group were the most varied, some containing attributes of Group 1 grinding stones, others with attributes of Group 3 examples, and still others with traits specific to Group 2, fewer traits proved scalable for the entire group than was true for either Group 1 or Group 3. Here only five traits combined to produce significant coefficients for the 98 sculptures of Group 2 (Table 22, p. 570). These variables, oval eyes, slightly raised nasal areas, curvilinear snouts, semi-naturalistic legs, and cylindrical tails, related to face, body, and tail characteristics.

Facial and Body Trait Scales for Group 3

These same 24 scales were also calculated using the data relative to Group 3 sculptures. Seven of the nine which gave significant results combined traits specific to the effigy grinding stones of this group. As was true for Group 1 sculptures, a combination of six traits (circular eyes, raised nasal areas, rectangular snouts, U-shaped mouths, stylized legs, and flat tails) proved scalable. As demonstrated for the previous groups, these related to face, leg, and tail shapes (Table 23, p. 571).

Facial and Body Trait Scales for Groups 1 and 2 Combined and Groups 2 and 3

The final test for the scalability of the effigy grinding stones was to combine the sculptures of Group 1 and Group 2 and the sculptures of Group 2 and Group 3. When the scales were calculated using this data, the same scales proved significant here as for the three groups individually. Forty-eight of the sculptures of Groups 1 and 2 combined possessed at least three traits in common (oval eyes, V-shaped mouths, and cylindrical tails). Using the scales for Group 2 and Group 3 with the combined data of these groups, 100 sculptures possessed at least three traits common to the Group 2 pieces (slightly raised nasal areas, curvilinear snouts, cylindrical tails) and 59 possessed at least three traits associated with those of Group 3 (circular eyes, U-shaped mouths, and stylized legs). All of these scales had coefficients of reproducibility greater than .9 and coefficients of scalability greater than .6 (Tables 24, 25, 26, pp. 572-574).

Figural Images: Standing Human Figures

The 65 traits identified in the formal analysis of the 220 Standing Human Figure sculptures were used in the Guttman scale analysis (Table 2, pp. 549-550). Initially different combinations of four, five, and six of these characteristics were tested using the Guttman Scale Subprogram. None of these had coefficients of reproducibility greater than .9 or coefficients of scalability

greater than .6, both of which are needed to consider a scale valid.

Facial Traits of Standing Human Figures

The 65 traits for the 220 sculptures were reexamined and it was determined that in some cases the attributes were too narrowly defined to yield significant results. In other instances, it was apparent that some were represented by none or too few examples to be meaningful. As a result, the original traits were aggregated into broader categories and traits having fewer than five examples were eliminated from the scales. Plain oval shaped eyes and oval eyes with slits were grouped together; rectangular shaped eyes with slits and quasi-rectangular eyes were grouped together; and concentric oval eyes and circular eyes were clustered together. This aggregation and elimination process reduced the number of eye types from eight to four.

Of the 164 scales generated using the revised facial traits, 15 yielded significant results. In each instance, a specific eye type was scaled with the three other facial traits (ear, nose, and mouth) using every possible combination of these four features. Of the 15 scales that had coefficients of reproducibility greater than .9 and coefficients of scalability greater than .6, only four scales had a few examples which possessed combinations of these four specific traits. The only scales which had a large number of examples represented did not have significant statistics. One of these scales (Table 27, p. 575) combined rectangular eyes with rectangular mouths,

solid projecting ears and flat triangular noses. The other scale (Table 28, p. 576) combined oval eyes with simple slit mouths, flat stylized ears and naturalistic noses. Although there were a number of examples represented in each of these scales, they still did not meet the requirements of the Guttman Scalogram for significant scales.

A third set of scales was then generated using variables that resulted from aggregating each of the four groups of facial traits into more inclusive categories. Flat and projecting triangular-shaped noses with nostrils were grouped together. The remaining nose types: triangular wedge shapes, inverted T-shapes, and naturalistic shapes, were used as originally identified. Nose types were then reduced from six to five. In like manner, mouth types were reduced from five to four by combining the rectangular and quasi-rectangular categories. Additionally, ear types were reduced from five to three by combining solid and pierced projecting types into one category and all naturalistic types into another category.

Of the 72 scales calculated 12 had significant results. Seven of these significant scales had examples which possessed four specific traits (eye, ear, nose, and mouth). Three of them represented a large number of sculptures (Tables 29, 30, and 31, pp. 577-579). Since the groups of sculptures represented by these sets of variables were distinct, it was decided to calculate these same scales for each of the subgroups previously identified in the formal analysis of the Standing Human Figures, ie. Groups 1, 2, and 3.

Facial Trait Scales for Group 1 Sculptures

When the data of the 96 Group 1 sculptures were used with the same 72 scales mentioned above, 33 showed significant results for both the coefficient of reproducibility and the coefficient of scalability. While seven of these 33 scales had sculptures with four specific attributes, only one scale (Table 32, p. 580) represented a large number of examples. The facial traits included in this scale were: flat, triangular-shaped noses, rectangular-shaped eyes: rectangular-shaped mouths, and stylized, projecting ears.

Facial Trait Scales for Group 2 Sculptures

When the 36 sculptures of Group 2 were scaled, 43 of the 72 scales had significant results. Although nine of these were perfect scales having coefficients of reproducibility and coefficients of scalability 1.0, they were meaningless with regard to the sculptures of Group 2 because in them none of the 36 images contained four specific traits (Table 33, p. 581). Of the remaining significant scales, only five had multiple pieces containing four specific characteristics. Of these, the one with the largest number of sculptures had 21 pieces having three or four traits in common (Table 34, p. 582). The facial traits of this scale are the same as those of Table 9 of Group 1 sculptures, rectangular eyes, flat triangular noses, rectangular mouths, and projecting ears.

Facial Trait Scales for Group 3 Sculptures

The 88 sculptures of Group 3 produced the largest number of

significant scales as 48 of the 72 scales had coefficients of reproducibility and scalability greater than .9 and .6. One of these (Table 35, p. 583) was a perfect scale with coefficients of 1.0, but again it was meaningless with regard to the sculptures of this group as no example had more than two of the specified traits. Only three of the 48 significant scales had multiple pieces with combinations of four specific traits. One scale (Table 36, p. 584) represented 37 examples having the same four facial traits. These consisted of a naturalistic nose, stylized ears, oval eyes, and a simple slit mouth having no marked lips.

Body Traits of Standing Human Figures

The next step was to calculate scales on various combinations of three and four specific body traits (legs, hips, torsos, and feet) on all 220 sculptures. Of the 60 scales generated seven yielded significant results. Each of these had multiple pieces with the stated characteristics. One scale (Table 37, p. 585) containing 38 sculptures with three specific traits, related only to leg characteristics of overall shape, modeled knees and ankle knobs. Another scale with 26 pieces is identical except for the addition of another variable related to the torso and chest area (Table 38, p. 586). The remaining significant scales were combinations of leg, hip and torso traits.

Body Trait Scales for Group 1, 2, and 3 Sculptures

In the visual analysis there appeared to be a consistent

relationship among variables relating to legs, hips and torsos. It was, therefore, thought appropriate to calculate scales combining these traits for each of the groups previously identified in the formal analysis. Additionally, it seemed appropriate to delete scales which were not combinations of those specific attributes. As a result, 48 scales were calculated for the sculptures in each of the groups. Of the 48 scales calculated for the 96 sculptures of Group 1, 24 showed significant results with correlations above .9 and .6; however, none of the scales included enough pieces having at least three specific traits for the results to be meaningful.

Nevertheless, what was apparent was that there existed a definite relationship between leg and hip shape (Table 39, p. 587).

Thirty-five scales showed significant results for the 36 sculptures of Group 2. Among these were 15 scales for which the correlations were 1.0, the scales were perfect but negative. The most meaningful result showed a relationship between thin cylindrical legs and thin shapeless hips (Table 40, p. 588). When these same scales were calculated for the 88 figural images of Group 3, 32 scales had significant reproducibility and scalability coefficients. Eight of these scales were again perfect but valueless here. As was expected, however, there was a relationship between thick columnar-shaped legs and wide shapeless hips (Table 41, p. 589).

Facial and Body Traits Combined for Standing Figures

Since several scales calculated independently for facial and body traits yielded significant results, the next step was to combine

these scales using both facial and body attributes. As was decided for the effigy grinding stones, sculptures which were missing traits because they were broken, masked or incomplete were not processed with examples having all traits coded since the missing variables were considered errors. Thus, when the remaining scales were calculated, those images identified as broken or incomplete were excluded from the computations. Twenty-eight scales were then selected using eye, ear and mouth traits in combination with torso, hip and leg traits. Nose traits proved too variable and, therefore, unscalable and so were eliminated from the scales. When these scales were calculated with the 179 complete sculptures from the group of 220 standing figures, eight scales gave meaningful results having significant coefficients. Each scale had a large number of pieces with all the stipulated traits. One scale combined three facial characteristics (rectangular eyes, projecting ears, and rectangular mouths) with three leg characteristics (heavy tapered legs, modeled knees, and ankle knobs) with muscular torsos and full rounded hips (Table 42, p. 590). Twenty-six pieces of sculpture possessed these eight traits. The largest group of sculptures showed 42 pieces having five common traits of rectangular eyes, projecting ears, rectangular mouths, heavy, tapered legs and full, rounded hips (Table 43, p. 591). Since these facial traits had previously scaled for Group 1 pieces, it appeared likely that these 42 sculptures were representatives of Group 1, while the 51 sculptures having none of the stipulated traits belonged to Group 3. Finally, the pieces having two or three of the traits likely represented Group 2.

Facial and Body Trait Scales for Group 1 Sculptures

These same 28 scales were then calculated with the data from each of the three groups. The most important of these scales for Group 1 sculptures showed that 65 of the 70 processed cases had at least three traits in common (rectangular mouths, projecting ears, and full, rounded hips; Table 44, p. 592). The 42 sculptures having all five traits in common were the same 42 pieces which emerged when the total group of 220 figural images were scaled.

Facial and Body Trait Scales for Group 2 Sculptures

When the data for the 36 sculptures of Group 2 were used with these 28 scales, 12 scales gave coefficients of reproducibility greater than .9 but only five had coefficients of scalability greater than .6. One of these significant scales revealed 28 sculptures having four or five common traits (rectangular eyes, projecting ears, rectangular mouths, thin, cylindrical legs, and shapeless hips; Table 45, p. 593). This same scale also indicated the great similarity of the pieces grouped together here as only one example shared fewer than three characteristics with the other Sculptures of Group 2.

Facial and Body Trait Scales for Group 3 Sculptures

The 88 Group 3 sculptures produced 18 scales with .9 or greater coefficients of reproducibility. Twelve of these scales also had coefficients of scalability greater than .6. The scale most relevant to the images of this grouping showed 55 sculptures having four or

five common characteristics (oval eyes, stylized ears, simple slit mouths, thick columnar legs, and shapeless hips; Table 46, p. 594).

Facial and Body Trait Scales for Groups 1 and 2 and Groups 2 and 3

As a further test of the scalability of the standing figural images the sculptures of Group 1 and Group 2 were combined and those from Group 2 and Group 3 were combined. The same 28 scales were then calculated using the combined data. As was expected, the same scales yielded significant coefficients of reproducibility and scalability. One scale (Table 47; p. 595) showed that 82 of the sculptures in Groups 1 and 2 possessed at least three traits in common (rectangular eyes, projecting ears, and rectangular mouths). In like manner, the same set of variables calculated with the data from Groups 2 and 3 had coefficients greater than .9 and .6 (Table 48; p. 596). It demonstrated that 66 sculptures also possessed at least three common characteristics, oval eyes, simple slit mouths, and shapeless hips.

Guttman Scale Discussion

Effigy Grinding Stones

Scales were established using every possible combination of the attributes originally coded for each effigy grinding stone (Table 1, pp. 547-548). Analysis of these scales provided evidence that certain attributes had specific relationships to each other. Those scales which demonstrated negative relationships between and among specific attributes were eliminated from further analysis. From the remaining scales three were selected as representing the largest

number of sculptural pieces for the entire group of 205 grinding stones (Tables 21, 22, 23, pp. 569-571). These same scales were also calculated separately on the data of the sculptures in each of the three major groupings.

Since one of the primary objectives of the scalograms was to demonstrate change in specific attributes of the sculptures, those traits which did not scale for the total group nor for each of the major subgroups were consequently eliminated from further analysis. This was particularly evident with regard to ear traits. The attributes selected to scale for all the sculptures as well as for the three groups separately were: eyes, nose, snout, legs, and tail. These are the same attributes which proved valuable in the original visual analysis of the sculptures and the consequent establishment of the three major stylistic groups (as discussed in Chapter II).

The scalograms for each of the three stylistic groups demonstrate a clear relationship among the specific features selected thus verifying the placement of the sculptures within the three groups. The traits identified for Group 1 sculptures were: oval eyes, flat nasal areas, wedge-shaped snouts, V-shaped mouths, naturalistic legs, and cylindrical tails. Those identified for Group 2 were: oval eyes, slightly raised noses, curvilinear snouts, semi-naturalistic legs, and cylindrical tails. Finally, the traits of Group 3 sculptures were shown to be: circular eyes, raised nasal areas, rectangular snouts, U-shaped mouths, stylized legs, and flat tails. As noted throughout the analysis, the scalograms were evaluated statistically by means of coefficients of reproducibility

and scalability. These statistics measure the degree to which the scale scores of the sculptures are predictors of their artistic patterns and whether the scales are really unidimensional and cumulative (Nie 1975:533).

Besides the relationship of features, the scalograms also suggest a change or development from one group to another when utilized with the data of all the grinding stones. Changes occur in eye, nose, snout, leg, and tail shapes. In other words, the scales demonstrate the validity of the original seriation of the sculptures and suggest gradual change through time. (See Tables 49 to 56, pp. 597-604, for graphs illustrating the scalograms.)

However, as is true in any similarity seriation, the direction of change was not known. In the original visual analysis, it was thought that the overall development was from naturalistic to stylized. If true, the progression would be from Group 1 to Group 2 to Group 3. In accord with this, the specific traits would then have changed from oval to circular eyes, from short flat nasal areas to long fully developed features, from wedge-shaped to rectangular-shaped snouts, from fleshy, rounded and bulbous legs to streamlined supports having little relationship to natural form, and from circular cross-sectioned tails to those flattened on the top surface. Nevertheless, without archaeological evidence, only a relative chronology could be suggested. In the case of the effigy grinding stones, the direction of change could have been from naturalistic to stylized or the reverse.

Standing Human Figures

As was true for the effigy grinding stones, scales were also established for the standing human figures using all possible combinations of the attributes originally coded for each piece of sculpture (Table 2, pp. 549-550). These scales suggested which attributes were of value to further analysis by demonstrating various degrees of relationships between and among them. This information allowed for the selection of three scales (Tables 32, 34, 36, pp. 580, 582, 584) dealing only with the facial traits of eyes, ears, nose and mouth for each of the three groups of human images. An additional set of scales (Tables 39, 40, 41, pp. 587-589) showed a relationship between hip and leg shapes for each of the three sculptural groups. These traits were then combined and scalograms established for a combination of these facial and body attributes. Nose variables demonstrated less than acceptable relationships with the other variables and so were eliminated from further analysis. The resultant scales contained five scalable attributes for each group of sculptures. These consisted of eye, ear, mouth, leg, and hip shapes (Tables 44, 45, 46, pp. 592-594). Again, these were the same attributes which proved important for the original visual analysis of the standing human figures and their division into the three major stylistic groups as postulated in Chapter II. For Group 1 standing figures these traits were: rectangular eyes, projecting ears, rectangular mouths, heavy tapered legs, and fleshy bulbous hips. Those identified for Group 2 were: rectangular eyes, projecting ears, rectangular mouths, thin cylindrical legs, and

narrow shapeless hips. The traits of Group 3 sculptures were: oval eyes, simple slit mouths, stylized ears, thick columnar legs, and wide shapeless hips.

The scalograms for each of the three stylistic groups demonstrate a clear relationship among the five specific attributes selected and thus corroborate the placement of the sculptures within the three groups. In each of the scales cited, the coefficients of reproducibility and scalability are well above the .9 and .6 needed for a valid scale. As in the case of the effigy grinding stones, a change in style from one group of sculptures to another is suggested. Changes occur in each of the selected facial and body features confirming the veracity of the original seriation of the sculptures and suggest gradual change through time. Although the direction of the change could not be established without archaeological evidence, it was originally thought that the progression was from Group 1 to Group 2 to Group 3. If true, the specific traits would have changed from rectangular to oval eyes, from simple projecting ears to detailed stylized representations, from rectangular-shaped mouths with lips to simple slits, from heavy but tapered and shapely legs to thin cylindrical legs to thick columnar supports, and from rounded bulbous hips to a shapeless feature. As was true for the effigy grinding stone sculptures, Group 2 examples continue to possess some Group 1 features but begin to show a change toward the direction of Group 3 figures. However, in this relative chronology change in the opposite direction is also possible.

CHAPTER IV

CHRONOLOGY OF THE MAJOR SCULPTURAL GROUPS

After the three sculptural groups were established for the effigy grinding stones and for the standing human images, the archaeological record was searched for information suggesting the chronological relationships of the groups to each other and their placement in the chronological schemes for Costa Rica and Panama.

Evidence for Dating Jaguar Effigy Grinding Stones

The most common ceremonial stone sculpture from the Stone Cist (the late Period in the Atlantic Watershed/Central Highlands area of Costa Rica) and its contemporary periods is the effigy grinding stone or the jaguar metate. Hundreds, if not thousands, of jaguar and related effigy grinding stones have come from the Atlantic Watershed, Central Highlands, and Diquis Regions of Costa Rica as well as from the Panamanian provinces of Chiriquí and Veraguas. Sites from which recorded examples have come fall within Period V and Period VI of the Santa Fe chronology. Snarskis (1981:58) suggests that stone cist tombs first appeared at the end of Period V, about AD 700 or 800.

Lothrop (1950:Pl. 30) illustrated several effigy grinding stones from the Sona/Las Palmas area of Veraguas. Holmes (1888) and MacCurdy (1911) pictured a variety from Chiriquí. In the Diquis Delta region of southern Costa Rica the jaguar metate was the type

most frequently found by Lothrop (1963:Pl. XXIV, XXV). The excavations of Snarskis (1978), Aguilar (1972, 1974) and Kennedy (1968) suggest this is true for the Atlantic Watershed/Central Highlands region also. In addition, it is the most numerous type in museum collections.

Snarskis (1978a:Fig. 152) illustrates an armadillo variant of the effigy metate from the Atlantic Watershed site of La Selva. It was found in a stone cist tomb in association with vessels of the La Selva Sandy Applique type said to have been made until about AD 900 (Snarskis 1978:191). Two C14 dates from the site, AD 940 \pm 90 and AD 1110 \pm 195, place it in late La Selva B times. Although Kennedy (1968) found a variety of grinding stones in the Reventazon area, none were of the common effigy type. Most were from his Middle Period B (AD 850-1400). At the La Maquina site, Carbon 14 dated AD 1364, Stirling (1964:244) found a jaguar effigy grinding stone and a carved human head.

Aguilar (1953:47) reported three types of metates from the Retes site at Irazú Volcano. One was a simple flat oval tetrapod with trophy head rim. Another was also oval but concave. Aguilar described it as the type characteristic of the Plains of Santa Clara. The plate ends are raised with small projections like bird beaks and the rims ornamented with carved heads. Both are supported on tall, thin cylindrical or conical legs. At the same site, Aguilar also found the typical rectangular and oval jaguar metates. The association of these three metate types suggests contemporaneity and dates them about AD 1000, as the C14 date for Retes is AD 960

(deVries 1958:136).

Stone (1977a:196) mentions two jaguar metates and a circular stand with animal heads on the rim from graves at the Linea Vieja site of El Indio. From the Atlantic Watershed/Central Highlands region, the richest finds are those in the Línea Vieja area and are best known from the excavations of Hartman (1901) and Skinner (1926). At Las Mercedes, Orosí, Chircot and Santiago, Hartman found jaguar metates, circular stands and figural images. When Skinner excavated at Las Mercedes, Costa Rica Farm and Anita Grande, he found the same types of objects. All tombs were of the stone cist type.

In 1945, when Mason published his monograph on the Minor C. Keith Collection, he described and illustrated an enormous number and variety of Costa Rican sculptures, the major portion having come from Las Mercedes. Included were effigy metates, oval tetrapod stools, circular stands and various three and four leg utilitarian metates. Mason attempted no chronological ordering and gave no information on grave associations as none was known. Based on the works of Hartman, Skinner and more recent archaeologists, it is likely that they came from stone cist tombs. Snarskis (1978a:278) feels that most of the Keith Collection can be dated to Stone Cist times.

In the Greater Chiriquí Region, similar dates are associated with jaguar grinding stones. In burials at San Vito de Java, jaguar metates were in association with Alligator and Armadillo Ware (Minilli 1964:421-423). At Puntarenas Farm in Jalaca near the Diquis Delta, the typical jaguar metate and bicephalic examples were also found with Alligator Ware vessels (Stone 1963:341). This ceramic

type has been found with Post-Conquest iron tools and is, therefore, a late pottery type. The jaguar examples from Lothrop's Diquis Delta (1963) excavations were associated with ceramics of the second phase in this area and are likely post-AD 800 (Willey 1971:338).

Group 3 Effigy Grinding Stones

At the burial site of Orosi in Group V, Hartman excavated 65 tombs arranged in two levels (Hartman 1901:163). In contrast to the cemetery at Chircot with its burials distributed in three levels having no apparent time difference, those at Orosi were evidently of two distinct ages. On the basis of Millifiori beads found in Tomb 3 of the upper level and a Birmania Polychrome tripod bowl (Hartman Pl. 56 #1,2) in tomb 36 of the lower level, Baudez (1967:202) concluded that there was a chronological difference between the contents of the two levels and thus the levels themselves. As was true at Chircot, Birmania Polychrome ceramics are diagnostic of the Middle Polychrome Period in Guanacaste. In contrast, the Millifiore beads are of glass and arrived in the Americas with the coming of the Spanish in the sixteenth century. It is, therefore, obvious that at least some part of the cemetery was in use just prior to and at the time of the Conquest. On the basis of the ceramics and glass beads, Baudez (1967:202) suggests that the 49 burials of the upper level belong to the Late Polychrome Period (AD 1200-1500) and the 16 burials of the lower level to the Middle Polychrome Period (AD 800-1200).

One of the grinding stones placed with Group 3 examples and probably representing a crocodile, came from Grave 59 of the upper

level at Orosi and, therefore, correlates with the Late Polychrome Period (Fig. 163). On the basis of this example, all those of similar style are also assigned to the same chronological period. This establishes the style of the late sculptures from Costa Rica and corresponds with Mason's suggestions concerning the chronology of several pieces from the Keith Collection.

Hartman also excavated a small effigy grinding stone at the site of Santiago near Cartago in the Central Highlands. When Baudez (1967:202) reexamined the contents of the burials here, he found that among the polychrome ceramics was a Jicote Polychrome vessel from the Guanacaste region. In the ceramic sequence of the area, this type is assigned to the Recent Polychrome Period, contemporary with the latter part of Period VI of the Santa Fe chronology. Since the site appears to be of a single phase, the grinding stone is likely of the same time frame. This particular piece is a member of Group 3 of this study (Fig. 164).

Group 2 Effigy Grinding Stones

In cemetery I at Chircot near Cartago, Hartman excavated a number of tombs which contained ceramic vessels and a few stone sculptures. Twenty-five centimeters below the roof of Grave 56 he found a small double-headed effigy vessel (Fig. 165). Although the features are indistinct and the legs broken, there are visible similarities with the objects of Group 2-3 Transition. The heads are neckless, the legs plain and slim. Surface decoration is confined to a rim band containing a simple zigzag motif between two parallel

lines.

Hartman made no effort to date the contents of these graves nor any of his Atlantic Watershed/Central Highlands excavations. However, he carefully recorded the graves and their associated artifacts by means of drawings and photographs. Baudez (1967:199), while restudying Hartman's excavations at the Las Huacas cemetery in Nicoya also looked at artifacts from the Atlantic Watershed/Central Highlands area of Costa Rica. He found that in Grave 56 at Chircot, associated with his double-headed grinding stone, was a Birmania tripod bowl from Guanacaste.

Although Hartman observed no differences between the construction of these tombs nor their contents, he realized the 205 burials at Chircot were distributed in three levels. The analysis of the ceramics from these levels by Baudez (1967) confirmed Hartman's original conclusions. In level one, Baudez recognized two examples of Birmania Polychrome. Level two contained two Mora Polychrome vessels and one Birmania Polychrome while from level three came three Birmania tripod bowls. Since both Mora Polychrome and Birmania Polychrome are diagnostics of the Palo Blanco Phase of the Tempisque Valley sequence in Guanacaste, Baudez concluded that Grave 56 and its associated artifacts were from the Middle Polychrome Period, dated between AD 800 and 1200. Baudez went on to assign all three levels of Chircot I cemetery to the Middle Polychrome Period. Lothrop (1926:346) designated the ceramic complex of these tombs "stone-cist ware."

If this is true, than the small weathered and worn shallow

bowl-like grinding stone found in Grave 85 of level one must also be from this period (Fig. 166). However, its rather nondescript features make it difficult to compare with other sculptures and thus it seems of little value in trying to associate other stone objects with it stylistically.

At the opposite end of the Orosi chronology is a small jaguar grinding stone from Grave 36 (Fig. 167). It was associated with a Brimania Polychrome bowl of the Middle Polychrome Period. Stylistically this example relates to those of Group 2 of this study and thus also helps to furnish a relative chronology for the sculptures being examined.

These examples excavated by Hartman (1901) and associated with specific ceramic types later identified by Baudez (1967) suggest that the sequence for the effigy grinding stones considered in this paper is from Group 1 to Group 2 to Group 3. This verifies the progression as originally proposed by the visual analysis and as demonstrated in the Guttman Scale analysis. In terms of style, the development is from naturalistic to stylized and from elaborately ornamented effigies to streamlined, simplified sculptures.

Early Effigy Grinding Stones

The earliest effigy grinding stones from Lower Central America may have come from Panama. In two graves at Sitio Conte, Coclé, were small and simple stone objects which had obviously been used for grinding. From Grave 5 (one of the latest) came a tapered, cylindrical leg metate with small crudely carved heads in relief at

either end of the oval plate (Fig. 168). Except for the addition of animal heads, this metate is almost identical in size and form to one from Grave 11 (Lothrop 1937:96). Other than its resemblance to this undecorated example the only clue to dating is its association with Late Coclé Polychrome of the Macaracas type. Since Cooke (1976:317) dates the majority of the Conte burials between AD 400 and 900, this would be among the earliest examples of effigy metates from the area.

An even older grave (Grave 1) at Sitio Conte contained a miniature effigy metate (Fig. 169). It differs from that in Grave 5 in being a single-headed quadruped and having incised ornamentation. Its location in Grave 1 with pre and early Conte ceramics assigns it to the earliest known date for an effigy grinding stone from either Panama or Costa Rica. Cooke (1975:6) suggests a possible date before AD 500 for Grave 1. However, neither of these grinding stones is stylistically related to those from the Atlantic Watershed/Central Highlands area.

Summary

On the basis of the evidence presented here and the visible characteristics as noted in the visual analysis and the Guttman Scalogram analysis, the sequence for the effigy grinding stones is from Group 1 to Group 2 to Group 3. The development is from effigies with oval eyes to those with circular eyes, from those with naturalistic, bulbous and fleshy legs to sculptures with simplified, streamlined legs, from images with flat nasal areas and wedge-shaped snouts to those with raised nasal areas and rectangular snouts, from

effigies with erect ears to those with flattened ears, and from animal representations with cylindrical-shaped tails to those with flattened cross-sections. The overall development is from elaborate and naturalistic representations to highly stylized and simplified sculptures.

Evidence for Dating Standing Figures

Few of the free-standing human image sculptures included in this study came from controlled excavations. As was the situation for the jaguar effigy grinding stones, there is little archaeological evidence on which to base a dating sequence. Although general provenience for the majority of the sculptures is known, most of these were surface finds or purchased objects. Thus, again, Hartman's (1901) excavations in the Atlantic Watershed/Central Highlands region were of great value here.

In the same cemeteries where Hartman recovered effigy grinding stones, he also excavated sculpture in the form of human images. These were primarily from the Central Highlands sites of Orosí and Chircot. In re-analyzing the tomb contents of sites excavated by Hartman, Baudez (1967) discovered that the Cartago Valley sites contained mainly Middle Polychrome ceramics. He concentrated on the tradeware from Guanacaste and identified several Birmania and Mora Polychrome vessels in association with volcanic stone objects. From the cemeteries at Chircot he recovered four standing human images and one independently carved human head. However, only two of these objects were identified by grave number. Both came from the upper

level of Chircot I. Hartman (1901) noticed no differences in the three levels here and Baudez (1967:201) concurred with him concluding that the Chircot cemeteries were Middle Polychrome with all three levels belonging to the same phase. Nevertheless, the fact that all the graves containing the volcanic stone sculptures were from the uppermost level attests to the fact that they are the most recent burials and might well be from the end of the Middle Polychrome Period. In accord with this, Snarskis (1978:263) says that the varieties of Mora and Birmana Polychrome found in Atlantic Watershed sites "are usually the later ones, which carried over into the Late Polychrome Period (AD 1200-1500) in Greater Nicoya."

Group 3 Standing Figures

One of the figures from Chircot (Fig. 170) was in the same grave (107) with a Stone Cist Period vessel from the Central Highlands (Hartman 1901: Pl. 25 Fig.8). The other three standing human figures are merely recorded as coming from a burial ground 50 meters east of Chircot I. In the formal analysis of this study, three of the four figures were placed in Group 3 on the basis of facial traits. All had naturalistic but idealized features including oval eyes, slit mouths, very human-like noses, and flattened stylized ears. The features of the fourth piece were too eroded to be identified.

The last stone object from Chircot representing a human head (Fig. 171) also came from the upper level of the cemetery (Grave 89). It was accompanied by a shallow red slipped tripod vessel with white lines. This vessel may be an example of what Kennedy (1976:97)

called White Line Ware and dated to the Middle Period B (AD 850-1400) of the Reventazon area of the Atlantic Watershed. If the comments of both Snarskis (1978) and Kennedy (1976) are taken into consideration, these stone sculptures likely belong to the Late Period of the Atlantic Watershed/Central Highlands area or what the Santa Fe chronology labels Period VI. In the light of this possible late dating and the fact that the sculpted head possessed all the facial features of Group 3 standing images, it can easily be considered to be among the late examples of volcanic stone carving from this region.

At Orosi the situation was somewhat different as the two levels of Group V cemetery were clearly of different times, the upper level being of the Late or Recent Polychrome Period and the lower level of the Middle Polychrome Period (Baudez 1967:202). Hartman (1901) illustrated three human images from here (Pl. 55 Fig. 2 & 3; Pl. 57 Fig. 2; Pl. 62 Fig. 1 & 2), one standing figure, one seated figure, and one head. All were found in graves on the upper level (Graves 47, 59, 62) but none were directly associated with any ceramic wares. However, on the basis of Millefiori glass beads found in a burial on this level, Baudez (1967: 202) assigned the graves of the level to the Recent Polychrome Period equivalent to Period VI (AD 1000-1500). Although broken, the standing figure has the oval eyes, slit mouth and flattened stylized ears of the images from Chircot placed in Group 3 of this study (Fig. 172). Its nose, however, was less than the naturalistic feature of many Group 3 images. Nevertheless, this last trait proved to be unscalable and was not used as one of the

determinants for placement in Group 3. On the other hand, the individual stone head possesses all the traits essential for inclusion in this group.

Only one other volcanic stone object from Orosí was a standing image (Hartman 1901: Pl. 66, Fig. 6). Its extremely small size made analysis of the features difficult but its overall shape allowed tentative placement in Group 3. Of the three individual heads, the eroded condition of one (Ibid., Pl. 50, Fig. 1) makes it impossible to categorize but the others clearly have the facial features of Group 3 sculptures, oval eyes, stylized ears, and slit mouths (Fig. 173).

Among the most outstanding stone sculptures that Hartman recovered in his excavations were those from the site of Las Mercedes. The sheer quantity of sculptures in museum collections, much of it recovered by Hartman and Minor C. Keith, attests to the importance of Las Mercedes. It is certain that the site flourished during the Stone Cist Period and was still being used when the Spanish arrived as Hartman (1901:21) reported finding another Millefiori bead in a grave he excavated here.

Most of the sculptures Hartman collected from Las Mercedes were surface finds. Since the site was still being used in the early sixteenth century, it is likely that these statues are among the last objects carved by the inhabitants at this ceremonial site. These were placed in Group 3 of this study on the basis of facial features, hip and leg shapes (Figs. 174, 175).

Although Hartman did not excavate at the site of Agua Caliente, he did purchase part of the Juan Troyo Collection, much of which came

from this site. The one piece he illustrated (Pl. 86, Fig. 1) is clearly of the same style as the large sculptures from Las Mercedes and was also placed in Group 3.

Group 1 Standing Human Figures

All the examples thus far cited are considered to be from the late end of the sculptural sequence. The early end of the sequence, the beginning of free-standing figural sculptures, is thought to have emerged in Early Period V or Las Selva Phase times as a result of the elaboration of the Flying-Panel Metates (Graham 1981:122). Excavations by Kennedy (1968:75), Snarskis (1978:157), and the Museo Nacional (Snarskis 1981:45) have recovered portions of these great ceremonial objects dating back to El Bosque Phase times (AD 1-500). The imagery of these is clearly related to The Santa Clara Figurines of the Pavas, El Bosque and La Selva Phases (Snarskis 1976b:106; 1978a:199; 1981:54). Among these ceramic figurines are warriors with trophy heads and axes, flute playing figures, bound prisoners, and standing male images wearing tiered feathered headdresses and saurian, avian, or feline masks.

In terms of imagery, the saurian masked stone figures from the Atlantic Watershed are clearly related to these ceramic figurines and to the masked male images from the large ceremonial altars, both of which can be dated to the El Bosque and La Selva Phases. Although none of these saurian masked figures from the Atlantic Watershed came from controlled excavations, the similarity between them and the flying panel figures suggests the development of the free-standing

images from those on the ceremonial altars (Graham 1981:122).

Because of the stylistic similarities, Snarskis (1981:212) dates those in the "Between Continents/Between Seas" exhibit to Late Period V-Early Period VI (c. AD 700-1100). In the formal analysis, these masked figures were placed in Group 1 of this study on the basis of their large projecting ears, broad full torsos, massive rounded hips, and heavy legs with modeled knees and ankle knobs. Their placement in Group 1 was also confirmed by the Guttman Scale analysis.

Group 2 Standing Human Figures

None of the standing human figures from Group 2 of this study have known archaeological contexts. Their placement was based on their degree of similarity with the sculptures in Group 1 and Group 3, that is the visible attributes they share with the saurian masked figures and the sculptures Hartman found at Chircot, Orosí, and Las Mercedes.

Summary

It appears that free-standing sculpture developed rapidly during Period VI times in the Atlantic Watershed/Central Highlands region of Costa Rica and that the imagery saw a change from primarily zoomorphic or masked figures to truly human representations (Snarskis 1981:68). The majority of such figures included in this study came from the Línea Vieja area of the Atlantic Watershed, particularly Las Mercedes, a site known to have flourished throughout most of Period VI (AD 1000-1500).

On the basis of the evidence presented here and the visible characteristics of the sculptures, the sequence for the standing human figures is from Group 1 to Group 2 to Group 3. As such, the development would be from figures with rectangular eyes to oval eyes, from those with large, plain, projecting ears to images with detailed stylized ears, from figures with rectangular mouths to those with simple slits, from sculptures with shapely full, rounded, and fleshy hips to those with broad but shapeless ones, from images with heavy, tapered legs with knees and ankle knobs to carvings with thick, columnar legs and less of an attempt at naturalism.

CHAPTER V

OTHER CEREMONIAL OBJECTS

The sculptured objects discussed in this chapter have been grouped solely on the basis of overall form. If form was related to function, these objects may also be grouped according to function. There has been no attempt to seriate them nor to group them stylistically as in most instances the pieces were too few in number and lacked the striking variety of the effigy grinding stones. For these same reasons Guttman Scale Analysis was not attempted on any of the groupings. However, they are important to this study as stylistically and iconographically they show many obvious relationships to the effigy grinding stones and the standing human figures. In addition, they supply much of the archaeological evidence for establishing the chronology of the effigy stones and the figural images. (See Appendix D, pp. 320-330, for list of Ceremonial Objects used in this study.)

Non-effigy Grinding Stones

The most common form of grinding stone found in the archaeological record is the non-effigy type. From its appearance it can be easily assumed that it was a purely functional and utilitarian item.

Simple Tripods and Tetrapods

Simple and plain three and four leg grinding stones are known from both Costa Rica and Panama. The most crude of these probably represent the daily utilitarian type, oval or rectangular in shape with short heavy legs and trough plates (Snarskis 1978a:Fig. 33b). This type was found at the Línea Vieja site of Severo Ledesma along with jade fragments and is C14 dated AD 345 (Snarskis 1976a:344).

Mason (1945:Pl. 13c) illustrated a similar piece, probably from Las Mercedes. He presumed this was an archaic and temporally early form. Skinner also collected an identical one at Las Mercedes (Fig. 176). Like the others it has a deeply concave grinding surface with a rim on three of the four sides. In addition, Keith collected related examples from the Curridabat and Cartago areas of the Central Highlands (Mason 1945:Pl. 50A,C). Besides slightly longer legs, these grinding stones have knoblike projections on the exterior plate surfaces.

A similar type is known from Panama, particularly from the Chiriquí region. MacCurdy (1911:Fig. 17), like Mason, presumed this type of three-legged object came early in the developmental sequence (Fig. 177). That this style was fairly common in western Panama is verified by the number presently in the collection of the Museo Chiricano at the Escuela Felix Olivares in David.

Of the examples described, only that from Severo Ledesma has known archaeological context. Here, two of the common utilitarian type were found in El Bosque phase contexts (Snarskis 1978a:155). That dates this type of metate at Severo Ledesma between AD 1 and

500. Several of the other pieces described were originally part of the Minor C. Keith Collection which Snarskis (1978a:278) says is almost entirely from the Stone Cist Period. However, he also notes (1978a:277, 288) that the typical utilitarian metate of the later period was an unmodified flat cobble in contrast to the trough shaped form of the earlier era. It then seems likely, that the majority of these three and four leg metates were previous to the Stone Cist Period or before AD 1000. Nevertheless, crude basin or trough shape metates are also reported from the Central Highlands site of Barrial de Herredia (AD 900 to 1100) having been in association with polychrome trade pottery from Guanacaste (Snarskis 1981:37, 59). These pots were of the Mora, Birmania and Papagayo types (Snarskis and Blanco 1978:107).

With few exceptions, the simple undecorated grinding stones from Panama are indistinguishable from those of Costa Rica. However, besides the boulderlike trough metate, the most commonly encountered utilitarian type is an elongated oval or rectangular shape, slightly curved on the longitudinal axis and rimless. Its three legs are usually short and conical. They frequently slant inward and are flush with the edges of the plate.

The earliest known piece found in archaeological context is that from a cemetery near Horconcos in eastern Chiriquí (Jurado and Castro 1967:29). Although this quasi-rectangular metate was the only object in its tomb, it adjoined another tomb which contained Aguas Buenas ceramics. A similar example was recovered from Grave 11 at Sitio Conte (Fig. 178). Lothrop (1937:96) said this type was the

typical Coclé metate with its slightly curved oval plate. Cooke (1972:383-389) does not list Grave 11 among the earliest nor the latest burials at the site so its exact chronological position there is not known. Nevertheless, it must date between AD 400 and 900 as this is the time span within which Cooke (1976:317) places all the Conte burials.

From the neighboring province of Herrera, at the Sixto Pinilla Place Site, Stirling (1949:394) found a well carved example of this same simple tripod type (Fig. 179). As is true of those from Coclé, it is oval in shape with conical legs, two of which are flush with the plate sides and slanted inward. Here it was associated with Late Coclé Polychrome ceramics.

Some 600 to 800 meters from the Sixto Pinilla site, on the property of Leopoldo Arosomena, another tripod metate of almost identical size and style was excavated. By ceramic association it was dated contemporary with the Early Period at Sitio Conte. As a result of excavations at these two sites, Ladd (1964:211) considers this simple table type metate to have been a product of both Coclé phases and must have been popular from at least AD 500 to 900 and perhaps even later.

With minor variations, this type of grinding stone existed throughout the provinces of Veraguas and Chiriquí to the west of Coclé and Herrera. Other than a wide range of sizes (34 to 69 cm long) and a somewhat more obvious curve to the plate, these examples are identical to those from Central Panama (Fig. 180). MacCurdy (1911:Fig. 18) illustrated a somewhat similar example from Gualaca,

Chiriquí, northeast of David (Fig. 181). This differs from the others in having an incised rim line on its upper surface. Its short crude tripod legs are worn and probably broken. MacCurdy (1911:27) referred to this as an early type in his metate developmental sequence. He also believed it was related to the Nicoya type on the basis of its tripod legs and curved plate.

The most common type of metate encountered in Veraguas is extremely heavy, has tapered rectangular legs and a plate which, at times, may be slightly curved. Lothrop (1950:Fig. 32) illustrated one from Bubi, Veraguas. According to him, this type is so common in Veraguas that in the southwestern coastal plains of the Bubi district, these frequently formed the floors of shaft graves (Lothrop 1950:17). Sometimes three or four metates were sunken into the earth making a solid stone floor. McGimsey (1959:352) referred to an "undecorated but well executed four-legged metate" excavated from a site near Río de Jesus, between Sona and Santiago. As with the others, it came from a shaft and chamber tomb. The only additional information given is that the associated ceramics were the typical Veraguas ware found in most shaft and chamber burials so common to this area. No temporal placement was noted but McGimsey did mention the presence of a few polychrome vessels in the Coclé style from the vicinity. The only decorated Veraguas type of grinding stone found at Sitio Conte came from layer 1, Grave 5 (Lothrop 1937:Fig. 62b) which Cooke (1972:122) places in Late Coclé times on the basis of its ceramic associations. This would likely date the metate between AD 700 and 900 and could easily make it contemporary with the plain tripod

grinding stones from the Herrera sites of Sixto Pinilla and Leopoldo Arosemena.

Regardless of type, however, McGimsey (1959:355) felt that all the tombs of Veraguas were probably quite late. What he meant by "quite late" is not clear but Brizuela (1973:np) characterized all the sites Lothrop explored in Veraguas as belonging to the "Classic Veraguas Phase" which she places about AD 1100. Most of these sites contained examples of this "typical Veraguas metate."

From the El Hatillo site in the province of Herrera near Parita, shaft grave burials in two of the mounds had skeletons placed on metates sunken into the soil. One (mound 2, burial 3) had three of the common four-leg type. The other (mound 8, burial 3) had a single metate of this same type. All had rectangular plates (40-50 cm in length), flat and thin with plain undecorated legs about 25 cm in height (Bull 1965:35-36). Associated ceramics were Macaracus, Parita and El Hatillo Polychromes. This dates the burials at the earliest contemporary with the late burials at Sitio Conte and extends them into the Herrera phase, c. AD 800-1500 (Ladd 1964:147).

Lothrop (1950:32) said this very geometric type of metate was not known from Coclé and rarely from Chiriquí. His excavations in the Diquis Delta area of Costa Rica uncovered only four-legged examples with the exception of two oval grinding stones, one with an annular or hollow drum base (1963:Pl. XXVI) similar to one illustrated by MacCurdy (1911:Fig. 19) which he considered to be the prototype of all Chiriquian metates (1911:27). Considering the overall appearance and the known dates, there can be little doubt

that effigy grinding stones developed from these tripod and tetrapod examples.

Tripod Grinding Stones with Low Rims

Another type of simple grinding stone, apparently contemporary with the previous examples is also a tripod with cylindrical or nearly cylindrical legs. Snarskis (1978a:Fig. 33a) illustrated one from the Zoned Bichrome II Period and Stirling (1969:239, 242) found rectangular and oval examples at the Línea Vieja sites of Mercocha and Porvenir with C14 dates of AD 144 and AD 279. This is perhaps the earliest "special-purpose" metate and is almost always a round or oblong tripod, surrounded by a low raised and notched rim (Graham 1981:119).

Fragments or entire stones related to this type have been found in El Bosque, Pavas and Curridabat phase contexts in Atlantic Watershed and Central Highlands sites. According to Snarskis (1978a:155), they are common in the Turrialba Valley and the Línea Vieja. He also referred to fragments of rectangular rimmed metates with El Bosque pottery and broken jade beads in a tomb at the La Cabana site, C14 dated AD 200 (1978a:176).

At the site of Tíbas near San José a burial was excavated which contained a skeleton placed across three raised rim metates (Fig. 182). These circular and rectangular examples had conventionalized notched rims and were associated with ceramics typical of the AD 100-500 period, two mace heads, an axe god pendant and an extraordinary jade carving (Snarskis 1979:92). An almost identical

burial was recovered from the Curridabat Phase (AD 500-900) site of La Fábrica de Grecia in the Central Highlands (Guerrero 1980:131; Fig. 183 of this study). On three circular metates rested a skeleton associated with mace heads, axe heads and jades, all objects much like those found at Tibas but with ceramics of the Curridabat Phase.

All these metates were well carved, had very low raised rims, three tapered cylindrical legs and a sculptured band encircling the circumference of the plate. Usually this is a highly stylized version of trophy heads so abstracted as to appear nothing more than a continuous series of notches. Snarskis (1978a:156; 1981:21) relates these to the shrunken heads taken by warriors as trophies of war. He feels there is some relationship between these metates and this custom, thus making the grinding stone a ceremonial as well as utilitarian object.

There are numerous examples of this type in museum collections in the United States and Central America. However, there are few with known proveniences and dated contexts. Those with the most recent associations are from the site of Chassoul in the Central Highlands, excavated by the University of Costa Rica (Figs. 184, 185). Two have flat rectangular plates with raised and notched rims and are tripods, one with cylindrical legs, the other with conical legs. They are small and nearly identical in size, measuring c. 35 cm long x 23 cm wide x 12 cm high. A third example is oval with a deeply concave and thick plate. Its rim edge is notched but its three legs are bulbous and nearly mammiform as opposed to conical or cylindrical. A fourth example from this site is slightly divergent

in being four-legged, oval, larger and taller. In contrast with the other three, the legs are flush with the sides of the plate and interrupt the series of notches. Like the Fabrica de Grecia metates, these are said to be from the Curridabat Phase on the basis of ceramic associations (Arias:personal communication).

Several almost identical examples were originally part of the Keith Collection (Mason 1945:Pl. 13 B,C,D,E). All are tripods, rectangular or oval, have notched, raised rims and are from Las Mercedes. They all fall within the range of sizes from Chassoul.

The largest of this type came from the Central Highlands of Costa Rica. It is almost twice the length and height of the others and has a deeply concave grinding plate. However, it has the same raised rim, notched edges and conical tripod legs and is clearly related in style.

Some of these simple, tripod, raised rim and notched edge grinding stones are likely candidates to have developed from the earlier forms. Among these is a type which seems to be of superior workmanship. Mason (1945:Pl. 13F) illustrated an example from Las Mercedes with three cylindrical legs, regularized notched rim and slightly curved plate. Larger than the previous less refined pieces, it measures 75 cm long x 46 cm wide x 27 cm high. This same type of grinding stone was recovered from El Bosque Phase contexts at the Linea Vieja site of Severo Ledesma (Snarskis 1981:45).

There are also nearly identical examples in the archaeological collection of the Banco Nacional de Costa Rica (Fig. 186). Perhaps slightly smaller, nevertheless, the illustrated piece is worked

with the same care and precision as the Las Mercedes examples. Provenience is recorded only as Atlantic Watershed. As a type, these relate to others found in both Costa Rica and Panama with simple "flying panels" attached to the undersides.

Tripod Grinding Stones with Notched Edges and Trophy Heads

Morphologically related to the three-legged grinding stones with flat plates and notched edges are rectangular, circular and oval examples with trophy heads. Small objects of this type have come from the Central Highlands and the Diquis Regions of Costa Rica (Fig. 187). All have relatively flat grinding surfaces with raised rims and notched edges. Trophy heads are placed in the center of the sides as well as at the corners. They are commonly carved from a very porous and coarse stone. Among the finest of these is a round one recovered from El Bosque Phase contexts at the Tíbas burial (Fig. 188) (Snarskis 1979:92).

From the Curridabat Phase of the La Fábrica de Grecia site came a unique but clearly related example (Fig. 189; Guerrero 1980:131). Its concave oval grinding plate is supported on four extremely short figural legs representing squatting personages with upraised arms. The rim has a double horizontal line incised into its circumference above the series of notches. Although of coarse stone and quite weathered, these notches appear to be a further development on the stage toward a continuous row of trophy heads.

Larger examples were also recovered from the Atlantic Watershed region. These are long and low with rectangular plates rimmed with a

series of simple notches. As with the smaller pieces, the attached trophy heads vary in number (Fig. 190). The tripod legs are cylindrical or standing female figures with hands on the abdomen and heads supporting the plate like caryatid statues (Fig. 191). Objects with caryatids or atlantean supports are more commonly found on grinding stones from Barriles and related sites in western Panama. Keith, however, did collect an example with atlantean supports from the Atlantic Watershed near Limón (Fig. 192). Instead of human figures, owl-like birds act as the tripod legs. In essence, this metate is much like the simpler ones in terms of size, shape and rim. It also relates to other Atlantic Watershed and Central Highlands examples with flying panels and figural supports.

In addition to their weathered and worn states, these grinding stones also seem to lack the carving precision and details as well as the plastic sculptural quality of the trophy heads on the round stools or the grave slabs. They are stylistically similar to the simplified heads on the rims of the hollow pot stands.

Grinding Stones with Drum Base or Slab Legs

MacCurdy (1911:27-31) truly believed he had visible proof of the evolution of the metate in Chiriquí. He felt there were two lines of development from the unmodified river boulder. One has already been discussed in reference to the three-legged trough-like type which MacCurdy considered an early solution to portability. This type was never fully developed anywhere except in the northeast of Costa Rica. The other, a pedestal base object, he considered the

"prototype of practically all the Chiriquian forms of metate as well as of stool" (1911:27; Fig. 193 of this study). In his mind, this type preceeded all four-legged examples, effigy and non-effigy.

In MacCurdy's evolutionary scheme, this pedestal base type could easily give birth the those with hollow, openwork bases (Fig. 194). He saw the basal openings as the next logical step in reducing the weight of the object. Less stone clearly means less weight, but morphologically the development seems less probable. In fact, the pedestal base example appears closer to many of the utilitarian tripod metates from Costa Rica than it does to this openwork example.

On the other hand, the basal opening type is constructionally close to the circular ring base stands or stools and stylistically related to MacCurdy's Figure 24 (Fig. 195). Both have quasi-rectangular plates with raised rims and incised decoration of horizontal and diagonal lines. It is easy to visualize the reduction of the open base to four heavy nearly triangular legs and the addition of two effigy heads. However, in the light of stylistic seriation of the effigy grinding stones, it seems likely that the openwork base example is a late piece, not one at the first stages of development.

MacCurdy (1911:28) also related the pedestal base type to a much smaller object from Chiriquí (Fig. 196). Instead of a drum or openwork base, this example has two slab-like supports extending the length of the long sides. His example is almost identical to several Keith collected from the Las Mercedes area. All are small but similar in size, ranging from 18 to 30 cm long and 8 to 13 cm in

height. Although MacCurdy referred to these as metates, it seems more likely that they served as seats as was suggested by Mason (1945: 240).

The example from Chiriquí has a non-representational design incised on the side slabs while the others are plain or have only two narrow geometric bands incised on the seat surface. In view of the fact that most of the Keith Collection from Las Mercedes is from the Stone Cist Period (Snarskis 1978a:278) and that incised surface designs do not seem to be important on early Chiriquian artifacts, all these examples most likely belong to Period VI of the Santa Fe chronology and are probably contemporary with the effigy grinding stones and the circular stands.

Grinding Stones with Lower Appendages

Besides grinding stones with carved rims and trophy heads, there are numerous examples whose undersides have sculptural motifs. Among these are tapered cylindrical leg tripods with hanging appendages (Fig. 197). Such grinding stones are known from Costa Rica and Panama, from the Línea Vieja to the Province of Herrera.

Those recorded from Costa Rica have no known archaeological context. However, one from Panama has the earliest known date for a decorated grinding stone. From a shaft grave at the site of Pueblo Nuevo on the Chiriquí/Veraguas border, an intricately carved tripod metate in association with Scarified and Guacamayo Ware was found (Lothrop 1959b:88). Although no illustration of it could be located, it is described by several authors (Ladd 1964:42; Willey 1971:328;

Lothrop 1966:198; Torres de Arauz 1972:70) as being similar to one from the Sixto Pinilla Place Site (Fig. 198) and another from Las Palmas (Fig. 199). These three metates have semi-rectangular grinding plates supported on three tall, thin undecorated conical legs. To the undersides of the slightly concave plate are attached a series of zoomorphic or geometric shapes. Ladd (1964:201) describes that from Sixto Pinilla as having thirteen stone rings resembling bird heads attached by neck and beak. Torres de Araúz (1972:70) says that from Pueblo Nuevo has zoomorphic and geometric motifs and considers it to be a seat or stand used in funerary ceremonies. Lothrop (1966:198) felt the appendages were birds or animals carved in high relief.

Dating this type of grinding stone has been problematical. C14 dates have been published for the Pueblo Nuevo site but they are not in agreement. Lothrop (1959a:88) gave a date of 230 ± 60 BC. Baudez (1963:46) repeats the date but calls the site Puerto Nuevo. Willey (1971:328) says the C14 date is 340 BC, while Haberland (1978:414) says that Pueblo Nuevo excavations are dated by sample C6 (GrN-1520) dated 330 ± 50 BP, corresponding to AD 1460-1642. He, however, rejects this date as far too recent and says the Pueblo Nuevo site is incorrectly associated with the C14 sample C3 (GrN-1516) used for dating the Scarified Ware of the Concepción Phase from 547 to 391 BC. Linares (1968:85) refers to Ladd's dating of the Pueblo Nuevo material to 340 ± 45 BC but admits that the C14 sample was not from this site but from one in nearby Chiriquí with similar pottery. However, she agrees with Baudez (1963:46) in dating the Scarified

Ware associated with the Pueblo Nuevo excavations to the period between 300 BC and AD 300.

Assuming that there is some accuracy in dating the Pueblo Nuevo materials, then the type of grinding stone found with the Scarified ceramics must at least date to AD 300 or earlier. This is also the earliest known context for decorated metates in Panama.

Ladd (1964:Pl. 23b) illustrated one of this type recovered from a mass burial at the Sixto Pinilla Place Site in the Herrera Province (Fig. 198). Its artifact association places the site contemporary with the early and late Coclé periods at Sitio Conte, c. AD 500-900. The very thin grinding plate (46.5 cm x 35 cm) rests on three long (22.5 cm) slim, slightly tapered cylindrical legs. To the underside of the plate are attached thirteen appendages said to resemble bird heads (Ladd 1964:201).

Lothrop (1950:Fig. 30a) had previously published an example of this type from Las Palmas, Veraguas. Its plate is slightly larger than the Herrera example, measuring 64 cm x 45 cm. In place of the rather rectangular objects under the plate, there are eight curvilinear forms recorded on the catalog cards at the Museo del Hombre Panameno as "oso hormigueros" (anteaters).

Two other examples in the Museo del Hombre Panameno relate to these. A very tall one from Bubi, Veraguas (which may possibly be the piece from Pueblo Nuevo, although it is identified in the museum catalog as simply being from the Bubi district of Veraguas) has twelve appendages and measures 53 cm long x 40 cm wide x 37 cm high (Fig. 200). The other, whose exact provenience in Veraguas is not

known, is much lower (15 cm) and in proportions is more like that from Las Palmas (Fig. 201). It differs from all the others in having only five forms attached to the plate. Three of these are loops from plate to legs while the remaining two are birdlike and resemble those on the Las Palmas example. They also appear to be more closely related to the simple "flying panel" metates commonly found in Veraguas and rarely in the Costa Rican Highlands.

Few of these are known from Costa Rica. Stone (1977b:Fig. 3) illustrates one similar to those she says are sometimes found in the Línea Vieja and the Meseta Central areas. She refers to it as a metate with a "stylized vestage of the large flying panel type" (1977b:248). Aguilar's description of one from El Molino in the Highlands sounds similar. He says that the metate has a slightly raised rim with small projections on the lower face and on the border (Aguilar 1975:24).

One from the Museo de America in Madrid and another illustrated by Stone and Balsar (1957:Pl. XXXVI) are long and low. Instead of stylized birdheads or anteaters appended to the lower sides of the plates, there are knoblike projections around the circumference. Down the center of the plates are several rectangular motifs much like the related "marimba" style metate.

Tripod Grinding Stones with Marimba Appendages

From the Atlantic Watershed and Central Highlands of Costa Rica comes a rather unique group of table top grinding stones. As a group, they have morphological relationships with at least two other

groups from Costa Rica and Panama. Their uniqueness is best expressed in the term often used to describe them, "marimba" metates. All are tripod with tapered conical legs. Although Stone and Balsar (1957:173:Fig. 14) say that the legs of this type are never ornamented, they illustrate an example with painted geometric designs on legs and plate underside. Such tables have circular or rectangular grinding plates with low raised rims around the entire upper surfaces of their flat plates. Without exception, they are carefully and skillfully carved.

Circular examples are known from the Central Highlands and Nuevo Corinto in the Línea Vieja (Fig. 202). They range from 31 to 61 cm in diameter and have a series of knobs or notches around the lower edge of the circumference. In this sense, they seem related to the circular tables with notched rims found in burials in central Costa Rica and often associated with mace heads and jade carvings. However, their unique characteristic of three radial series of rectangular appendages from legs to plate center, distinguishes them from the other examples.

With few exceptions in style and execution, the rectangular examples of this "marimba" type metate are much like the circular tables (Fig. 203). Sizes range from 46 to 99 cm in length and 16 to 26 cm in height. All but one came from the Atlantic Watershed region. The rim carvings on the underside of the plates range from extremely small notches to large pierced appendages reminiscent of the knobs on the Sixto Pinilla or Pueblo Nuevo grinding stones. All have a vertebral column down the center of the plate bottom. These

vary from five to nine in number and are all free-standing except for those on the Nuevo Corinto metate which are joined. In some instances these are small animal heads carved at the top of each leg (Fig. 204). These relate to the "flying panel" metates which commonly have heads or entire animal figures attached to the legs or in place of the legs.

Examples of this type also come from Panama (Fig. 205). They, too, are rectangular tripods with rim knobs and vertebral columns and conform to all the characteristics of the Costa Rican examples except that the "marimba" appendages are pierced. These open-work pendant elements are similar to those on the example from Bubi, Veraguas and that from the Sixto Pinella site in Herrera. With such striking similarities, a relationship can scarcely be denied.

This type of grinding stone is almost totally confined to the Central Highlands and Atlantic Watershed area of Costa Rica. Those from Panama may well have been trade pieces imported into Chiriquí. Graham (1981:119) says that this type of metate, along with the plain rectangular or circular tripod with notched edges, seems to be the "earliest special purpose metate" from Central Costa Rica. Snarskis (1978a:157) relates the rectangular appendages to the dorsal scutes of the alligator or cayman.

It seems logical to conclude that this type of metate preceded and influenced the elaborate "Flying Panel" type (Graham 1981:119). Although the archaeological context has been reported for very few of these, apparently they are confined to Periods IV and V of the Santa Fe chronology. Aguilar (1974:312) refers to excavations in Pavas

near San Jose where burials in bottle-shaped tombs were accompanied by tripod metates with flat plates and rectangular stone tables with raised edges, three legs and a series of projections on the lower side. He calls these "marimba" projections and reports (1975:24) that one of these metates came from the Pavas Phase (300 BC - AD 300) site of El Molino in Cartago. Ferrero (1977:162) extends this phase to AD 500, coeval with the El Bosque Phase of the Atlantic Watershed. He refers to rectangular or round metates, rather thin, with protuberances on the lower side, found in El Bosque contexts (Ferrero 1977:457). Snarskis (1977:157) also refers to examples from this phase.

These are most likely the examples cited by Stone (1977a:194; 1966:18) and Stone and Balsar (1957:177, Fig. 14). Such metates were found in burials at La Union Sur, a site in the Línea Vieja area originally part of the Costa Rican Farm site. Stone (1977a:194) refers to surface patterns painted in white on these. She also illustrated two examples from the Línea Vieja site of Nuevo Corinto (1966:Fig. 2c, 23a,c) and said this is the only location from which these painted grinding stones have been found. Of the examples illustrated or photographed, only four have painted designs. All are from the Atlantic Watershed, two from Nuevo Corinto, one from Guapiles and the other without exact provenience. Whether all are from the same site or not, they are all from the same area as Nuevo Corinto and La Union Sur are near Guapiles. It is likely that they were all contemporary.

Stone (1977a:194) places the La Union Sur example in the Middle

B/Late Period (AD 850-1502). However, if these are as Stone and Balsar (1957:177) originally proposed, the first of the "flying panel" type of metate, and if Aguilar's (1974:312; 1975:24) finds were in Pavas Phase contexts, the Middle B/Late Period placement is probably too late. It is more logical to place this type of "marimba" metate in the El Bosque and Pavas Phases. This would make it contemporary with the proposed initial dating of the more elaborate "flying panel" type. Snarskis (1978a:Fig. 49d,e) illustrates a circular one and calls it Transitional Period. He states (1978a:235) that "all the ground stone tool types described in Zoned Bichrome II lithics seem to carry over into the Transitional Period" and specifically refers to round and rectangular raised edge metates.

Evidence for dating Non-Effigy Grinding Stones

MacCurdy (1911:27) believed that the Central American metate went through a lengthy evolution before arriving at the highly developed effigy form. He was of the opinion that the earliest type was also the simplest and was in essence a flattened river boulder. His theory assumed the carving away of excess stone to give the object portability. First came the three-leg variety and then the quadruped effigy metate. In this manner, MacCurdy saw a genetic relationship between the simplest and the most developed forms. More than thirty years later Mason (1945:217) referred to this hypothesis of evolution from flat stone to tripod to zoomorphic form. Although he considered its portability, he also noted that not all data

support this theory. In reality, there are prehistoric and historic examples of the simple boulder type of grinding stone. From the oldest dated sites in Panama, Cerro Mangote and Mongrillo, have come nearly unmodified grinding stones with shallow basins (Ladd:1964:20). Snarskis (1978a:25) refers to the present day Talamancan Indians as using "unmodified river stones" to grind food. Despite the probable truth of MacCurdy's hypothesis, actual data indicates that form or shape alone is not adequate to date these objects. Archaeological context is essential in an attempt to date and seriate the sculptures as well as to substantiate such theories. This date has already been discussed.

Flying Panel Altars

Simple Altars

Belonging to the type of grinding stone known as "flying panel," is a group with relatively flat plates, tapered cylindrical tripod supports, slightly raised rims and in most instances small knobs under the plate edges (Fig. 206). This verbal description could easily apply to the previously discussed tripod metates commonly found in Central Costa Rica. The present grouping, however, differs in one important aspect. Under the grinding plate, attached to one leg and the plate surface, is a horizontal bar. On this "flying panel," as it is popularly called, are usually found human or animal images (Fig. 207). The known examples have from one to four figures and include monkeys, bats, snakes, felines, birds and humans.

It is not unusual for the plate to curve slightly upward toward

the ends, especially that over the single leg. Although thought of as being rectangular, with few exceptions, the plate is actually rounded at the corners making it quasi-rectangular in shape (Fig. 208). They range in size from 53 to 106 cm in length and 15 to 33 cm in width. Some are long and low in proportions while others have shortened plates and taller legs.

These examples also differ from the simple raised rim rectangular grinding stones in another way. While the former group have a continuous series of notches or knobs along the undersides of the edges, these are sparsely ornamented. It is not uncommon to have such motifs spaced two or more inches apart (Fig. 209). Only two examples do not conform to this. One has an incised horizontal line in the center of the rim around the entire circumference. Below this line, in extremely low relief, is a continuous series of small notches. The other has a plain rim with no ornamentation.

With one exception, all the photographed and illustrated examples of this type are from the Central Panamanian Province of Veraguas. Two came from Sona, three from Las Palmas, one from Santiago and one from Tabasara. No provenience other than Veraguas is recorded for the other examples. The one exception is a tripod metate with a flying panel but it differs from the others in being extremely small, 32 cm long x 15 cm high, having a perfectly rectangular plate, thicker and with a higher rim, no edge design and is said to come from the Nicoya Peninsula of Costa Rica.

There is no recorded context for any of these pieces and, as previously mentioned, the time frame in Veraguas is not clearly

established. Nevertheless, Brizuela (1973:np) believes that the sites Lothrop explored in the central to southern part of Veraguas belong to the Classic Veraguas Phase which she dates c. AD 1100. She places the common rectangular tetrapod metate, the jaguar effigy form and the rectangular tripod with the flying panel as being contemporary.

Lothrop (1950:3) considered the cultures of Coclé and Chiriquí to have been contemporary with that of Veraguas. Further study has shown him to be only partially true as the Coclé materials represented at Sitio Conte are now known to be much earlier (Cooke 1975:6). Linares (1968a:87) feels the Veraguas Culture or the Classic Veraguas Phase may have begun as early as AD 800. That the culture or phase existed until the Conquest is proven by the existence of iron tools in graves (Lothrop 1950:3; Ladd 1964:16).

Elaborate Altars

The group of objects known as "altars" is the most elaborate and complex of all the Lower Central American stone sculptures. Twenty-six complete examples were located for this study. These range from heavy, massive pieces to lacy, baroque, intricately carved altars (Figs. 2i0, 2ii). The variety is amazing yet the motifs are limited. Most (22) are rectangular, only a few (4) have circular or nearly circular plates. Eight have figural legs. The others are cylindrical with figures appended.

Few have been excavated scientifically as most are known to have arrived in collections due to the work of huaqueros. In discussing

the metates of Veraguas, Lothrop (1950:76) said that the type with a flying panel was not a common form. The lack of archaeological excavation in the Atlantic Watershed/Central Highlands region of Costa Rica led him to conclude that since most of the then known examples came from Veraguas, this was the likely place of origin. Had he access to more information, it would have been evident that the majority of the known examples have come from central Costa Rica and thus presumably have an origin other than Panamanian.

Regardless of size or shape, the grinding plate of the altar has a low rim, 1 to 2 cm high. The lateral edges in every instance have a continuous series of notches or stylized heads, some quite recognizable, others extremely abstracted. The smaller examples are less ornate, less detailed, heavier, and more blocky in appearance with less variety of motifs. Plates are relatively thin, the thicker ones being on the smaller sculptures. All are flat or nearly so with little or no concave depression from extensive grinding of foodstuffs.

Beneath the grinding plate is the flying panel, usually an L-shaped support attached on one end to the single leg and on the other to the underside of the plate. A couple of the smaller examples, where no bar exists, have the panel figure itself attached to leg and plate. In one rare case, a single human head is pendent from the plate with no other attachment. Several of the larger altars substitute animals for the bar on which is placed the central motif. These animals consist of a feline, probably a jaguar, double-headed crocodiles and a crab. One has two human figures for

the bar.

In general, the flying panel design is rigidly symmetrical containing one to three figures. The most bizarre examples have a single large central figure which in a few cases is attended by two smaller figures of lesser importance. Stone (1977b:248) says the "beaked bird" is the motif usually found on the panel (Fig. 212). In reality, this does not seem to be the case as of the twenty-six examples located for this study, only six can definitely be identified as the "long beaked bird." One other example may belong to this grouping but seems more owl-like. Three with long curved snouts, sometimes said to be birds, are probably crocodiles (Fig. 213). Other crocodile images have more angular snouts. One of these large altar figures may possibly be a crocodile or a jaguar (Fig. 211). Ferrero (1977:331) refers to this masked crocodile figure as having its body covered with tattoos.

As the central motifs on the flying panels, humans predominate. Nine of the twenty-six have full bodied figures, while three have heads only. As such, the most common central figure is a human being wearing an enormous mask. In some cases this is worn directly over the face and in other cases it rests on the top of the head like a headdress, instead of a mask (Fig. 214).

Birds are the most frequently found images adorning the supports (Fig. 215). Seventeen examples have long beaked birds or owls, either alone or associated with another animal and/or human figure (head or entire). One has monkey legs while another has monkeys and jaguars attached to the legs. Only a single example has crocodiles

appended (Fig. 213). The remaining altars (6) have human or anthropomorphic legs. These last all belong to the smaller less complex type of altar.

It is generally agreed that the iconography is best explainable in reference to mythology. Stone (1966:25) proposed the existence of three important cults embedded in the themes and motifs of the sculpture and ceramics of central Costa Rica. These are: 1. the cult of the long beaked bird, 2. the cult of the trophy head, 3. the cult of the procreative forces of nature.

All of these appear to be represented on the elaborate stone altars. Without exception, the animal imagery in these sculptures, jaguars, crocodiles, monkeys, crabs, serpents, owls, and long beak birds, were undoubtedly species native to and common in the natural environment of much of Lower Central America. That they should appear as the important motifs in artifacts at this time can be explained by the apparent importance attached to ceremonialism. Most of the motifs seen on El Bosque Phase ceramics are also found on the contemporary stonework. This is apparent in the case of the great stone altars.

Several of these large altars, particularly those with long beaked birds as a primary motif, have a very rectilinear and flattened appearance (Fig. 212). They lack details and seem static. The other large altars are more plastically modeled and embody a sense of realism and momentarily suspended animation (Fig. 200). Figures are more fleshy, rounded and naturalistic. There is a need for space to allow the sculptures to be viewed from all angles.

Despite the symmetry, the sculptures are not entirely frontally oriented.

Sizes vary greatly with a considerable range in length and height. The smallest is 34 cm long while the largest is 120 cm. Heights range from 17 to 75 cm. The smaller are the less ornate examples, the larger are the more complex. The range of motifs is also less varied in the former group, consisting primarily of human, bird and anthropomorphic forms. Of these, there are no masked figures, no monkeys and only one with reptilian forms. Thirteen examples are placed in this group which can be subdivided into those with figural legs (7) and those with tubular legs and appended animals (6).

The second group composed of the more elaborate examples, also consists of thirteen altars. All are over 70 cm long and more than 45 cm high. As with the previous group, these are also subdivided into two smaller units. Five altars can be placed in one group. Three have long beaked birds with greatly expanded wings on the central panel (Fig. 216). The other two examples have pairs of human figures (Fig. 217). All have thin plates with notches (4 rectangular, 1 circular) and tubular legs with long beaked birds. These are the most rectangular of all the examples. The second subgrouping consists of eight sculptures. With possibly one exception the central figure of the flying panel is a male human image wearing a large animal mask (6 crocodiles, 1 beaked bird, 1 grotesque human (Fig. 218).

Imagery has expanded to include monkeys, felines and crabs while

human heads and crocodiles are now common motifs. Three examples from Azul have plate edges carved into recognizable human faces (Fig. 219). With two exceptions they have multiple images attached to the legs. In four cases these are long beaked birds and human heads or figures. One combines long beaked birds and crocodiles while another has long tailed monkeys standing on jaguars. Only one has monkey supports (Fig. 220).

The central figure in five examples stands on living creatures not tubular bars. The main image on the San Raphael de Coronado sculpture wears a grotesque saurian mask from which a serpent tongue falls (Fig. 212). This motif, frequently found in South American imagery, is also a common element on the human figural sculptures from the Diquis Delta region of Costa Rica.

If this grouping is accurate, it may also have chronological significance. There are definite differences in size, imagery and style between the two groups. Snarskis (1978a:157) tends to substantiate the above hypothesis saying: "It appears from a comparison of style and motifs that the earlier examples of this type were smaller and more stylized, the larger more complex model, having been made early in the Transitional Period."

From the Linea Vieja area of the Atlantic Watershed are three related yet unique grinding tables. Of similar size, they average 77 cm in length and 32 cm in height. Each is composed of a slightly curved rimmed plate resting on a four-legged mammal (probably feline; Fig. 221). These plates are thick with carved edges. Two are only vaguely notched, the other has a continuous series of long beaked

birds surrounding the sides.

In the "Between Continents/Between Seas" exhibit are three circular pot stands from the Atlantic Watershed. Each has a band of beaked birds at the top for the pot to rest upon. All belong to the El Bosque/Pavas Phase ceramic complex and are dated in Period IV, AD 1 to 500. The motif, style and dating correlate well with the "flying panel" metates and also with the three in this group.

In two of these grinding tables the supporting animal figure is stocky and fleshy and relates well with the "flying panel" altars in the first group. The other example is more streamlined, thinner and rectangular. From the jaguar's mouth comes an elongated angular tongue shaped like that of the long beaked bird in Group 2b. On the basis of style, these three sculptures would appear to be early and later examples of a type related to the flying panel metates. It seems likely that they span a similar time frame from late Period IV to early Period V.

Barriles Ceremonial Grinding Stones

Other than the site of Sitio Conte in the Coclé Province, the best known archaeological site in Panama is Barriles in the Volcan Baru District of Chiriquí. The 1949 excavations by Stirling showed it to have been a ceremonial center of considerable size and importance as from Barriles have come the largest and most naturalistic stone sculptures of Panama. These include nearly life-size human figures and enormous grinding stones or tables.

These grinding stones were the only objects recovered from the

deep shaft and chamber tombs of the site. Their size and iconography suggest the existence of a fairly well developed religious cult having to do with war (trophy heads) and fertility (agriculture). The sculptures, both human figures and ceremonial objects, attest to the presence of social stratification and ranked society. It seems likely that the graves with the large grinding stones can be interpreted as those of nobility, perhaps the chiefs (Haberland 1984:244).

These characteristics by themselves are common elements of tribal chiefdoms but the Aguas Buenas ceramic associations and C14 dating are surprising (Linares et al. 1975:144). Haberland (1960a:13) says his excavations at Barriles showed the ceramics to be identical to those of the Aguas Buenas complex and it is, therefore, logical to assume the sculptures and ceramic materials are contemporary. Six radiocarbon dates from various contexts at Barriles give dates ranging from 60 BC to AD 1200 (Linares et al. 1975:144). The site was occupied twice with the first occupation ending c. AD 800 (Linares, Sheets and Rosenthal 1975:141). This makes the period of the initial settlement an example of a highly developed society at a very early date. Haberland (1984:242) goes so far as to suggest that for its time Barriles was the largest and/or most elaborate settlement in all of Greater Chiriquí.

Stirling (1950:241) originally dated the Barriles sculptures AD 1250 which placed them in the "Classic Chiriquí" phase contemporary with that of Veraguas. He further concluded the site had come to an end due to the eruption of Barú in the second half of the fifteenth

century and felt the artifactual materials were the same as those described by the sixteenth century conquerors (Miro 1966:89).

Previous to Stirling's work at Barriles, Alejandro Mendez, Director of the National Museum of Panama, had visited the site and removed the large figural sculptures for display at the museum. He was already of the opinion that the objects belonged to a culture earlier than that of "Classic Chiriquí" (Miro 1966:89). Linares (1968a:85; 1972:328) originally believed the occupation of the Barriles area was of short duration, probably not more than three centuries. Believing that Volcan Barú erupted for the last time in AD 300, she dated the Barriles culture between AD 0 and 300, within the Aguas Buenas Phase of Chiriquí.

Torres de Araúz (1966:35) placed Barriles in Period III of Baudez' sequence of cultural development in Lower Central America. This dates it between 300 BC and AD 300. She adhered to this same chronological division in her 1972 survey of Panamanian art. Toral (1968:63) says Baudez located Barriles in Period IV, dated AD 300 to 500, but felt the culture might extend some 500 years further.

As early as the mid-1950s, Haberland (1955:230) had concluded Aguas Buenas ceramics were older than the Chiriquí Polychrome. He says the Aguas Buenas culture existed in Chiriquí by the middle of the first century AD and that it came to an end between AD 500 and 700 when the site was overcome by South American peoples (Haberland 1968:11). Nevertheless, as a cultural phase he places Aguas Buenas between AD 300 and 500 (Haberland 1976:116).

On the basis of a 1972 survey of the Volcan Barú district,

Linares and Sheets (1980:54) propose a date c. 200 BC for the initial settlement of the area. But it was not until several centuries later that the people responsible for the highly developed Barriles culture arrived there. Noting the nearly identical ceramics from both areas about AD 200, they believe the Barriles people came from the Aguas Buenas area of eastern Costa Rica. During the next few centuries, Barriles developed into a regional ceremonial center. The importance of this theory needs to be stressed as Haberland (1984:240) would further extend the origin of the Aguas Buenas culture at least to Central Costa Rica noting the similarity between Aguas Buenas ceramics and those of the El Bosque complex in the Atlantic Watershed.

The early dating of Barriles to the first three centuries of this era has lost favor today. In the light of more recent investigation of the Volcan district (Linares, Sheets and Rosenthal 1975:142), it appears that the ceremonial area and its associated sculptures at the Barriles site were produced late in the site's first occupation. Graham (1981:123) suggests that this was probably between AD 400 and 600 or as late AD 800 (the latest C14 date from the first settlement). This later dating is also more agreeable with Haberland's (1976:116) invasion theory and would further substantiate ideas that the final eruption of Barú (thought to have occurred c. AD 600-700; Linares and Sheets 1980:55) was not a cataclysmic event in the lives of the Barriles people.

That there was a relationship between the cultures of Barriles and of adjacent areas cannot be denied. Artifacts of Barriles style

have been found south of the Volcan region at Santa Marta, Chiriquí (de la Guardia 1965), at Río Negro on the Panama/Costa Rica border (Sander 1961), at San Vito de Java in southeast Costa Rica near the frontier (Laurencich 1972), and in the Talamanca Valley of Atlantic Costa Rica (Balsar 1971). The connections of Barriles with other Lower Central American peoples are certainly not limited to these few instances. The cult of the metate and trophy head are found throughout Costa Rica to Central Panama while peg base statues are known in all three archaeological zones of Costa Rica.

While one theory exists that the Barriles people came from eastern Costa Rica (Linares and Sheets 1980:54), there is another theory which says that these people spread their influence west (Stone 1977:103). In accord with the above chronological placement for the Barriles sculptures, they were contemporary with the El Bosque and early La Selva phases of Costa Rica. During this time, trophy heads appeared on the ceremonial grinding stones of both areas and the art of each reached a climax, one with the great ceremonial "altars," the other with enormous metates and realistic figural sculpture. Undoubtedly, the greatest influence of Barriles on the sculpture of central Costa Rica can be seen in the figural images. In the light of all present archaeological information, Ferrero (1977:178) and Stone (1972:103) feel the images of Barriles are the earliest large scale naturalistic sculpture anywhere in the area and are, therefore, the likely precursors of the realistic sculptures of the Atlantic Watershed from Period VI.

Among the ceremonial objects recovered from Barriles, was a

large basalt table measuring 217 cm in length and 86 cm in height (Fig. 222). This enormous curved oval plate is supported by four bust length human figures wearing caps and holding their arms upward to balance the weight. The legs are actually short, heavy, cylindrical forms with the human images appended to the front. Anatomical details of the torsos are visible and the arms are bent in the same manner as the figures on the flying panel metates from Central Costa Rica. With the exception of simple slits for mouths, the trophy heads are also similar to the facial features of heads on the Costa Rican altars. The faces are truncated triangles with eyes recessed under heavy, angular brows and noses of raised triangular forms extending from the forehead.

The Barriles people also produced smaller versions of this table as well as extremely large examples. Three tall (94 cm), tapered and somewhat flattened cylindrical stone objects in the Museo del Hombre Panameno are thought to be legs of a large table (Fig. 223). Each has small angular human figures carved in relief on the surface. The lower figures raise their arms like atlantids but hold objects in their hands. The upper figures on two legs seem anthropomorphic while the third leg has a pair of joined human figures.

Another example, known today only from photographs, has two legs one meter in height (Fig. 224). They represent male and females figure whose legs are cut off above the knees. Except for their more rounded bodies, they closely resemble the caryatids and atlantids on the large oval metate. Additionally, each figure wears a figural pendent (perhaps gold or jade) which hangs from the neck. Torres de

Arauz (1972:90) illustrated a proposed reconstruction of this object suggesting that it was an enormous metate (Fig. 225).

Smaller examples of the Barriles type of metate are known (Fig. 226). All have oval plates with highly stylized trophy heads, numbering as many as eighty-seven. In each case, there are raised sculptured elements at the ends of the upper surface of the plates. They may be small animal images or heads. Examples of these are known from the Volcan district and Gualaca, almost in central Chiriquí (Fig. 227).

From the Cerro Punta site of Sitio Piti, have come sculptures of the Barriles style but smaller. Unfortunately, Linares, Sheets and Rosenthal (1975:142) do not describe these. However, we do know that the site was contemporary with Barriles and was destroyed about AD 600 by the eruption of Barú.

From the Las Huacas cemetery near Sona, Veraguas, have been recovered a number of three and four-legged metates. Some are oval and identical to those from Barriles (Brizuela 1973:np). They have male and female atlantid and caryatid figures with arms on chests, rim edges carved as trophy heads and small figures at the ends of the plates. The great similarity between these metates and those from Barriles is interpreted as evidence of contact between the areas. A C14 date of AD 405 from Las Huacas is easily within the range of dates assigned to the Barriles culture.

A similar piece from the nearby site of Cativa, also in the Sona district, further corroborates this idea of contact with Chiriquí (Fig. 228). The metate is oval with four legs carved to represent

human figures. Angular trophy heads in low relief surround the plate. Its measurements of 62 cm in length and 18 cm in height are similar to those from the Volcan area. Others with slight variations have also been found. One with a deeply concave rectangular plate is supported on four conical legs with human images which appear to be seated (Fig. 229). Their faces are truncated triangles with Barriles features.

Another variant of this type of grinding stone was found by Stirling in a cemetery at La Pita near Sona. He reported uncovering an extremely rich burial in which were two four-legged metates, one with long legs in the form of crocodiles (Stirling 1951:246). An example from the Museo del Hombre Panameno fits his description but is said to be from the site of Largarto near San Pablo in Veraguas (Fig. 230). Although the context of this piece is unknown, Stirling implies that the piece found at La Pita was in association with a large number of ceramic vessels from the late Veraguas period (Miro 1966:93).

The vessels illustrated by Stirling (1951:239) are identical to those from the El Hatillo site and belong to the Macaracas, Parita and El Hatillo types (Ladd 1964:Pls. 2,4,5,7,8). They would be from the late Period V and Period VI of the Santa Fe Chronology and, in part, be contemporary with late Sitio Conte. The ceramics and the site could be dated as early as AD 800, a date close to the final C14 date for the end of the first Barriles occupation. The suggestion of this dating for the Veraguas sculpture could, however, be two or three centuries later than the Barriles pieces. This might be in

keeping with the idea of a movement of the Barriles people out of the Volcan district around AD 800. It is likely that some moved west into Costa Rica. However, Linares (1977:313) proposes that these people also moved south and east into the Gulf of Chiriquí area. From here their migration further east would have been quite possible. It is also possible that the metates found at La Pita and Largarto were trade objects from Chiriquí. Haberland (1984:250) believes that the jaguar metates of Chiriquí came from central Costa Rica and were thus not the products of local craftsmen. The same might be true for Veraguas despite the absence of Chiriquí pottery in Veraguas sites (Cooke 1975:32; Haberland 1984:250).

Tetrapod Grinding Stones/Stools

Oval tetrapod grinding stones/tables or stools have come from the Atlantic Watershed/Central Highlands and Diquis Regions of Costa Rica. All have slightly curved or concave plates with ornamental rims ranging from fringe-like textile decoration to trophy heads. Legs assume a variety of forms. They may be cylindrical or conical, human or simian. The simplest type is deeply concave with heavy proportions and plain, thick cylindrical legs (Fig. 231). The only surface decoration consists of an incised horizontal line encircling the perimeter of the plate with a series of small relief forms below. These may be a simplified version of the more detailed ornamentation commonly found on stools of this type or a less developed example of the trophy heads on similar tables.

Other closely related pieces are thinner and less concave with

undecorated tapered cylindrical legs and highly abstracted triangular rim heads having slit eyes and mouths and triangular noses (Figs. 232, 233). They are less realistic than those on the Barriles metates. Some have small figures on the upper plate like those from Barriles (Fig. 234). These vary in size from 43 to 110 cm in length.

A few closely related to the Barriles examples have human atlantean or caryatid figures (Fig. 235). Some of these are females posed with arms on their chests holding their breasts like many of the free-standing images of the Stone Cist Period. All are oval with trophy head rims or fringe-like ornamentation.

Instead of full-figure caryatid or atlantean images, there are some stools with large human heads acting as supports (Fig. 236). Graham (1981:123) describes one of these from the Atlantic Watershed as a "virtual copy of the largest whole metate from Barriles." Although related to the Panamanian example, the facial features are much like those on the free-standing figural sculptures from Las Mercedes and surrounding sites. The other example from the Diquis region, is also "Barriloid" in style. Its highly stylized trophy heads and human supports closely resemble those from Panama.

Monkeys are substituted for human figures on a few examples from the Atlantic Watershed. These simians with long curved tails, flexed knees and turned heads, support the seat or plate with heads and hands similar to those on the great altars. As with the simpler stools, rim decorations range from fringe to trophy heads. They are smaller than the majority of the oval, tetrapod metates and more like the common oval ceremonial stools (Fig. 237).

The group of oval stools with cylindrical legs is the most homogeneous of all the subgroupings (Fig. 238). Of the eighteen examples, the variation among them is extremely small. All have concave plates on four undecorated cylindrical or tapered legs and a fringe rim ornamentation with a pendent motif at each end. Only the smallest differences can be seen in the pendent design but even this does not seem to have any relationship to provenience. Recorded locations are limited to the Atlantic Watershed/Central Highlands with about half coming from Las Mercedes. The greatest variation is in size with a range between 18 and 50 cm in length and 9 to 30 in height. As is the case with most of the stone sculpture groupings, the material varies from very coarse and porous to smooth and fine grained. Apparently the skills of the craftsmen also varied as not all are carefully and clearly carved. One incomplete example still has legs joined. Considering the eighteen examples in this grouping, it is apparent that the range of variation is not sufficient enough to propose temporal differences. It can be assumed that all were produced during a fairly short period of time in a restricted area.

A subgrouping of these oval stools has front legs and back legs joined at the base by horizontal bars with small simian figures (Fig. 239). The general form is identical to that of the previous stools as all have slightly concave oval plates with four cylindrical legs flush with the sides of the plate. Each is embellished with the fringe ornamentation and pendent motif. Of the complete examples, all but one have monkeys with profile bodies and frontal faces. The single exception has human heads on the bars. The monkeys face

equally left or right and usually stand on their hind legs with front legs and tails attached to the undersides of the plate or the legs. In all but the two incomplete examples, the toes are marked by long parallel incisions. Despite the slight variations, the monkey figures are nearly identical having rounded and fleshy, somewhat realistic bodies and almost triangular faces with incised features. They vary little, most having rectangular eyes, with or without noses and pursed lips with slit mouths. Of the eight said to be from the Atlantic Watershed, five came from Las Mercedes. Their size range is completely within that established for the oval stools with free-standing legs.

Like the previous subgrouping, there are no features to propose temporal differences and it is, therefore, likely that the homogeneity of these stools infers identical chronological placement. Their similarity to the effigy metates with joined legs also implies contemporaneity. Since there are no known examples of decorated effigy grinding stones from contexts earlier than the Stone Cist Period, it is logical to presume that the oval stools also date from this period. Hartman found no examples of this type at Las Mercedes but he did illustrate stone fragments of what appear to be pieces of the connecting bars on which the monkeys are perched (Hartman 1901:Pl. 13, #6).

It seems likely that these stools were inspired by the great "flying panel" altars of the late Period IV and early Period V sites. At the earliest, this would place them in the late Period V, close to the beginning of the Stone Cist Period.

Evidence for Dating Tetrapod Stools

In Panama, examples of the oval tetrapod stool with trophy heads and plain or figural legs came from Aguas Buenas contexts at the Barriles site in Chiriquí. Since the last C14 date for the first Barriles occupation is c. AD 800 (Linares et al. 1975:144), these ceremonial sculptures must have been produced prior to the ninth century. Haberland, however, sets the end of the Aguas Buenas Phase at AD 600 with the eruption of Volcan Barú (1984:245). Considering the highly developed nature of the Barriles sculpture, they may be products of a late date within the culture (Linares et al 1975:142). Graham (1981:123) suggests they may have been manufactured between AD 400 and 600 or perhaps as late as AD 800, in which case the Aguas Buenas ceramic complex must also have extended to this date.

If the smaller but similar four-legged oval versions from the Atlantic Watershed region were a result of Barriles influence, it may well have been that resulting from the spread of Barriles people throughout Chiriquí and eastern Costa Rica after the abandonment of the Volcan area. This suggests a date in the second half of Period V (AD. 500-1000). Dating these sculptures is further complicated by conflicting statements. Published archaeological literature does not refer specifically to these oval tetrapod stools, but similar objects in the "Between Continents/Between Seas" exhibit catalog are said to come from El Bosque Phase contexts (Snarskis 1981:218-219). It also refers to oval four-legged metates with undecorated legs from unnamed Atlantic Watershed/Central Highlands sites dating c. AD 500.

Snarskis (1978a:278) says that tetrapod metates were apparently produced only during the Stone Cist Period. However, Aguilar (1974:313) found oval tetrapod metates as well as rectangular tripod examples in Curridabat Phase sites in the Highlands. The problem is perhaps one of the dating of the Stone Cist Period. In his dissertation, Snarskis (1978a:242) dates the Stone Cist Period between AD 1000 and 1500. However, more recently he did suggest a date as early as AD 800 (1981:personal communication) and further refers to stone cist tombs dating c. AD 700-800 (1981:58). If stone cist tombs existed as early as AD 800, this could account for Aguilar's Curridabat Phase finds and is also in accord with Graham's (1981:126) late Period V date for the Costa Rican versions of the Barriles metates. This, however, does not solve the question of the El Bosque Phase examples.

The probability of a Stone Cist Period date for the oval stools with fringe and pendent rim decoration is further supported by the stylistic relationship of these with effigy grinding stones. Mason (1945:Pl. 17D) illustrated an effigy example with surface ornamentation identical to that most typical of the tetrapod oval stools (Mason 1945:Pls. 24, 25). In addition, identical horizontal bar motifs with simian figures are also found on the effigy metates. Some are of the same shape and have the same fringe-like ornamentation while others have a variety of incised surface motifs.

Considering the known sites from which effigy metates have come, there is little doubt that they all fall within the time span of the Stone Cist Period. In the Greater Chiriquí region they are limited

to the Classic Chiriquí Phase which Haberland (1984:247) suggests began between AD 800 and 1000. This would have been contemporary with the Stone Cist Period of the Atlantic Watershed and is also in keeping with the Classic Veraguas Phase, dated AD 800 to the Conquest (Torres de Araúz 1972:28).

Circular Stands

Stands with Atlantean Figures

Circular stands or stools can be divided into several subgroupings. One of these consists of those having atlantean figures standing on an annular base. Such figures may be simian, human or feline. Monkeys are differentiated from humans by the presence of a tail. Of the twenty-three examples in this study, only three have definitely human figures and two have felines. With the exception of the two feline examples and one simian, all figures stand frontally with legs separated, knees flexed and arms raised. While the number of figures is usually four, one example has only three and another has seven monkeys in profile (Fig. 240). These monkeys are nearly identical to those on a flying panel metate from Veraguas, Panama (Fig. 208). In both sculptures the monkeys are lined up with each animal joined to the preceding figure by grasping its tail. This pose is also common to the single figures on oval stools with joined legs. Although the provenience of the circular stand is said to be Nicoya, it is unlikely that it originated there as there are no other known examples of this type from northwestern Costa Rica. It is most probably a trade piece from the central or

southern part of the country. Such stools are also known from Chiriquí, Panama. But the majority of these circular caryatid stands are from the Atlantic Watrshed/Central Highlands region.

Plates may be perfectly flat, slightly concave or with a raised rim. The outer edge surface may be plain or have a band of incised interlace. One has a series of twenty-five trophy heads on the lower rim edge (Fig. 241). These heads are identical to those on a jaguar metate from Panama (Fig. 75) and to those on several circular stands with hollow drum bases. The diagonal and diamond interlace on legs and head as well as the rimmed oval eyes and wedge shaped snout are characteristic of the early jaguar effigy grinding stones. Incised rim edge designs are mainly double interlaced angular guilloche patterns. Some are very precise and regular (Fig. 242). Others combine guilloche with sigmoids to produce an irregular, unrhythmical band.

With one exception, the human or animal atlanteans have triangular or wedge-shaped faces (Fig. 243). Eyes are circular to oval. Some monkey figures have triangular humanized noses while others have a more simian or feline snout. The more human-like figures have slit mouths (Fig. 244). The others have open mouths with teeth visible. Not all have ears. Those that do may have them erect on the top of the head, flat on the sides or projecting from the sides (Fig. 245). All have fingers and toes incised except the profile monkey figures. Two show chest muscles and one has a design on the head. However, none of these features can be isolated or grouped to indicate chronological differences. The group is so

homogeneous that they are likely all contemporary. The variations can probably be attributed to works of different craftsmen and/or having been carved at different sites.

None of these circular stands has a known archaeological context. The exhibit catalog for "Between Continents/Between Seas" (Cat. No. 201) suggests a date about AD 1000 for one example. The pose of the simian figures and the guilloche design suggest the relationship of this piece with several others of the group. In addition, several sculptures have stylistic relationships with examples of other types of ceremonial objects. One is related to a Veraguas metate, another to a jaguar effigy from Panama, and a third has jaguar atlantean figures almost identical to those on a rectangular bowl from Volcan Irazu.

As is true of most of the groupings of ceremonial objects, sizes vary greatly. Diameters range from 15 to 41 cm and heights from 10 to 27 cm. With few exceptions, the smaller examples have rimmed plates while the larger pieces are flat. The variation in size and the presence or absence of rims may be due to function. Some may have been used as tables or stools while others served as mortars.

Stands with Drum Base

The circular stands with drum bases can be divided into several subgroupings. The simplest consist of monolithic drum shaped objects with solid bases (Fig. 246). Other than to shape the stone into a cylindrical form, there has been little modification of the original stone. The five examples all have some type of surface decoration

near the top. Two have a row of trophy heads around the perimeter but their mutilated state prevents identification. One has a slightly projecting edge with four heads in high relief. Another has a low relief band of guilloche. Although weathered and eroded, it is possible to see the similarity of this design with that on the atlantean stands and effigy grinding stones.

A slight modification of the stone cylinder easily results in a stand with a grinding or offering plate resting on a drum base (Fig. 247). One example of this type has an overhanging edge with twenty-three trophy heads. More feline than human, they can be compared with heads on several of the atlantean figures. The three examples of this type are large (42-62 cm in diameter and 30-38 cm high) but only one has a concave plate as if utilized for grinding.

A number of smaller circular stands with drum bases are related to the former examples. The simplest, from Las Mercedes, illustrated by Mason (1945:Pl. 27D) is utterly plain with no trace of surface ornamentation. As suggested by Mason (1945:243), the simplicity may indicate an unfinished stage. One found on the surface of Grave 14 at Orosí (Hartman 1901:Pl. 50, #2) and another from the Keith Collection (Fig. 248) are slightly less massive with a more constricted and cone shaped base and a series of pendent trophy heads. On the former piece the heads are too incomplete to be identified while in the latter, the Las Mercedes piece, the twenty-six heads are flat and simplified with angular incised features like those on the atlantean stool from Aguacaliente (Fig. 241) and on a jaguar metate from Panama. It is likely that this

piece was in the process of being made since it has several slight depressions which may have been the future location of lattice-work openings. When completed, this would have had a hollow base and would have been like one from Cartago (Fig. 249) whose twenty-five trophy heads are almost identical on the Las Mercedes piece.

Numerous smaller stands of the same type are known. Several, now in the Carnegie Museum, are carved from coarse, dark volcanic stone (Fig. 250). They lack the refinements and finish of the larger sculptures. They may have served as mortars as they all have raised rims with convex plates. Their similarity can be attributed in part to the fact that all were part of the Troyo Collection from the Central Highlands (Fig. 251). A variant of these small stands has a rectangular plate on the cylindrical pedestal base (Fig. 252). It is probably the most poorly carved piece in this study. The sixteen trophy heads have humorously irregular features. It is likely the product of an amateur carver. Said to come from Buenos Aires in southeastern Costa Rica, it is similar in overall form to a small stand from Chiriquí illustrated by Holmes (1888:Fig. 12).

The most commonly encountered type of stool or stand from Costa Rica also has a circular plate supported on a hollow pedestal base with several vertical openings (Fig. 253). These slits not only reduce the weight of the stands but help create a sculpture in which solids and voids relate. The simplicity of the stands produces a monumental feeling despite their actual size (10 to 31 cm high and 19 to 57 cm in diameter). All have trophy heads on the lower rim edge, numbering from 4 to 28. The range of variation in these heads is

great. There are highly abstracted heads as well as extremely realistic animal heads. They come from the Central Highlands and Atlantic Watershed. Some of the smaller stands (Fig. 254) have incised guilloche designs above the heads. This surface decoration is more common on the atlantean stands. The largest examples and those with the most naturalistic heads come from the Linea Vieja area (Figs. 255, 256).

One of the smaller pieces from the Troyo Collection of the Central Highlands, is a connecting link between the stools with diamond shaped basal openings and those with vertical slits (Fig. 254). This stand has the realistic trophy heads typical of the latter group as well as having its widely spread placement. In addition, it is related to the Panamanian examples and to the circular atlantean stools.

The most distinctive and elaborate pieces have circular plates on hollow bases with vertical openings (Fig. 257). The plates are flat with slight depressions in the center. Only one has a narrow, slightly raised border around the perimeter of the plate (Fig. 258). This piece was found in the cemetery at Guayabo by Anastasio Alfaro while the other was collected by Juan Troyo in the Central Highlands. The larger sculpture measures 75 cm in diameter and 40 cm in height while the smaller is only 52 x 28 cm. Instead of trophy heads, both examples have a series of feline animals suspended from the lower edge of the rim. The Guayabo piece is the more complex, having twice as many figures (14) and an interlaced curvilinear guilloche or sigmoid band. The stands are clearly related to other examples, some

smaller and with less ornamentation and said to have come from Chiriquí, Panama (Fig. 259). The major difference relates to the artist's skill in carving and to the more rigid and stiff characteristics of the Panama piece.

The closest stylistic relationship is between the Guayabo stand (Fig. 258) and a grave slab (Fig. 296). Both have small feline figures carved in relief and in the round and both come from the Atlantic Watershed site of Guayabo de Turrialba. In general, the same jaguar imagery is seen on the circular ceremonial stands as on the grave slabs. Other grave markers (Fig. 295) have almost identical three-dimensional feline figures along the sides. In one instance they take a variety of poses while on the other they are all alike. Other slabs have rows of reclining jaguars in high relief on the surface edges (Fig. 299). Mason (1945:Pl. 34A, C) illustrated two from Las Mercedes with relief figures and another with free-standing jaguar images on the top edge. All are similar to the animals displayed on the circular stand from Guayabo.

In addition to the jaguar imagery, the grave slabs and circular stands are related through the use of trophy heads. Several from Las Mercedes have a continuous row of trophy heads in low relief on the edges of the long sides. The most highly stylized heads are very similar to those on several circular stands. In one specific instance these heads are nearly identical to the large pendent faces on the sides of a circular stand from Las Mercedes.

Stands from Panama

The most commonly encountered circular stand from Panama is the trophy head type. They are usually small, have hollow bases with vertical openings and slightly depressed plates with a series of pendant animal heads on the lower edge of the plate. The simplest is an hourglass or spool shape with a tall shaft flaring out at top and bottom to form base and plate (Fig. 259). Its notched rim edge is too eroded to detect details. However, it may be the same piece illustrated by Holmes (1888:Fig. 12) which shows a row of square faces with circular eyes and slit mouths.

A single center of production might be proposed for the type illustrated by Holmes (1888:Fig. 13). There are three almost identical examples of this kind in the Smithsonian collection (Fig. 260), one in the Peabody Museum at Yale, and one at the Museum of the American Indian. All are from Chiriquí, three having been collected by James McNeil in the late nineteenth century in the Bugaba district northwest of David. The smallest example, in a private collection in Dívala, was excavated on a finca in San Andres, Bugaba, Chiriquí (Fig. 261). It is identical to the others. All have seven to ten trophy heads and a hollow base with four openings. The only variation is an added row of trophy heads on the flared out edge of the base (Fig. 262). As a type, these differ from the other circular stands from Panama in being squat and bulky in appearance. The trophy heads are large and heavy in proportion to the height of the stand. No similar examples are known from Costa Rica.

Only two four-legged circular stands were located. The larger

has tall cylindrical legs with human faces at the top and a concave plate with thirty extremely small heads (Fig. 263). These heads are reminiscent of those on the simplest of the stands. The other piece is more oval than circular, low and crudely carved with faces lightly incised on four cubic supports. Although the museum catalog refers to it as a metate, its small size suggests it was used as a stand. There is nothing comparable from Costa Rica.

One of the two trophy head examples illustrated by MacCurdy (1911:Pl. IVA) is a type commonly seen in Costa Rica. Its hollow tapered base with four vertical openings supports a slightly concave circular plate with nine trophy heads. These are the smaller more typical wedge or V-shaped faces. In the Heye Collection is one from Bugaba (Fig. 264). It also has small V-shaped heads but the entire piece gives the impression of having been carved by a beginner or unskilled craftsman. The basal openings are incomplete and uneven while the heads have few details. The overall appearance is one of crudity.

The two largest examples are also the two most carefully sculpted and precisely finished (Fig. 265). They are almost identical to some collected by Troyo in the Central Highlands of Costa Rica. The bases are tall, tapered and open. The plates are circular and concave with incised guilloche and sigmoid or "S" design. Heads are truncated triangles with large circular eyes and visible teeth.

From Chiriquí has also come evidence that there were circular pedestal base stands with full-bodied animals on the rim (Fig. 266).

One has already been compared to those from Guayabo in Costa Rica. As noted, the figures on the Panamanian example are stiffer and less naturalistic.

Only one stand with full-bodied effigy figures as legs is known (Fig. 267). Two rather clumsy animals support a circular plate with trophy heads. The concept was one developed to its fullest in Costa Rica, especially in the Linea Vieja Region around Las Mercedes. However, the Panamanian example is crude and lacks the finess of those from Costa Rica.

Stands with Atlantean Figures from Panama

Atlantean circular stands have also been recovered from the Chiriquí Region of Panama. They differ little from the Costa Rican examples. All have a circular plate, flat or with raised rim, supported by a group of atlantean figures standing on an annular base. As was true of the Costa Rican stools, the figures are carved in the round and support the plate with head and upraised arms. Most have long curved tails joined to the adjacent figure, the upper plate or the lower ring. In a couple of the examples, these figures are alternately rightside up and upside down (Fig. 268).

These stands ordinarily have a band of incised geometric decoration on the rim edge. This varies from an intertwined guilloche to sigmoid motifs, all quite angular. One exceptionally fine piece, part of the McNeil Collection from David, Chiriquí, can be compared to the best Costa Rican examples (Fig. 269). It is unique in having only two figures which are separated by panels of

diamond lattice work. Stylistically, the animal figures are nearly identical to those on a piece from Guapiles, Línea Vieja, thought to date C. AD 1000 (Fig. 270). This lattice-work motif is found on circular stands with hollow bases and pot ring rests.

The most variant example comes from Veraguas (Fig. 271). Its worn nature precludes identification of the base figures and the rim edge notches have no recognizable facial features. It can be related to no other pieces in this study.

The fewer number of pieces from Panama may account for the lack of variation in size. These are more homogeneous than the Costa Rican examples, ranging from 25 to 33 cm in diameter and 14 to 19 cm in height. Holmes (1888), MacCurdy (1911), and Mason (1945) all illustrate examples of these circular stools. Holmes (1888:27) differentiates them from metates on the basis of their circular plates, raised rims and apparent lack of use. However, his statement must be considered in the light of the few examples he described. In actuality, not all have raised rims and some do show signs of use.

MacCurdy (1911:35) called them stools and noted they are worn from usage but not to the same degree as the metates. As was the case with Holmes, the sample upon which MacCurdy based his assumptions was small. He suggested a difference in function which may have existed because of the iconography of the metates versus stools and referred to the jaguar imagery of the metates but the monkey and human imagery of the stools. It is certainly true that the majority of the effigy metates are feline while the atlantean supports of the circular stands are simian or human. However, it is

also true that a number of the jaguar metates and oval stools have monkey figures on the bars connecting the legs while many of the circular stand atlantean figures are more feline in appearance than simian. This latter point was noted by Mason (1945:244) in reference to the Costa Rican examples.

Both Holmes (1888:29) and MacCurdy (1911:35) refer to similar objects in clay (Fig. 272). MacCurdy illustrated several of these from the Yale Collection (Pl. XLVI). All are from Chiriquí, Panama, and are clearly more complex and fanciful than the stone examples (Fig. 273). The figures, although derived from nature, are taken to the point of absurdity and, as MacCurdy (1911:162) suggests, are grotesque. That these atlantean stands are related to objects in other materials is evident. One in the Yale Collection and illustrated by MacCurdy (Fig. 274) has a hollow drum base with figures nearly identical to those on Chiriquian gold work. This stand and another in a private collection in Divala, Chiriquí are either direct imitations or prototypes for the stone stools with trophy heads.

Two of the ceramic stands from the Peabody Museum at Yale are cataloged as Armadillo Ware (Fig. 275). This ceramic type is considered to have been late in the Chiriquí ceramic sequence. Torres de Arauz (1972:42, 43) notes that in the "Armadillo" or "Bisquit" ware of the "Classic Chiriquí" phase there is a pedestal or small table type of object probably used as a stand for other things.

Although there are two of these ceramic stands in the American Museum of Natural History said to be from Costa Rica (Fig. 276), they

may be unique to Panama. Since there are no references to similar objects having been found in any Costa Rican excavations nor is there any reference to these in the literature, they are likely trade items from Chiriquí.

Mason (1945:245) rather interestingly suggests that the morphology of these stone pedestals is related to that of the jaguars and oval seats with connected legs as well as the atlantean bowls. That these may be somewhat later than the oval seats is suggested by the relationship of the oval seats with fringed ornamentation to jaguar metates with similar rim design. In the proposed seriation of the effigy metates, these are early. Also to be noted are the types of incised rim edge design. On the circular stands, these bands are limited to interlace guilloche and sigmoid motifs. These are not the earliest designs on effigy metates where there is a predominance of simple zigzag line patterns. It seems logical to suggest that the design motifs were well worked out before being applied to the stands. In only one instance is there anything to suggest that the design falls early in the sequence (Fig. 277). Considering the bodily proportions of the figures and the crudity of the carving, this piece seems to be better explained as the product of an inexperienced craftsman. The obvious relationship of several of these stools with other stone objects also emphasizes the unlikelihood that they are contemporary with the earliest effigy metates.

Evidence for Dating Circular Stands

None of the circular stands are reported to have been scientifically excavated. Two of the heavy cylindrical altars were surface finds by Hartman in the so-called "stone-cutter's workshop" at Las Mercedes. One plain circular stand without any surface ornamentation and another with highly stylized trophy heads (Mason 1945:Pl. 27a, d) also came from Las Mercedes but their context is unknown. Hartman also found a similar example on top of Grave 14 of Group I at Orosí. Two of the large stands with hollow drum bases and realistic trophy heads (Mason 1945:Pl. 27b, c) were part of the Keith Collection from Las Mercedes. A smaller one was found by Hartman in the Coffee Plantation area at Orosí. Two of the largest and finest of these circular stands came from the cemetery at Guayabo de Turrialba.

Since there are no known dates attached to any of these examples, they can only be dated by comparison with other objects. Those in the "Between Continents/Bedtween Seas Exhibition" are given a date in Early Period VI, c. AD 1000. This is based on a C14 date of AD 960 \pm 100 (deVries 1958:136) from the site of Retes where a similar stand of wood with trophy heads and a hollow diamond pierced base was found. The exhibit pieces vary slightly; one having pendant animal figures, another with realistic trophy heads and the third having a ring base with three atlantean monkey figures.

Ferrero (1977:157, 339) dates the circular stands in the Middle Guayabo Period, between AD 800 and 1300, and Snarskis (1978a:277) says the circular atlantean or pedestal base stands are only found

during Stone Cist times c. AD 800/1000 to 1500.

Pot Ring Stands

The group of objects called pot ring stands is an obvious connecting link between the atlantean stands and the trophy head stands. The simplest of these hollow constricted base stands are much like the monolithic cylindrical drum altars and the large trophy head stands from Las Mercedes (Fig. 278). Many of these stands have lattice-work openings which relate them to the flat plate circular stands with trophy head rims and open-work bases. Some are simple and hollow with diamond cutouts (Fig. 279). Others also have a row of notches or stylized heads with incised or modeled features below the rim (Fig. 280). A few are quite naturalistic and detailed (Fig. 281). Whether plain or pierced, there is little variation in size, the average being 13 cm in diameter and 8 cm in height.

Within the group of pot ring stands are several with atlantean figures (Fig. 282). Except for their smaller size, they are almost identical to the circular stands with simian caryatid figures. Those with four monkeys standing on an annular base have arms raised to support the upper ring (Fig. 283). All have small rounded bodies, long tails, fingers and toes delineated, erect ears, projecting snouts and oval eyes. One variant has bicephalic feline animals.

The majority of the examples came from Las Mercedes and were collected by Hartman. A few were recovered at Mercedes Farm, Anita Grande, Cartago, and Chircot. Hartman (1901:Pl. 66) also found fragments of a stand with monkey caryatids at the Orosí Coffee

Plantation site. Mason (1945:246) noted nineteen in the Keith Collection from Las Mercedes and distinguished four types: plain, lattice-work, circle of heads and atlantean, which he referred to as jaguars. From this distribution, it seems that the Linea Vieja region around Las Mercedes, or even the site itself, was the production center for these objects. The few found elsewhere were likely trade items from Las Mercedes.

Evidence for Dating Pot-Ring Stands

Skinner (1926:454) recorded several circular stands from his Línea Vieja excavations. From Cemetery 2 at Las Mercedes he noted two stone salvillas in Grave 20. One had thirteen human heads on the rim. Grave 27 had a broken salvilla. From a grave in Cemetery 4 came two small but well carved round stone tables, one supported by four human figures, the other by three long-tailed monkeys. From graves at Anita Grande came broken salvillas (Graves 2, 18) and two stone stools (Grave 45). Hartman illustrated (1901:Fig. 280) one from the Chircot II burial ground.

Such pottery stands were also made of clay as seen in examples Lothrop illustrated (1926:Pl. CLXXXVII). Like those of stone, several came from Las Mercedes. In the Costa Rican exhibit (Cat. No. 210, Pl. 35) is a human effigy vessel from the central region. The figure is seated on a low circular stool which has a rim of trophy heads. It is identical to one Hartman (1901:Pl. 7, Fig. 5) found in a cache at Las Mercedes and another illustrated by Lothrop (1926:Pl. CLXXXVIIa). Similar stands were sometimes part of the vase itself as

in the Yellow Line Ware piece from Las Mercedes (Lothrop 1926:Pl. CLVII).

Figural Support Bowls

Related to the circular plate atlantean stands, pot ring rests, stands with trophy heads, jaguar effigy metates and independent figural sculpture, is a group of bowl-like objects. They differ from the previous groups by having free-standing figures or heads as supports rather than being joined by a basal ring. The simplest are circular plates with raised rims supported on three realistic animal heads (Fig. 284). In overall form, these are much like the ceramic tripod vessels with hollow animal head supports. Vessels of this general pattern are found in the Late Polychrome Period in Guanacaste (Ferrero 1977:102), the Late Period of the Atlantic Watershed/Central Highlands (Ferrero 1977:Pl. XXVIII, XXIX), and the Late Period of the Greater Chiriquí area (Ferrero 1977:167). These bowl-like objects are also related to the circular pedestal stands with trophy head rims. Their low relief surface decoration, consisting of a band of curvilinear guilloche, is identical to that found on the finest and most developed of the effigy metates.

The largest group consists of bowls or similar forms supported by three or four figures. Most have humans with arms raised upward, supporting the bowl with hands and heads or backs. Usually these figures stand erect. However, they may also kneel or sit (Fig. 285). One has three figures with human bodies and feline heads (Fig. 286). Others have four animal supports. Among these are examples with

feline-headed standing figures having long curved tails acting as supports in place of one hand or kneeling figures, perhaps tailless monkeys, with only one arm raised.

Stylistically, the figures are very similar. Most represent males with portly torsos, stubby legs and long arms, usually flexed like the masked figures or wings of beaked birds on the large flying panel altars (Fig. 287). Heads are rounded triangles with rectangular slit eyes, rectangular or triangular noses and incised mouths. There is no modeling, all details are incised.

The example found by Skinner at Anita Grande is a variant as the figures kneel, have oval eyes and are profusely covered with incised surface designs consisting of diamond and diagonal interlace (Fig. 285). Two others also have incised surface decoration but it is limited to bowl bands of simple zigzag lines or multiple line diamond patterns (Fig. 288). The incised designs on these bowls can be compared to those on the effigy grinding stones and the circular stands. Many of the human figures are related to the Group 2 free-standing sculptures so common in the Atlantic Watershed/Central Highlands region. In one instance the figures are seated like the small "sukia" images found in burials. Animal figures are also similar to those on the atlantean ring base stands and pot rest stands. As is true of the pot ring stands, these are likely all from the Atlantic Watershed region. Lothrop (1926:Pl. CLIXg) illustrated a similar example in clay from Anita Grande.

The most variant stone bowl is a small example perhaps used as a mortar. In the Museum of the American Indian catalog it is recorded

as representing a monkey holding a baby (Fig. 289). However, except for its large mouth, the facial features seem far more human than simian. Most of its surface is incised with a multiple line diamond pattern previously seen on other ceremonial objects. Although no other stone examples are known, a similar concept is found on ceramic vessels from the Nicoya area (Ferrero 1977:Pl. VI). Such ceramics are monochrome and Carrillo Polychrome ware belonging to the Old Polychrome Period or Late Period IV to early Period V, c. AD 300 - 700.

The other major grouping of stone bowls consists of those with shallow rectangular boxes resting on the backs of two full-length feline figures. The animals are always in profile with frontal heads. They stand or recline in very informal (Fig. 290) or rigid (Fig. 291) poses. Usually the animal form is well modeled and naturalistic with a long curving tail. Facial features are clearly delineated with a wedge-shaped snout or slightly raised nasal area, large oval eyes and erect ears. Most have feet with well marked toes.

Surface ornamentation ranges from none to large figure eights and circles (Fig. 291), to sigmoids and frets (Fig. 290) or guilloches (Fig. 292). These surface designs are similar to those on the circular bowls and stands and especially the effigy metates. In like manner, the animal supports find parallel examples among the feline effigy figures and the circular atlantean stands. The faces, in particular, seem to be copies of the small images on the bars of joined leg grinding stones, pedestal stand trophy heads and the

atlantean figures on annular base stands. These close similarities seem to assure their contemporaneity. As was true of the circular bowls, all are from the Atlantic Watershed/Central Highlands.

Two difficult to classify examples from the Atlantic Watershed help to relate these small stone bowls to the larger effigy metates (Fig. 293). They are likely small grinding stones with full-bodied felines serving as supports. The smaller piece is more rigid with form and features almost identical to a bowl from Las Mercedes (Fig. 291). The other is over 50 cm long and as such comes close to the effigy metates in size as well as in form. Its head, with oval eyes and large squared jaw, may represent a saurian rather than a feline.

Ferrero (1977:397) places these animal supported bowls in the Late Period. Several belong to the old Minor C. Keith Collection, most of which belonged to the Stone Cist Period. Snarskis (1982:217) assigns the turtle-headed effigy bowl to Period VI. These datings are in relative agreement as the Late Period, the Stone Cist Period and Period VI all occupy the last centuries before the conquest.

Grave Markers or Slabs

Among the largest and most unusual of the volcanic stone objects from Costa Rica is a group of slablike forms variously referred to as tables (Mason 1945:247), sacrificial slabs (Skinner 1926:457), and altars (Mason 1945:247). This type of object is one of the few ceremonial items mentioned in the earliest writings. It is generally accepted that Columbus described one of these seen in a house in Cariay (Limon). If what was described relates to these stone

objects, then they functioned as funeral biers and grave markers (Colon 1959:240). Although none have been scientifically excavated, they are known to have been found in two contexts. Skinner (1926:457) said that Alpizar, who excavated for Minor C. Keith, reported finding such grave slabs in Línea Vieja burials along with other mortuary goods. Skinner found a broken one standing erect at Anita Grande (1926:457). Mason (1945:248) concludes the latter is an example of how these objects were used before the deceased was finally buried. He cites the placement and type of surface ornamentation to substantiate his theory.

When Mason wrote his descriptive study of the Minor C. Keith Collection, he knew of nineteen examples of these stone grave slabs. Twenty-three were located for this study. Besides the seventeen sculptures of the Keith Collection, all of which are from Las Mercedes, three are from Guayabo, one is from Anita Grande and two are without exact provenience. All are likely from the Atlantic Watershed region, but eighteen can be further located in the Línea Vieja and three in the nearby Reventazon area. Mason (1945:249) felt that these objects came only from the site of Las Mercedes during its reign as the chief ceremonial center of the area. He further suggested they were so alike as to suggest an identical origin, being "made by one tribe or tribal division within a relatively short span of time." Nevertheless, he made an attempt to subdivide them into smaller groups. The result was three groups of four, two groups of three, and one unique piece. All those in Group 1 were small and rectangular and had trophy heads on the sides of the slabs. Those of

Group 2 had two figures at the top while those of Group 3 were shovel shaped, had bird figures and/or geometric designs in relief. In Group 4 the three figures at the top were joined, while in Group 5 there were only relief figures along the edges and no free-standing images at the top.

Mason's groups are not the only way to categorize these slabs. The easiest is simply to group them by the number of free-standing figures carved at the top: three have no figures, two have one figure, seven have two figures, five have three figures, and three have five figures. They might also be grouped by shape: twelve are rectangular, nine are rectangular with oval ends, and two are oval.

Excluding the fragmentary pieces, these grave slabs range from 74 to 210 cm in length, with the smallest coming from Las Mercedes (Fig. 294) and the largest from Guayabo (Fig. 295). Five pieces are under 100 cm, five are between 100 and 150 cm, seven are between 150 and 200 cm, and three are over 200 cm.

A single bird figure with arm-like wings and a human-like body is found on two examples. Others have avian and feline images combined (Fig. 296). Three are paired human figures while another has a human with a feline mouth. Three are strictly feline but the majority represent anthropomorphic figures, most of which have human bodies and feline or crocodilian faces and heads (Fig. 297).

In seven of the carvings, the three-dimensional figures at the top are joined to make open spaces or voids important (Fig. 298). This is like that on the circular stands but as a concept it started with the flying panel altars. Three others are related to the

circular stands with animals appended to the underside of the rim. Two oval examples have figures in relief on the surface as do three rectangular pieces (Fig. 299).

Stylistically, the bird figures are reminiscent of those on flying panel altars, but a bird minus the excessively long beak. The twin figures carrying trophy heads are identical in concept and pose to many of the free-standing images from the Atlantic Watershed area. They are squat, stocky males wearing wide belts and skull caps. Their facial features with flat, triangular noses, slit mouths, oval depressed eyes and flat human ears are more clearly carved than those on the corresponding free-standing sculptures. Several have chubby figures like those from Las Pacayas (Fig. 300). In one example (Fig. 301) the ears are like the large Las Mercedes figures. Eyes are oval, mouths are slits and noses are realistic but the bodies are contorted.

Three have monkey or jaguar figures of the type commonly seen on atlantean stands and pot rests (Fig. 298). Several have figures with muscular human bodies but large crocodilian or feline heads (Fig. 297). Considering their body shapes and facial features, it seems possible to place these in a sequence from latest to earliest. With their rounded and fleshy torsos, shapely hips and legs, they can be most easily compared with the standing human figures of Group 3. They also relate to these images by facial traits: large oval eyes, naturalistic noses, slit mouths and stylized but humanlike ears, usually flattened at the sides of the head. Some Group 3 human figures also have incised eyebrows and laugh lines, once more

indicating a probable relationship with images on the grave slabs. Those with less human facial traits appear to relate to Group 3 effigy grinding stone figures with their long snouts, flattened ears, large oval or nearly circular eyes and squared jaws with prominent teeth.

At the opposite end of the chronological series might be placed those whose imagery is similar to the standing human sculptures in Group 2 (Fig. 302). These are less fleshy and muscular, thinner with a more shapeless, columnar appearance. The triangular, more flattened nose, quasi-rectangular mouth with slit and projecting ears are also Group 2 traits. On several of these same slabs, the edges are carved with low relief triangular shaped trophy heads with highly stylized and angular features. These relate not only to the standing figures with trophy heads, but also to the circular stands, effigy grinding stones and large altars with trophy heads (Fig. 303). None of the grave slabs have traits or characteristics which relate to Group 1 human images or effigy grinding stones. All similarities are with figures in Groups 2 and 3 and thus would appear to be developed from the free-standing images.

Chacmool and Related Figures

When Lothrop (1926:292) wrote his study of Lower Central American ceramics, he mentioned the existence of stone chacmool figures in Costa Rica. At the time, he knew of three examples. Almost twenty years later, when Mason (1945) published his volume on the Keith Collection, he referred to the same three sculptures, one

from the Smithsonian, another in the American Museum of Natural History, and the third in a park in Limon, Costa Rica. Since then only a few others have come to light. Whether they were Mesoamerican inspired seems questionable but plausible. Mason (1945:256) pointed to the obvious differences between the Toltec type and that in the Keith Collection and concluded they were not necessarily historically connected. However, as Snarskis noted (1982:214) in the catalog of the Costa Rican exhibit, those from Lower Central America relate timewise with those of Mesoamerica, suggesting the possibility of influence.

The examples known today are of a variety of forms. None resemble the cubic human figures of the Toltec age as they are substantial and fleshy animal/human combinations. Considering the figural images on other ceremonial objects and many of the free-standing sculptures, these composite chacmool creatures are no surprise. One found by Kennedy (1968:245) at the Atlantic Watershed site of Najerra is the most naturalistic (Fig. 304). Although lacking its head, it was undoubtedly a feline figure. Unlike the typical Mesoamerican chacmoos, this figure does not recline but stands on four legs. Its sacrificial plate or grinding surface is a flat oval area on its back. In this sense, it seems to stand between the true chacmool and the common effigy metate of Costa Rica. Kennedy (1968:246) placed the Najerra site (and by association its contents) in his Middle Period B, between AD 850 and 1400.

Stone (1961:Fig. 3c) illustrated one of a human figure also reclining frontally. No size is indicated and it is possible that

this is a small bowl or mortar instead of a chacmool. Nevertheless, in concept it is similar to the previous example. Stylistically, it is much like the free-standing sculptures which were prolifically produced in Period VI.

The remaining chacmool images relate more clearly to the Mesoamerican concept in that they are reclining figures with the sacrificial bowl or grinding plate on the torso or abdomen. The most variant of these is the example from the Smithsonian Collection (Fig. 305). This was the sculpture photographed by Hartman (1901:Pl. 15) at the *Línea Vieja* site of Williamsberg and illustrated by Hough (1912:Pl. 3c). Its uniqueness is the fact that it is composed of two figures, presumably male and female. There are examples of sexual intercourse in Costa Rican ceramics (Ferrero 1977:124, 304) but no other examples in stone are known. The closest comparison is seen in some Olmec sculptures which have been given a mythological interpretation explaining the jaguar/human imagery as the result of the union of a human female with a jaguar (Bernal 1969:67). Although the heads are missing, neither of the figures on the Costa Rican example appears to be other than human.

In the Museo Nacional in San José is a related example with unknown provenience. It is also a female figure reclining on its back with arms at the sides and hands on the abdomen in the act of holding the sacrificial plate as in the Smithsonian sculpture (Fig. 306). The lower portion of the legs is missing but they appear to have been flexed and drawn up at the knees like the majority of chacmool figures. This very weathered female example has crudely

carved feline facial features.

Similar in style but better preserved is the example in the "Between Continents/Between Seas" exhibit (Fig. 307). As was true of the previous sculpture, the body of this figure is female, it reclines dorsally, has legs drawn up with knees flexed and grasps the circular abdominal depression with both hands. The facial features reveal this to be a composite, monster-like figure with an animal face or mask. Graham (1982:130) calls it a monkey or a human with an ape-feline mask. Its fleshy rounded body as well as the square jaw with prominent incisors, large recessed circular eyes, flat scroll-like ears and human nose, relate it to some of the large free-standing sculptures as well as the animal forms on the circular stands or pot rests. Although simian figures were prolific on the great flying panel altars, they were less grotesque than on this example. Masked figures or composite creatures have been popular in Costa Rican art at least since the El Bosque phase of Period IV.

The most elaborate example is that from the Keith Collection and illustrated by Mason (1945:Pl. 35c) who described it as a "supine anthropomorphic hawk-god" (Fig. 308). Although basically similar to the female chacmools, it is obviously male. Other than the prominent male sex organs, its body is the same human, stocky, reclining figure as the other examples. However, it is ornamented with undulating serpents in low relief, a motif infrequently seen on the stone sculptures. On its abdomen rests the circular plate held by the right hand only as the left arm reaches to the head. Clearly a bird with a pointed and hooked beak, the sunken eyes and human ears are

related to those of the "ape-feline" figure. As was true of the others, this one is also from the Atlantic Watershed zone, having been found at Las Mercedes.

The Museo Nacional Collection also contains two smaller, more coarse, less human chacmool figures. Both are from the Central Costa Rican area. Kennedy (1968:75) reported the smaller one came from a site near Turrialba and said its zoomorphic features may be those of a turtle. The other example, illustrated by Stone (1977:Fig. 257) is more feline and monster-like. It is interesting to note that of the known chacmool examples from Costa Rica, there are only two with heads turned sideways in a manner reminiscent of the true Mesoamerican chacmoos.

None of these chacmool sculptures is small yet the range of variation in size is great. The smallest is from the site near Turrialba (65 cm) while the largest is the composite monster figure in the Mannil Collection (155 cm). The remainder are between 75 and 115 cm in length.

Little can be said with accuracy regarding their temporal placement. From the ceramics found at the Williamsberg site and a C14 date of AD 1410 (Stirling 1969:245), the site and its contents are placed late in Period VI. Kennedy (1968:105) considered where two of the sculptures were originally located, Najerra and IICA, to belong to his Middle Period B (AD 850-1400). These dates all overlap somewhat but cover the entire period of the great sculptural production in Costa Rica.

Non-effigy Vases and Containers

There are a few miscellaneous carved stone objects from Costa Rica. Most of these can be considered vase or container forms as they are all modified cylindrical shapes. The largest was collected by Troyo in the Atlantic Watershed area (Fig. 309). Although it is catalogued in the Carnegie collection as a stone stool, it is actually a hollow container with straight walls and tripod supports. It is finely carved with erect animal forms in high relief on the exterior surface. These animals are fleshy and stand like the atlantean figures with one or both arms raised. They are identical in style but some have long curved tails like the monkey or jaguar figures on the circular stands. There is a more simian than feline feeling although the two forms often merge with resulting ambiguity of interpretation. The three supports are short knobs with the form of faces. This motif is found on ceramics from every region of Costa Rica. Its very human quality can be compared to the faces on the independent figural images of Group 3 from Period VI of the Atlantic Watershed/Central Highlands zone.

Two smaller pieces are related but less sculptural (Figs. 310, 311). Both are from the central area, Anita Grande and Aguascaliente. Relief forms on the surfaces are human faces and animal figures with arms and legs spread. These are separated by panels with lightly incised geometric designs reminiscent of the linear patterns on the jaguar grinding stones and related to those on a stone bowl which Skinner found at Las Mercedes .

Velasco collected a similar piece from the Las Huacas site

(Fig. 312). It is almost identical to the Anita Grande piece in size and form and is a small bowl on an annular base. The surface is lightly incised with a simple geometric design which can be compared to examples from every region of Costa Rica.

Two other taller objects of unknown provenience seem to be related to northern and eastern examples. Both are vase-like forms with slightly flared bases. Both have two faces in relatively high relief on the surface. In one instance (Fig. 313) these are very human while in the other they are unidentifiable. The surfaces of both objects are incised with a quasi-rectangular pattern similar to that on the Las Huacas example and recalling the designs on Nicoyan metates. They are also reminiscent of the hourglass stools from Guanacaste.

There are no objects like these from Panama in the surveys of Holmes, MacCurdy or Torres de Arauz. Nor was anything similar found in any museum or private collection.

CHAPTER VI

OTHER FIGURAL IMAGES

The sculptured figures in this chapter have been grouped on the basis of overall form. In general, this also differentiates the Costa Rican from the Panamanian sculptures. Where the groups are rather large, the images have been placed into subgroups on the basis of visible facial and bodily characteristics. In the case of the seated figures and the individual heads these groupings parallel those of the standing figures. These groups of human or animal images are important to this study as many are obviously related to the standing human figures. Like the ceremonial objects, they also supply evidence for establishing a chronology for the volcanic stone sculptures of Lower Central America. (See Appendices E, F, and G, pp. 331-341, for lists of other Figural Images used in this study.)

Seated Figures

One of the most common standardized poses of human figural sculptures from Central and Eastern Costa Rica is the seated image. Unlike the standing figures, there are no female forms, all are obviously male. The majority have been called, labeled and catalogued "sukias," a term referring to the medicine men or shamen among the contemporary Mosquito Indians of Central America. It is, however, doubtful that all seated male sculptures are representative

of this class of individuals. Apparently the term was originally applied to small scale volcanic stone figures who sat on their buttocks with knees flexed and drawn toward the chest, arms extended but flexed resting on the knees and holding a thin cylindrical object in one or both hands (Fig. 314). Based on analogy with contemporary Indians, this object is thought to be a cigar or a flute, both paraphernalia of the medicine man.

These small figures are numerous. However, there is another group of considerable size whose poses are variations on that commonly said to be a "sukia." Some are nearly identical except for the absence of the cigar or flute. Their elbows rest on their knees and arms are linked, either lying parallel to each other with hands at the elbows or they are twisted and interwoven as if made of rubber (Fig. 315). Others squat with one knee on the ground and the other raised upward. A few hold a bowl in one hand or hold the hand to the forehead. In rare examples a figure may kneel on both knees or hold its hands behind its back as if it were a captive. On the whole, these figures are larger than those which conform to the "sukia" pose.

Mason (1945:261) was of the opinion that regardless of the differences in size and posture between these two groups of seated figures "their homogeneity is so marked that their contemporaneity and identity of origin are definitely indicated." On the other hand, he referred to the figures holding an object to their mouths as being technically inferior to those with folded arms. The truth of this statement may be more apparent today than when Mason wrote his volume

on the Keith Collection. It also seems to be more visible when objects from other collections are considered.

Group 1

To this grouping are assigned all seated or squatting figures not holding cylindrical shaped objects. As previously noted, these take various positions but like the standing figures were undoubtedly conceived to be viewed frontally. When figures are not posed in perfect symmetry, a balance is achieved by manipulation of the limbs. This is particularly true of those images with one arm raised to the head.

When facial features as well as postures are considered, the differences between these figures and "sukias" is great enough to suggest they were carved over an extended period of time and ought not to be considered as contemporary artifacts. With few exceptions, Group 1 figures have rectangular eyes with horizontal slits, mouths of similar shape with protruding lips, narrow noses which broaden at the nostrils, and large projecting ears (Fig. 316). These last are frequently pierced to accommodate some type of ear ornament. Heads are realistically shaped with raised and rounded crowns and may be somewhat enlarged.

Bodies are rounded and fleshy with spines marked and fingers and toes incised. Many have hair rendered with parallel striations on the top of the head and back of the neck. Others have a head decoration which seems to be a cap or hat. Jewelry is uncommon to any group of sculpture but a few seated figures do wear necklaces. A

couple also wear a mid-torso belt but only one carries a weapon and holds a trophy head.

Subgroup 1a

As was true of the standing figures, the seated images can also be subdivided on the basis of facial features. The resulting groups can be correlated with those of the standing figures. Subgroup 1a sculptures are the most varied, the largest and the best finished of all the seated images. When dividing the standing figures, body proportions and musculature were important considerations. This was only partially true for the seated images as pose conceals many of these characteristics. The large bulbous legs and modeled knees are either absent or hidden. Buttocks, however, are fleshy and rounded; spines are incised or raised. Shoulder blades and chest muscles are rarely seen. Nevertheless, facial features clearly place these figures in Group 1 (Fig. 317). All have raised rectangular eyes with medial slits and triangular noses with nostrils. Mouths are similar to eyes except in one example where the lips are parted and teeth are exposed. Ears are large and usually pierced. All have some type of head decoration either in the form of caps or carefully delineated hair.

Not all figures sit, some kneel on one or both knees and may hold warrior attributes or small vessels or have one hand raised to the forehead (Fig. 318). The most unusual pose is that of a prisoner with arms tied behind the back. All other figures in this group sit or squat with arms forward and flexed resting in the knees. A few of

these sit on small stools. Arm positions are varied and may have hands clasped, arms folded and parallel, intertwined or one hand raised to the chin. In general, these are the most elaborate of the seated figures.

The average size is c. 22 cm tall with the range from 12 to 32 cm. All but one are thought to have come from the Atlantic Watershed area. One of these was collected by Skinner at Las Mercedes and another by Kennedy at the La Portuguesa site.

Subgroup 1b

Few seated or squatting figures are assigned to Subgroup 1b. Those that are grouped here possess the same facial characteristics as the standing figures of Subgroup 1b. Eyes are raised ovals, noses project, mouths are pursed and ears are large and sometimes pierced. The largest and most realistic piece is also the most exquisitely carved (Fig. 319). This squatting figure with one knee raised holds a small vase or container. Except for the oval eyes, it is much like the squatting figures of Subgroup 1a and wears a headband with long hair down its back.

All have spines visible, some raised and others incised. Two sit on low stools while the rest have no base or support other than their buttocks. Except for the figure holding the container, all have arms flexed resting on the knees (Fig. 320).

Group 2

Group 2 figures resemble those of Group 1 but have slightly

different facial features. All but one are seated with knees drawn up and arms crossed resting on the knees (Fig. 321). There is little unique about any of these examples. All have rectangular eyes with a central groove, slightly raised lips, protruding unpierced ears and triangular noses with or without marked nostrils (Fig. 322). One wears some type of neck ornament and the majority have plain heads or a horizontal line probably marking a flat skull cap.

Several figures, although seated in the same pose, are slightly variant (Figs. 323, 324). They are more compact forms almost cylindrical in shape with arms forming a circle supported on slablike legs. The body mass is more abstracted and less fleshy or realistic than the others. They could probably form their own subgroup except that their facial features relate them to standing figures of Subgroup 2a.

Mason (1945:Pl. 44D) illustrated one example which may belong to this grouping. Although its features are quite crude, they are more like those of Subgroup 2a than any other group. One other rare example may also belong to this group. It is the largest of all the seated figures (46 cm) having a tall thin body and long limbs. Its ears and mouth, however, may possibly relate it to Subgroup 2b standing figures.

Excluding the last piece, sizes range from 8 cm to 30 cm in height. All come from the Atlantic Watershed with several from the vicinity of Las Mercedes.

Sukia Figures

"Sukia" figures are here considered to be those seated male figures with knees flexed, elbows resting on knees and holding a thin cylindrical shaped object to the mouth (Fig. 325). This flute or cigar may be held with one or both hands. These small images are among the most numerous Costa Rican figural sculptures. Snarskis (1982:216) feels that the hundreds or perhaps thousands of examples suggest mass production. This is further suggested by the lack of variation in size. Most range between 10 and 20 cm in height.

Group 1

Subgroup 1a

Only one figure belongs to Subgroup 1a (Fig. 326). It is almost identical to a figure of the other Subgroup 1a seated figures except that it holds the cylindrical object identifying the image as a "sukia." Unlike the typical "sukia" figure, it sits on a small low stool and has the rounded and high cranium not common to the "sukias." It is likely contemporary with the previous piece and may even be a product of the same artisan. Both are said to come from the Línea Vieja.

Group 2

Subgroup 2a

The few figures placed in Subgroup 2a all have nearly square eyes, projecting ears and long noses (Fig. 327). They also have the raised cranial area similar to Group 1 figures but not found on any

figures of Subgroup 2b.

Subgroup 2b

Most of the "sukia" figures with rectangular eyes are classified as Subgroup 2b (Fig. 328). Ears are simple half circles usually projecting from the head at right angles. Eyes are elongated split rectangles separated by long tapered triangular noses, usually with nostrils. Mouths are not visible as the object held is placed in the mouth. Heads are elongated ovals with rather flat tops. In almost every instance they have an incised line indicating the presence of a shallow patterned skull cap (Fig. 329). Bodies are cylindrical with male genitals usually indicated and an incised spinal column. Arms and legs are narrow fleshless tubular appendages. Upper and lower portions are marked by a shallow incised line (Fig. 330). Feet and hands are small with parallel line fingers and toes.

There are only two variations from the norm. One has a diamond pattern on arms and torso as if the figure is wearing a sweater (Fig. 331). It is probable that this patterning represents a tattooed design. The other variation consists of twin or siamese figures. Seated back to back like bookends, they appear to be joined at the spine (Fig. 332). Other than their twin nature, there are no apparent differences between these and the simple "sukia" figures. In facial features and body form they conform to the type or norm (Fig. 333).

Although they range in size from 8 to 29 cm, the average height is about 15 cm. Several were collected by Troyo in the Central

Highlands. These are the most homogeneous in size, varying only a few centimeters.

Group 3

Subgroup 3a

Stylistically, Group 3 "sukia" figures are related to Group 3 standing figures. They display the same facial features and clearly reveal their development from the Group 2 "sukias" (Fig. 334). Subgroup 3a figures show little differences from those of Subgroup 2b. The images possess the same cylindrical squatting bodies with legs drawn upward and arms resting on knees (Fig. 335). There is little sense of bodily weight as the figures are more skeletal than fleshy. All have incised spines and one figure (Fig. 336) has a series of four parallel horizontal lines encircling the upper torso to indicate the rib cage. Several others have double parallel lines on each side of the torso which curve with the position of the spine and skeletal structure (Fig. 337). Arms and legs are long and tubular with small hands and feet. Hand positions show some change and variation. In Group 2 figures the most common placement was to have one hand raised to the mouth holding the cylindrical object and the other hand grasping the opposite forearm. This still occurs but is no longer common. If one hand holds the cigar or flute, the opposite hand and forearm are placed beneath it resting on the knee. In several instances the "sukia" holds the object to its mouth using both hands (Fig. 338).

Heads are usually elongated ovals too large for their bodies

(Fig. 339). The top of the cranium is nearly flat and in most cases a line encircles the head as if to indicate the presence of a skull cap, a few of which have incised designs. Eyes are usually incised ovals with a central groove. There are some exceptions in which eyes are raised ovals with slits or nearly circular and incised. Such variant examples may represent early and late figures of Subgroup 3a forming the transition from 2b to 3b figures. Noses have nearly rectangular bridges with side nostrils. Ears are smaller than previously, are plain and project from the sides of the head similar to those of the previous subgroup (Fig. 340).

These figures range in size from 8 to 28 cm tall and are almost identical with those "sukia" figures of Group 2. They are considerably smaller, however, than the other seated figures.

Subgroup 3b

Figures in this group are less elongated and heavier than those of Subgroup 3a. Bodies are fleshy and fuller with more life-like limbs (Fig. 341). Most hold the cigar or flute with both hands. One has the left hand at the mouth but holds nothing. This figure also kneels on one knee and might be better classified with the non-sukia images.

Many of the sculptures in Subgroup 3b have geometric designs incised on the crown of the head (Fig. 342). This part of the cranium may be flat but is frequently more naturalistically rounded. All have oval eyes, the majority being undecorated. Ears are large and flat, rather naturalistically rendered and placed toward the back

of the head. Noses are long, large and projecting (Fig. 343). Generally, the heads are large in proportion to the bodies although the figures are of approximately the same size range as the previous group, they have a more massive appearance. Double or siamese figures are also part of this group and seem to be skillfully executed (Fig. 344). On the whole, they are less standardized.

In the Carnegie Institute in Pittsburgh is a group of seated figures originally part of the Troyo Collection from the Central Highlands. It is likely that they should be included in Subgroup 3b as most of the images raise an object to the mouth with both hands. However, features are not discernable as the stone is extremely coarse and badly weathered. As a result, they seem crude or unfinished. It is also possible that not all represent humans as some appear more animal-like than others. They range in size from 9 to 20 cm in height.

Subgroup 3c

From the Atlantic Watershed zone and particularly the site of Las Mercedes have come several large boulder-like sculptures (Fig. 345). All are sitting or squatting male figures with legs flexed and drawn upward toward the body and arms resting on the knees. They are posed in the same manner as the small sukia or related figures. Unlike the smaller figures, open spaces and open-work carving play no role. All are compact rounded and massive forms. Some resemble the sukias with hands held to the mouth, others cross and intertwine the arms while still others are so massive their arms reach only to the

chest area and do not cross nor overlap the torso.

Hartman (1907:7) and Lothrop (1926:293) referred to several large sculptures found at Las Mercedes by Minor C. Keith which were later presented to the Smithsonian Institute Museum. There are at least four of these figures presently at the Smithsonian (Figs. 346, 347) and probably another at the American Museum of Natural History. Hartman also sent several others to the Stockholm Museum. It is likely that these figures were among those from the so-called "stone cutter's workshop" at Las Mercedes (Hartman 1901:Pl. 10).

They are placeable only within Group 3 as all have large oval incised eyes, slit mouths and flat human-like ears. The poses, however, are found on figures from Group 1 to 3. One further characteristic suggesting their relationship with Group 3 figures is the rounded semi-naturalistic quality of their bodies. In this they not only recall the other seated figures of Group 3 but also the standing images (Fig. 348).

At least eight or nine of these figures were originally from Las Mercedes. They are the largest figures of this type, ranging from 55 to 72 cm in height. Such figures are matched only by those from El Baul, Monte Alto and Bilbao, Guatemala. All of these last examples are thought to be earlier in date.

Related to these in size and style are nine sculptured figures from the circumference of Mound 48 at the Guayabo de Turrialba site (Fig. 349). Although more crude, perhaps incomplete and apparently weathered, these images have similar facial features and poses with arms flexed and hands almost meeting on the chest or abdomen. The

only other possible relationship with Costa Rican sculptures is with the group known as "Capellades" style figures (Mason:1945:276). These are, however, considerably smaller in size, averaging about 20 cm in height.

Evidence for Dating Seated Figures

The small seated figures called "sukias" are so numerous and so similar as to suggest mass production during a short period of time. Hartman (1901) illustrated seven of these recovered from his Central Highlands excavations. Three of these were in datable contexts at three different sites. From Grave 42 at Chircot I came one example. Another was found in Burial 62 at Orosí V. The final figure came from Grave 18 at Los Limones. Based on Baudez's analysis (1967:201, 202), the Chircot site is dated Middle Polychrome while the other two are Late Polychrome. Since the sculptures appear to have nearly identical characteristics, they suggest manufacture during a short period of time, perhaps late Middle Polychrome-early Late Polychrome times.

It seems probable that the boulder sculptures were some of the latest figures produced in Central and Atlantic Costa Rica. The majority were found on the surface as opposed to being recovered from burials. This is true of the Las Mercedes as well as the Guayabo figures. At Guayabo the nine figures were associated with architectural remains which Fonseca (1981:104) dates to the last 500 or 600 years before the Conquest. Ferrero (1977:159) apparently considers the constructions and sculptures of Guayabo to have been

completed by AD 1300 as he refers to a great cultural decline at this time suggesting the end of the building of mounds like M 48 to which the sculptures are related.

At Mercedes, Hartman and Keith both found large sculptures on the surface, some on or at the foot of mounds and others grouped at a forested edge of the site. It seems probable that these statues were among the last produced at the site or were at least still important at a late date.

The presence of such sculptures on the surface at Las Mercedes and Guayabo and their stylistic placement in the proposed sequence suggests they are late examples of the figural sculptures of the Indians who occupied the Central and Atlantic coastal areas of Costa Rica. That the Spaniards made little or no mention of stone sculptures is indicative only of their preoccupation with more lucrative items of gold and is not sufficient evidence to suggest that sculpturing in stone had ceased to have importance by the time of the Conquest.

Individual Heads

Frequently encountered among the volcanic stone sculptures from Costa Rica are individual human heads. Although they can clearly be divided into two categories, one composed of independently carved heads, the other of heads broken from statues, they do form a rather homogeneous group with little stylistic differences visible between them. The independent heads usually have cylindrical necks with flat

bases on which the sculptures rest. In contrast, the rough and uneven bottoms of others can only indicate breakage, presumably from full-bodied figures. It is possible that some of the broken-off heads were smoothed and reworked and now appear to be independent sculptures. This is further proof that even the artists conceived of no essential stylistic differences between separate heads and those attached to bodies.

The function of these independent heads may have been the same as that of the reserve heads from Old Kingdom Egypt. As was true of those from Costa Rica, such heads were found in tombs and likely acted as substitutes for the deceased person, the seat of the spirit or the soul.

Lines (1941:4) called them "cabezas-retratos" or portrait heads of living and dead chiefs. He cited descriptions of Columbus' fourth voyage when he landed at Cariari (Colón 1959:240). Here the Spanish found houses with embalmed and dried bodies. Nearby were "tablas" sculpted with animal figures and what may have been carved images of the deceased. Although it is not specifically said that these images were heads, Lines believed (1941:14) "la figura del enterrado" was a "cabeza-retrato." He further substantiated his claim by stating that in his archaeological experience he found only three examples of these heads, each time resting on the slabs covering a burial. Hartman (1907) found similar heads in his Atlantic Watershed and Highlands excavations. The majority of these also came from tombs.

Lines (1941), Aguilar (1952), and Mason (1945) have each described these separate heads and tried to categorize them into

coherent groupings. Lines (1941:5) divided the independent heads into three categories based on position. His first group consisted of those in normal vertical positions as if the figure were standing or sitting erect. These he felt represented living individuals. The other two groups had heads inclined slightly backwards which he labeled "cabezas yacentes" or heads lying down. These he considered to be dead or "post mortem" figures.

Aguilar (1952:15) referred to them as "cabezas trofeo" and linked them with the entire complex of figural and functional stone objects thought to have been part of the aboriginal trophy head cult. He, too, believed these heads represented both living and dead personages, either enemies or chiefs and important people of one's own tribe. At the same time, he suggested that any classification of these sculptures ought to be based on specific elements, such as the shapes or forms of eyes, nose and mouth.

Mason (1945:263-267) made the most thorough study of these human heads basing his classification primarily on eye form. He found three types: plain ovals, grooved ovals and depressed ovals. As a result, he felt the sequential development progressed in the same manner despite what he called the relative homogeneity and probable contemporaneity of the entire group.

Of the three, Mason's study is the most detailed but falls short of placing them in chronological order. There are more differences than he was willing to consider. Noses, mouths and ears must all be related to the various eye types. When this is done, the heads seem to assume a logical sequential arrangement. This sequence can easily

be related to full figure sculptures and can follow the same chronological order.

Group 1

Subgroup 1a

The majority of the heads in Subgroup 1a can easily be identified as having been broken from free-standing images. Several can actually be matched to full-bodied figures from the Atlantic Watershed/Central Highlands region. All have rather elaborate headdresses, some quite tall. Although no two are identical, the similarities are close enough to suggest contemporaneity (Fig. 350).

Facial features are the primary criteria for classification. The majority have rectangular eyes with deeply incised outlines and medial grooves giving the appearance of being raised from the surface (Fig. 351). Noses are raised triangular shapes with nostrils. Mouths are pursed with large lips slightly separated (Fig. 352). All had or have large ears projecting from the sides of the head. Like the free-standing figures, most were pierced to accommodate ear ornaments. The headdresses are the most varied traits. These elaborate head coverings may take a turban form with serpent bands or diagonal incising, have "alter-ego" figures, be tall layered or decorated crowns (Fig. 353), conical shaped hats, embroidered or woven skull caps or even incorporate the figure's hair into the headdress (Fig. 354). Whatever their specific attributes, the majority of these heads are from the Atlantic Coastal area, especially the site of Las Mercedes. They range in size from about 7

to 20 cm high.

Subgroup 1b

Heads in Subgroup 1b do not differ greatly from those in Subgroup 1a except that they have oval eyes, some concentric and others with central slits (Fig. 355). They are nearly identical to the heads on standing figures of Subgroup 1b. Ears may be pierced but this is a less common trait than in the previous group. Noses and mouths are same as all other 1b figures. All have some type of cranial decoration (Fig. 356). The most common type is a close fitting cap with an interlaced or woven design, some of which end in a top knob (Fig. 357). Others have hair and head decoration combined in the typical parallel line incised hair.

Some of what Lines (1941:5) called "dead heads" are related to this subgroup. These backward tipped heads have features like many of the more erect types (Fig. 358). Although some of the heads in this grouping were obviously broken from larger statues, the first examples of independent head sculptures appear here. As is also true of the 1a Subgroup, all but one are said to be from the Atlantic Watershed. They are at the same time, of almost identical size, the average being slightly over 14 cm tall.

Group 2

Subgroup 2a

There are few head sculptures which relate to figures from Subgroup 2a and none from 2b. All have rectangular eyes but ears

vary from small projections to flattened naturalistic forms (Figs. 359, 360). Each has a triangular shaped nose, pursed and split lips, and a close fitting cap (Fig. 361). All are smaller than the average for Subgroups 1a and 1b, with the range being from 5 to 12 cm tall (Fig. 362).

Group 3

Almost two-thirds of the individual human heads can be placed in Group 3. Like the full-bodied, sitting or standing images, these are also capable of being subdivided on the basis of facial features. In contrast with those sculptures of previous groups, all the human images of Group 3, full-bodied or independent heads, have oval eyes (Fig. 363). Although there are some differences between the heads with plain oval eyes and those with grooved oval eyes, it is unlikely that all of one type preceded all of the other. However, it does appear that the most skillfully rendered and the most developed pieces have medial eye grooves. It is also true that several of the pieces most closely related to those of Group 2 are of this type, others are plain or even recessed ovals.

With few exceptions, early Group 3 examples still have projecting ears while later sculptures have fiat decorative ones, some quite naturalistic and human. Mouths change from the pursed protruding lips to small horizontal slits. The few exceptions to this have teeth exposed. Noses go through a similar development moving away from the long thin highly stylized version to a projecting triangular idealized human feature. Several display

eyebrows or laugh lines. Few have both traits, and it appears that the eyebrows are the earlier motif.

Headdresses are still common but they are no longer the large elaborate types of earlier heads. Instead they are usually low "beannies" or tight fitting skull caps almost always with some incised design (Fig. 364). There is great similarity among these head designs but no two are identical. They have rectilinear and curvilinear elements and may have simple parallel lines or interlocking patterns.

Subgroup 3a

Several of the heads in this group were originally parts of large statues while others are clearly independent sculptures. Some are exceptionally large, measuring up to 24 cm in height. One of these is anthropomorphic (Fig. 365). Its lips are open exposing a full mouth of feline or crocodilian teeth. Cone-shaped headdresses are found on figures throughout the entire sculptural sequence. They are seen on figures with rectangular as well as oval eyes. In the Keith Collection from Mercedes Farm is an example with split oval eyes, large projecting ears and a small mouth (Fig. 366). It seems to be a transitional piece between heads of Groups 2 and 3 as there are no others in Group 3 with such large ears. The smallest head of this group has nearly identical eyes, nose and mouth but very flat and small ears (Fig. 364).

Perhaps transitional between Subgroups 3a and 3b is a head fragment from Cartago (Fig. 367). It wears a low, patterned conical

cap, has plain oval eyes, a long nose with broad nostrils and a small horizontal mouth. All are Subgroup 3a features except for the flattened human ears which are common to 3b figures.

When Mason (1945:262-267) discussed the independent human heads in the Minor C. Keith Collection, he suggested a sequential arrangement based on eyes. His system proposed plain ovals first followed by grooved ovals and then recessed ovals making these the latest and the culminating form. Stylistic analysis does not seem to substantiate his theory as heads with recessed oval eyes have other facial features identical to those of Subgroup 3a heads as well as 3a standing figures (Fig. 368). The only examples of heads of this type came from Las Mercedes. All have slightly projecting ears like full-bodied images in Subgroup 3a. They also have the long thin noses with broad nostrils typical of this group. Two have simple slit mouths while the others have small slightly open mouths with teeth visible. The caps are the usual baret or beanie with the simple parallel line designs also seen on Subgroup 3a standing figures.

Subgroup 3b

Within Subgroup 3b are three small clusters of heads. These may have chronological significance as they share some features but differ in others. However, the three clusters may be merely the result of different workshops.

Subgroup 3b-Cluster 1

Without exception the heads grouped together here were independently carved sculptures. Several have extremely long cylindrical necks and small heads (Fig. 369). Features are commonly large and out of proportion with the size of the face. Eyes are simple, broad incised ovals. Noses spring from the forehead and project from the face in a long angular line. Mouths are horizontal slits at the bottom of the chins. Some have slightly raised lips (Fig. 370). Ears are small when compared with other heads of Subgroup 3b. All have incised curved eyebrows, a feature not noted previously. A few have lines on the cheeks probably representing facial tattoos. Most have ornamental crowns, while a few are plain or bald (Fig. 371).

These heads are less human than many in Subgroups 3a and 3b and are carved from very porous and coarse stone which gives them a crude appearance. That they are later in time than Subgroup 3a heads seems clear based on the development of facial features. Mason (1945:263), however, considered these to be the most primitive of the heads and suggested they came first in the temporal sequence. He must have been of the belief that simplicity preceeded complexity.

As a group these heads stand somewhat alone as few full-bodied sculptures repeat their facial characteristics. Some other images of Subgroup 3b relate to them through the presence of oval eyes and incised eyebrows. As such, the combination of features seen on these heads is generally limited to this category of sculptures. At least half of the group came from Las Mercedes. Only a few are from the

Central Highlands. There is little variation in size as the majority measure 11 or 12 cm in height with the extremes of 9 and 16 cm.

Subgroup 3b-Cluster 2

A second cluster of heads within Subgroup 3b suggests that the next stage of development is related to the ears. Most of these heads have simple incised oval eyes, long, broad flattened noses with nostrils and mouths indicated by small slits (Fig. 372). Only a single example has eyebrows and one other has laughlines. As a rule, all seem sober and some even appear to frown (Fig. 373).

The greatest difference between these heads and other Subgroup 3b examples exists in the ears. In the former heads the ears are generally small and slightly projecting while this cluster has extremely large and flat ears (Fig. 374). No two are alike but all consist of combinations of curvilinear elements with a feeling of naturalness yet obviously patterned and stylized. In several examples the ears reach from lower jaw bone to temple and are set far back on the sides of the head.

All but one have incised designs suggesting the head is covered by a small skull cap of either textile or hammered gold (Fig. 375). Without exception they came from the Las Mercedes site or nearby. Of all the clusters or groups they are the most uniform in size as well as style. The variation in size is a mere 3 cm, ranging from 11 to 14 cm in height.

Subgroup 3b-Cluster 3

This last cluster of Subgroup 3b heads is also a very homogeneous group and contains some of the most beautifully and skillfully carved pieces (Fig. 376). The precision of detail attained in many of these heads can be attributed to the fineness and compactness of the stone used (Fig. 377). While displaying some of the most human features, they are at the same time among the most conventionalized and idealized images (Fig. 378).

Except for three examples each head has facial wrinkles or laugh lines from the edge of the nostrils diagonally to the lower jaw. One may be a transition piece from middle to late 3b as it is the only one in this cluster with incised eyebrows. This same head and four others also have lightly incised facial lines probably representing tattoos.

Head coverings exhibit a wider variety of types than in the previous heads of Subgroup 3b (Fig. 379). Besides the tight fitting skull cap, there are caps with a series of raised knobs, plain and ornamented conical caps, beanies with elaborate interlaced patterns and even heads with ropes (Fig. 380) Only the unfinished pieces have plain undecorated crowns.

There are very strong unifying factors among these sculptures. Besides the oval eyes, small mouths and facial wrinkles, the noses and ears also suggest contemporaneity (Fig. 381). The ears are usually smaller than those of the previous clusters but are still conventionalized and flat against the sides of the head except in one case (Fig. 382). This head has the ears shown as pierced and wearing

cylindrical ear plugs. It is nearly identical to the heads on the two large figures Hartman found lying on the surface at Las Mercedes. This same head also imparts the feeling that it was sculpted with the aid of a measuring device as if the facial features were measured, drawn and carved with no deviation from the ideal.

Noses emerge from between the eyes, are relatively long, curve slightly downward and are triangular shaped with nostrils modeled and marked. Heads of the standing figures in Subgroup 3b exhibit most of the same facial characteristics as these independent heads. In contrast with the other groups or clusters, none of these heads were broken from figures, all were independently sculpted.

Although Mason (1945:263) considered many of these same heads with grooved oval eyes to be intermediate between those with plain ovals and those with recessed ovals, on the basis of stylistic comparisons, it seems more likely that most figures with grooved oval eyes are among the latest examples of Costa Rican sculptures. That plain oval eyes were also contemporary with grooved oval examples is highly probable, but most of them seem to have preceded those with medial slits. The recessed oval eyes are associated with other facial features not found on heads with grooved eyes. They are, however, similar to those on many heads with plain oval eyes.

Evidence for Dating the Independent Heads

Snarskis (1978a:278) says that the independent heads are found only in Stone Cist sites. This is substantiated by Hartman's (1901) excavations in the Atlantic Watershed/Central Highlands. From Grave

89 at Chircot I cemetery, he recovered a highly stylized but beautifully carved example measuring 10 cm in height. In addition, he found a nearly identical piece in Grave 47 of the Orosi V cemetery. Both were in upper level burials giving evidence of the late nature of the graves at each site. However, Baudez (1967:201, 202) dates the Chircot find to Middle Polychrome times and the Orosi sculpture to the Late or Recent Polychrome Period. Since the carvings possess nearly identical characteristics, there are several possible explanations. The first of these suggests that the piece from Orosi was carved earlier, perhaps in the preceding period and like an heirloom became a treasured object buried generations later. On the other hand, it also suggests that the upper levels of each of these cemeteries are nearly contemporary, one being late Middle Polychrome, the other being early Late Polychrome. In addition, the sculptures also suggest the continuation of a carving style from Middle to Late Polychrome times.

Capellades Figures

A small group of human and animal images from the Atlantic Watershed/Central Highlands region has been called the "Capellades" style (Lehmann 1913:83). As a sculptural style it was geographically contained in a small area south of Irazú Volcano. For the twenty objects photographed, only two specific site locations were recorded, Las Pacayas and San Isidro de Arenilla. Stone (1977:211), however, includes the nearby sites of Capellades (from which the style name is derived) and Descanso within the distribution sphere of these

figures. As a style, it must have had an extremely short duration and it would not be out of line to suggest that all the objects classified as "Capelladas" style were contemporary products of the same workshop. With the possible exception of two figures the sculptures display little variation (Fig. 383).

Human figures are short and stocky nude males and females. They stand or kneel, have rounded obese torsos with limbs out of proportion to the bodies, and have little or no indication of toes and fingers. Heads are neckless and circular with expressionless faces. Facial features in low relief are simplified with circular or oval eyes, broad flattened, semi-rectangular noses, small flat ears and wide horizontally slit mouths.

Animal figures are feline or avian. Mason (1945:281) suggested that they represent jaguars and parrots. Like the human images, they are cylindrical, fleshy and extremely simplified. There are few identifying characteristics to specify species yet Mason (1945:279) divided the felines into two groups. All are seated on buttocks and hind legs. Two examples have the front legs parallel to the rear legs and extended to the ground as if on all fours (Fig. 384). The others are upright with front legs crossed over the torso or resting on the knees (Fig. 385). These groupings have no significance other than to characterize poses as stylistically the figures share much with the facial features of the human figures. The bird images, likewise, form a unified group with massive bodies, full wings and small heads with circular eyes. They even have the cylindrical fleshy legs of the human and feline figures (Fig. 386).

There are few characteristics of these figures which are shared by other Costa Rican sculptured images. Mason (1945:278) suggested they bear some resemblance to the small figures carved on Atlantic Watershed grave slabs. He could only have been referring to the obesity of the figures as other features have no stylistic relationship. There are, however, some full-bodied human images from the Atlantic Watershed area, especially Las Mercedes, which have the massive rounded torsos of Capelladas figures (Fig. 387). Other than the obese nature of these sculptures, they have little or nothing in common with the figures from Las Pacayas.

Stone (1966:Figs. 3f, 5e, 5f) illustrated three figures from the Reventazon area which she classified as "Capellades." Although they are seated and heavy in appearance, their crudity and the coarseness of the stone does not relate to the other Capelladas figures. In addition, their poses differ slightly and they lack the rounded fleshy bodies ascribed to the style.

Ferrero (1977:illus. III-100) illustrated a figure said to have come from Capelladas. This standing female is in the common pose holding her breasts like most of the Atlantic Watershed examples. It seems doubtful that it should be classified as "Capellades" style as it possesses none of the characteristics originally used to describe figures in this style. She stands with legs separated and arms flexed. Ferrero (1977:336) suggests that this female figure is typical of the "Capellades" style and even refers to others with tattooed bodies.

Dating Capellades Figures

There is little evidence to help in the dating of these sculptures. Mason (1945:281) made no suggestion of chronological placement or relationships. Kennedy (1968:107) lists the Capellades site among the Middle B Period (AD 850-1400) sites from the Reventazon Area. Although no description is furnished, Kennedy (1968:106, 107) says the Capellades site is associated with other Middle B Period sites on the basis of ceramics. He refers to it as an example of regionalism. Since none of the known figures came from controlled excavations, nothing more can be said with assurance concerning their chronological placement. Haberland (1973:142) concurs with this. He lists "Capellades" as one of the main sculptural styles in Southern Central America but says there is no archaeological data giving information about associations or dating.

Animal Figures

Figures with Bodies

Although animals were prolific as ornamental motifs on the functional or ceremonial stone objects, they are infrequent and uncommon among the independent figural sculptures. When encountered they are usually more anthropomorphic than zoomorphic. Whether considered simian or feline, they have human-like torsos, limbs, hands and feet. Heads greatly resemble those of the human images with nearly identical facial features. The most animalistic trait is the presence of a long, tapered curved tail and in a few instances, small feline ears (Fig. 388).

Whether jaguar or monkey cannot be decided with assurance. What can be said is that they clearly relate to the free-standing human figures as well as the animal images adorning ceremonial sculptures. The long tailed figures stand erect with hand to mouth or forehead, holding something or with both arms freed from the body (Fig. 389). In at least two examples the tail acts as the third leg of a tripod to support the figure. Facial features, body forms and appendages indicate a relationship with the atlantean figures supporting circular pedestals, especially those from the Las Mercedes area. One even has an incised geometric design on its cap like the sigmoids of stand rims, metate edges and body ornamentation on effigy figures.

The rounded bodies, the method of representing fingers and toes and the facial features relate these anthropomorphic images to Group 3 sculptures. The simple oval eyes, incised eyebrows and facial lines, flat ears, slit mouths and triangular noses place them more specifically in Subgroup 3b and suggest they are among the latest stone sculptures from Central and Atlantic Costa Rica.

Another group of animal sculptures is more unique. Each is a somewhat columnar form with a peg base and a quasi-rectangular head (Fig. 390). Three of these are part of the Hartman Collection at the Carnegie Museum. Provenience is uncertain but within the Atlantic Watershed/Central Highlands zone. Each has a large squared jaw with teeth visible. Eyes are circular and noses are flattened rectangles with side nostrils. No ears are present. The archaeological contexts of these are unknown but two similar sculptures were reportedly found in the Reventazon area (Kennedy 1968:315). From a

burial cache of a stone cist grave at the Azuero site came an example almost identical to the three Hartman collected. Kennedy (1968:315) refers to it as a jaguar or tiger and says it was associated with Chocolate Ware vessels. These ceramics place Azuero in the Middle Period B of the Reventazon sequence (AD 850-1400). However, Kennedy (1976:90) says Chocolate Ware like Yellow Line Ware continued to be produced in the Late Period just prior to the Conquest.

Heads

Animal heads although not as common as human heads, are frequently encountered in museum collections. The majority of these are fragments of larger sculptures. Their feline characteristics indicate they probably belonged to effigy ceremonial grinding stones. Some, however, were carved as independent sculptures similar to the human heads (Fig. 391).

With few exceptions these heads are clearly related to those of the ceremonial effigy figures. They possess most of the facial characteristics and decorative markings. Like the animal heads on the ceremonial objects, the surfaces may be simplified and severely plain or elaborately covered with surface carving. Most represent jaguars with jaws exposing large N-shaped canines. Eyes are commonly broad ovals, nasal areas low and rectangular with nostrils marked and whiskers carefully incised at the end of the snout (Fig. 392). A few examples are noteworthy as they are not feline. One represents a duck, another a tapir and a third is probably a crocodile.

Those that were carved specifically as independent heads rest

erect on bases formed of short cylindrical necks with flat bottoms. The majority of these heads come from the Las Mercedes area and are similar in size to the human heads, measuring between 18 and 30 cm in height.

Figural Images from Panama

In terms of sheer quantity, the free-stranding sculptural images of Panama are considerably fewer in number than those of Costa Rica. The Costa Rican figures located for this study number in the hundreds while those from Panama are only slightly more than fifty. It is noteworthy to consider that with the exception of a single piece from Veraguas, these sculptures came from only two provinces, Coclé and Chiriquí. Those from Coclé are all of the same type, being columnar or pedestal based. The Chiriquian figures are more varied and include pedestal base forms and peg base figures as well as images standing erect on two feet. The majority represent human personages and are predominately male. The two archaeological sites of Barriles and El Cano are the major sources, while the important site of Sitio Conte is totally lacking in figural stone sculpture. The largest portion of its artifacts consists ceramics and goldwork.

Barriles Figures

The most spectacular sculptures from Chiriquí came from the Barriles site in the Volcan area north of the city of David. It is also from this site that the largest and most unusual of the functional volcanic stone objects were recovered. These are the

enormous oval shaped metates with trophy head rims, some of which also have human atlantean or caryatid supporting figures. There can be little doubt that these metates or ceremonial altars are related to the free-standing statues. All have nearly triangular shaped faces with narrow chins, small slit quasi-oval protruding eyes and mouths, thin straight noses broadening at the nostrils and projecting ears. Without exception, they wear tall conical hats, some of which fit over the ears (Fig. 393).

A few wear pendants on their chests in the form of small human or anthropomorphic figurines. In all but one instance, these are single figures with arms at sides and legs straight. They are likely representations of gold jewelry. These same images appear in relief on the two atlantean figures and the three columnar legs broken from extremely large metates (Figs. 223, 225). The only additional article of ornamentation besides the caps and pendants is a narrow abdominal cincture found on two of the free-standing sculptures and one caryatid figure. All these Barriles figures are male except for the one large caryatid. Where the figures are complete or nearly so, they stand on columnar bases which were intended to be placed into the ground for support.

The metates were clearly associated with the trophy head cult as the perimeters are ringed with a series of small human heads. At least two of the large male figures also share this relationship as they carry small shrunken heads in their left hands (Fig. 394).

Every statement written about these figures from Barriles includes the comment that they are the most naturalistic of the Lower

Central American sculptures. Despite the obvious stylization of the images, their bodies and facial characteristics confirm the truth of that opinion. Nevertheless, within the group of large standing figures there seem to be two variants of the Barriles style. In one case the torsos are broad, rounded and fleshy. Limbs are substantial, with knees and ankles differentiated and arms usually flexed and separated from the body. These are the more naturalistic figures and include double as well as single figures (Fig. 395).

Figures of the other grouping are thinner, flatter, stiffer and more rigid in appearance. Torsos are long and slim in proportion to the legs. Arms are so exaggerated they are over half the length of the figure. Bodies and limbs are less naturalistic and are summary statements lacking the convincing touches of realism evident on the other sculptures. Even the facial features are abstracted and more symbolic than natural (Fig. 396).

The first group has much in common with Group 1 standing figures from the Atlantic Watershed/Central Highlands Region of Costa Rica. The broad hips and torsos as well as the solid columnar legs with large and heavy feet are found in figures from both Panama and Costa Rica.

The second group is much more closely related to the flat, peg base statuary from the Diquís Region of southern Costa Rica. Figures are slim, narrow and nearly triangular shaped. Arms are thin, straight, parallel to the torso and separated from the body by means of long and narrow slits.

There is no archaeological evidence to propose the existence of

one of these variants prior to the other. Both seem developed enough to conclude that despite the lack of previous sculptured forms, there must have been some precedent established and some developmental stage before these images. These were likely figures carved from wood.

As seen in a small peg base figure said to be from Bugaba, the relationship between the large sculptured images and the Diquis figures is strong (Fig. 397). This andesite figure is closer in size to those from Costa Rica but is stylistically similar to both the Panamanian and Costa Rican images. Its overall appearance is closest to Diquis figures, many of which wear conical caps and cinctures.

At the Museo Chiricano in David are a number of sculptured fragments from the site of Santa Marta, about 40 km south of Barriles. Although in very poor condition, their similarity to the double figures from the type site is unmistakable. To the north and west of Barriles in the vicinity of San Vito de Java, Costa Rica, were found fragmented images, some with heads like those from Barriles (Laurencich 1972:223). These were associated with Aguas Buenas sherds which suggests their contemporaneity with the Barriles images.

That this Barriles style was not confined to the Volcan Region of Chiriquí can also be verified by two other figures from Costa Rica (Figs. 398, 399). One comes from the Talamanca area of Limón province (Balsar 1971:59). The other was found at Canas Gordas on the Costa Rica-Panama border of Puntarenas Province (Lines 1959:313).

Although separated by some distance, both are in the style of the Barriles figures. The former is a portion of a double figure with a large standing male supporting a smaller figure seated on its shoulders. The latter is a male figure standing on a columnar or peg base, wearing a conical cap, pendent necklace and abdominal cincture. He holds a trophy head and knife like the Atlantic Watershed figures.

Balsar (1971:59) suggests that the fragmentary figure was carried from the site of Barriles by a group of immigrants who were forced out by foreign invaders. Haberland (1984:253) feels these newcomers advanced through the territory between AD 600 and 800. Other opinions (Linares, Sheets and Rosenthal 1975:141) suggest the site of Barriles may have continued as late as AD 800. This could result in a later dating for all the sculptures.

The broken figure was found with two other male images about one meter in height. These appear to be dancing, one with both hands on the abdomen, the other with one hand on the forehead and one on the abdomen. Both are said to be typical of the figures which became extremely common after AD 1000 in the Atlantic Watershed Region (Balsar 1971:59). This association proposes not only an important chronological link but also implies the existence of contact in the form of a migratory or trade route between the two regions. It, however, does not necessarily suggest the contemporaneity of the two types of sculpture but may have been the means by which the influence and knowledge of Barriles reached eastern Costa Rica. This supports several previous ideas concerning the direction of movement and the source of sculptural knowledge.

Venus Figures

Stylistically close to the Barriles sculptures is a small group of female figures usually referred to as "Venus" images (Fig. 400). The four photographed for this study are nearly identical in form and posture as well as decorative motifs of dress. All are rigid standing images with a basically rectangular form. Shoulders are squared, breasts are small and high, arms are flexed with hands on the abdomen. Legs are heavy and slightly flexed and are supported by large rectangular feet with incised toes and raised ankle knobs. Heads vary from oval to triangular but all have very prominent and angular jaw lines, flat craniums, long projecting noses and quasi-rectangular eyes and mouths with medial grooves. They have projecting ears except for the example illustrated by Holmes (Fig. 401). Each wears an abdominal cincture and a turban headdress with shallow surface designs. Despite their overall similarity, they vary in size from 32 to 78 cm in height.

There can be no doubt that these images are representative of the same individual, human or goddess. MacCurdy (1911:39) referred to her as the "Panama Venus," while Holmes (1888:23) called her a "Chiriquí Goddess," and Torres de Araúz (1972:73) says she is "Venus of Cebaco." Three are reportedly from Chiriquí Province. The other is from the Island of Cebaco in the Gulf of Montejó off the southern coast of Veraguas. Haberland (1973:138) groups these together and calls them the Cebaco style from Chiriquí.

The single volcanic stone sculpture from Veraguas (Fig. 402)

shares features of the Barriles style as well as the Venus figures and even the Penenome images. Its triangular shaped face, low forehead and cranium as well as facial features are common to figures in all of these groups.

Villalba Figures

On Villalba Island in the Gulf of Chiriquí is a figure similar to the Venus sculptures (Fig. 403). Although incomplete, it has the same general shape and characteristics of the others. It is female, has flexed legs, arms across the torso, triangular face with prominent jaw and projecting ears and nose. Sculpturally it is not as open and free as the "Venus" figures. It is not free-standing as the legs are one solid piece and tenoned and the arms are joined to the torso. It also lacks the banded turban and ornamental cincture present on the other figures. Nevertheless, its relationship with these is evident. Originally, Haberland (1960:20) placed them together as one of three types of stone sculpture indigenous to Chiriquí and called it the "Villalba Type." Later he referred to the existence of both a Villalba style and a Cebaco style, and related the former with Penenome II figures from Coclé Province (Haberland 1973:138).

Dating these sculptures and sculptural styles is extremely difficult since most of them have no known associational material. Haberland (1973:138) does refer to ceramic sherds from the San Lorenzo Phase (AD 800-1100) at Villalba. Linares (1968:78), however, proposes the site was occupied until the Conquest. More recently,

Haberland (1984:246) referred to the existence of the Burica Phase (AD 600/800-1000) at Villalba. Whichever dating is accurate for the Villalba site, it is clearly posterior to the Barriles site and its sculptures which are related to the Aguas Buenas Phase.

Haberland (1960:20) compared a pedestal based anthropomorphic figure in the Brooklyn Museum (Fig. 404) to the Villalba sculpture and placed them in the same style group which he called the "Villalba" type. They are related in pose and general form but the Brooklyn figure is more cylindrical and is male. The general concept is found in figures from Chiriquí and Coclé. Two human sculptures from Bouquette near Barriles (Fig. 405) are also seated male images supported on columnar bases. These are slightly more angular with arms less rigidly compressed to the body. Their angularity is closer to the Venus images than to the columnar sculptures.

Cocle Figures

The majority of the tall pedestal columnar base figures are said to have come from the Province of Coclé in Central Panama. Most museum collections record the provenience of these sculptures as El Cano. Hyatt Verrill (1927:47-61) reported the existence of a large ceremonial site in Coclé which he called "The Temple Site." Said to be located between the Rio Grande and Rio Cano, Verrill (nd:80-81) referred to it as a large ceremonial precinct with rows of stone columns of which at least 100 had carved human or animal figures up to seven feet high.

Haberland (1973:138) divides these sculptures into two groups

which be labeled Penenome I and II styles but he makes no suggestion that one preceded the other in time. The first group consists of those columnar figures having only the head carved in the round (Fig. 406). The rest of the figures adhere closely to the column having limbs and details carved on the surface in low relief. They are tall slim figures with no distinction between column and image. A single figure from the Reilburg Museum in Zurich is thought to illustrate the transition between Penenome I and II styles (Haberland 1973:Figs. 3 and 4).

The Penenome II style consists of carvings in deeper relief, of figures "fully rounded and more naturalistic" (Haberland 1973:138). Rather than the figures being incorporated into the column, they are perched upon it (Fig. 407). The shape of the column changes and becomes more square than cylindrical. The sculptured forms are considerably smaller, being confined to the top or upper portion of the stone. Besides human figures, there are small anthropomorphic figures and small animal images on the tops of the pedestals.

Stylistically, the Brooklyn figure from Chiriquí is similar to the Penenome II style as well as the Villalba style. It is likely that the Chiriquí, Villalba and Penenome styles are related as there are resemblances among the human and the anthropomorphic columnar figures as well as the small animal images from Villalba and the Temple Site. Haberland (1973:138) says such a connection is probable but cannot be verified as dates have not been established with certainty.

Cooke (1972:455) believes the sculptural figures of the Temple

Site date from Phase V (AD 500-800) and possibly Phase VI (AD 800-1200). This would make the site contemporary with Sitio Conte which is thought to have flourished between AD 500 and 900. Late Barriles would likely have been contemporary with early Phase V. Haberland (1973:149), however, concludes there is no verifiable relationship between Barriles statues and those of Penenome. If the Villalba figures belong to the San Lorenzo Phase (AD 800-1100) then they may be contemporary with the late Penenome carvings or may possibly be the latest in a sequence from Barriles to Penenome to Villalba. Regardless of the exact position of the Villalba figures, the progression is clearly from more to less realistic, from naturalism to conventionalism.

Besides the large columnar and shaft sculptures, Verrill also collected a number of small stone figures at the Temple Site. Most are compact standing or squatting male images with arms attached to torso and flexed across the abdomen. A couple have one hand raised toward the mouth or even freed from the body. All have an elaborate type of hair arrangement or wear a head covering. Most commonly these consist of three raised areas on the cranium which go from the forehead to the back of the neck as if the hair was parted and gathered (Fig. 406). Some have an elongated and tapered ornament from the top of the head down the back. This may be an extension of the headdress or it may represent long hair (Fig. 409).

Most are crudely carved of porous stone with few details enumerated and facial features not discernable. They vary from rounded to elongated, from having legs to a peg base. Two of them

resemble figures illustrated by MacCurdy (1911:Fig. 37, 38). All are boulder-like squatting figures with large heads and limbs in relief. Features are crude but sculpted not incised. Hair or head coverings are similar with incised parallel striations across the crown of the head. The two illustrated by MacCurdy were part of the McNeil Collection said to have come from Bouquette, Chiriquí. They appear to represent males or perhaps are hermaphrodites. The lack of details, the size of the sculptures and the crudity of the carving make it impossible to analyze them stylistically. In general, they do relate to some of the large Penenome figures with neckless heads set directly on the shoulders, limbs in relief, legs drawn up as if squatting and arms across the torso.

Chiriquí Figures

The remaining Panamanian stone figures all come from the Province of Chiriquí. They can be divided into two groups, those which are basically boulder-like (Fig. 410) and those which are flattened (Fig. 411). In this manner, they greatly resemble the carved images from southern Costa Rica, those which Haberland (1973:140) classifies as representing the Palmar and Diquis styles.

The boulder sculptures from Chiriquí are identical to those from Palmar. Numbers alone suggest that the pieces found in Panama were probably brought there from Costa Rica and were not part of a style native to Chiriquí. However, the entire region of southeastern Costa Rica and western Panama formed the Greater Chiriquí archaeological division. It has already been noted that throughout this region

ceremonial and functional stone objects such as effigy metates and circular stands with atlantean figures have been recovered. Whether these were manufactured at several locations within Greater Chiriquí or whether their original source was to the east or west of the area is not known. Nevertheless, the size and weight of many of these objects suggests they were not transported long distances. Most of the figural sculptures were smaller and therefore easily transportable.

With few exceptions the free-standing images are human and male and as was true of the small Penenome figures, they are crudely carved and weathered. Their archaeological contexts are unknown and they are therefore datable only in relationship to the Costa Rican sculptures.

CHAPTER VII

CHRONOLOGY OF OTHER SCULPTURAL GROUPS

The other sculptural groups, discussed in Chapters V and VI, can be placed in the chronological sequence on the basis of archaeological evidence and their similarities to the identified and scaled traits of the effigy grinding stones and the standing human figures.

While present archaeological evidence suggests that the effigy grinding stones and the majority of the standing human figures are from the Stone Cist Period or Period VI times (c. AD 1000-1500), other archaeological evidence shows decorative volcanic stone sculptures from Costa Rica and Panama to date back to Zoned Bichrome II or late Period IV times (c. AD 1-500).

Among the earliest sculptured objects were several types of non-effigy grinding stones (Snarskis 1976a:344; 1978a:155). Tripod metates with low rims, plain, notched or with small trophy heads, are known from El Bosque, Pavas, and Curridabat Phases in the Atlantic Watershed/Central Highlands region (Stirling 1969:239; Snarskis 1978a:176, 1979:92; Guerrero 1980:131). They are all dated to contexts before AD 800.

Grinding stones with appendages on the lower surface come from both Costa Rica and Panama. Those with the earliest known contexts in Costa Rica have notched rims like the tripod metates but also have

a bar with animal or human images attached to the bottom of the plate. They, too, have been recovered from El Bosque and Pavas phase contexts (AD 1-500; Aguilar 1975:24). Similar objects with bird-like appendages have been found in Panama in contexts datable to late Period IV and early Period V (c. AD 1-800; Ladd 1964:201).

The related Marimba type grinding stones have also been recovered from Pavas and El Bosque Phase burials in the Central Highlands (Aguilar 1975:24) and the Atlantic Watershed (Snarskis 1978a:157).

The elaborate ceremonial objects called Flying Panel Altars of Central Costa Rica can be traced to Zoned Bichrome II and Transitional Period times, late Period IV-early Period V (c. AD 1-800; Snarskis 1978a:157, 1981:23; Aguilar 1974:313). They are the likely descendants of the marimba grinding stones and those with low notched and stylized rims. More simple variants of these have come from Veraguas, Panama, but were not recovered in context (Lothrop 1950:76). Based on their visible relationship with the Costa Rican examples, they may also belong to late Period IV-early Period V (before AD 800).

The most important Panamanian stone sculptures came from the Barriles site in western Chiriquí. Here both ceremonial grinding stones and standing human images were recovered in context. Their association with Aguas Buenas ceramics dates them c. AD 400-700 (Haberland 1960a:13). Although the origins of the Barriles style cannot be definitely located, the similarity of the ceramics to those of Zoned Bichrome II and Transitional Periods in the Atlantic

Watershed/Central Highlands suggests a relationship. It is possible that the Barriles culture had its origins in central or eastern Costa Rica if not in Panama (Haberland 1984:240). Wherever its beginnings, the Barriles culture spread its influence south, east, and west after the disruption of the Barú area c. AD 700 (Linares 1977:313).

Oval tetrapod grinding stones or stools from the Atlantic Watershed/Central Highlands of Costa Rica may well have been inspired by the large ceremonial grinding stones from Barriles. It is also likely that they were influenced by the Flying Panel Altars. At the same time they are related to some of the effigy grinding stones having cylindrical legs joined by bars on which are perched human or animal images. They may be as early as late Period V, the beginnings of the Stone Cist Period (c. AD 800; Snarskis 1978a:278).

Also related to the marimba and flying panel altars, the notched and trophy head metates and the effigy grinding stones are several varieties of circular stands. They have come from both Costa Rica and Panama but the only examples with known archaeological context came from Retes in the Central Highlands which has a Carbon 14 date of AD 960 (deVries 1958:136). Those with ring bases and atlantean figures came primarily from the Atlantic Watershed/Central Highlands area. The figures on these, both human and animal can be related to the figures on the flying panel altars, the marimba altars, grave slabs, and free-standing sculpture. In like manner, those with trophy head rims can be related to the rims on non-effigy grinding stones, flying panel altars, grave slabs, and free-standing figures.

Both the atlantean and trophy head varieties have also been

found in Panama. Many are identical to those from the Atlantic Watershed/Central Highlands region. However, in Panama precedent had already been set for these stone objects in ceramic prototypes called Armadillo Ware of the Classic Chiriquí Phase (c. AD 800/1000-1500; Torres de Arauz 1972:42).

From the Atlantic Watershed/Central Highlands area came variants of the circular stands which acted as pot ring rests. Many have trophy heads or small animals around the upper rim. These stands also exist in ceramic ware of the Cartago Red Line group dated to the Stone Cist Period (Snarskis 1976:101). It is thought that they are a link between the trophy head stands and the atlantean stands.

Also related to the circular stands, pot ring rests, effigy grinding stones and free-standing figural sculptures are small bowl-like objects with figural supports. In addition, they relate to the Late Polychrome ceramics of the Guanacaste-Nicoya Region and the ceramics of the Late Period in the Atlantic Watershed/Central Highlands and the Chiriquí Regions (Ferrero 1977:102, 167). Surface decoration is much like the most accomplished of the effigy grinding stones. Facial features of the figures range from rectangular eyes with slits to oval eyes. Most are stylistically related to Group 2 effigy grinding stones and Group 2 standing figures from the Atlantic Watershed/Central Highlands. None of those in this study have known archaeological contexts.

The few vases or containers with human or animal imagery relate best to the free-standing figures of Group 3 with oval eyes and slit mouths.

The type of grave slab or burial marker found by Skinner (1926:457) at Anita Grande can be related to Group 2 and Group 3 free-standing images and effigy grinding stones. Some are related to standing human figures of Group 2 as their facial and body traits recall the shapeless hips, columnar legs, and projecting ears of those sculptures. Others relate to Group 3 figures having oval eyes, slit mouths, flat stylized ears, and stocky bodies. Those with zoomorphic images display the long snouts, square jaws, oval eyes, and flat ears of Group 3 effigy grinding stones figures. Since none of the figures on these grave slabs are like Group 1 standing figures it seems likely that they made their first appearance somewhat later and developed from the free-standing images. In no instance has there been controlled archaeological excavation of any of these slabs.

The few chacmool figures are difficult to place. Although they are much like the free-standing sculptures, some are masked like Group 1 figures while others have the circular eyes, scroll-like ears, squared jaw, human nose, and stocky bodies of Group 3 figures. Kennedy (1968:246) dated the Najerra site example to Middle Period B (AD 850-1400) while Stirling (1969:245) suggested c. AD 1400 for the Williamsberg site from which the double figure example came.

Seated human figures and individual heads can be related to the standing human images in each of the three groups. Group 1 seated figures have the same facial features as standing figures. These consist of rectangular eyes and mouths, large projecting ears, narrow triangular noses, and rounded fleshy bodies. Those of Group 2 repeat

some of these facial features but have less fleshy more tubular bodies while those of Group 3 have slit oval eyes, more flattened and stylized ears and longer more naturalistic noses. There is also a return to the heavier fuller body style as seen in Group 3 standing images. These are the features on the images Hartman recovered from his Central Highland excavations (1901). Based on Baudez's (1967) analysis, they are likely late Middle Polychrome or early Late Polychrome times, c. AD 1200 or later.

The individual heads are nearly identical to those of the full-bodied sculptures. The majority relate to Group 3 figures having oval eyes, with and without slits, flat decorative ears, simple slit mouths, and idealized human noses. Many also display incised eyebrows and laugh lines. They exist only from the Stone Cist Period and were recovered by Hartman from burials in the Central Highlands. One from Chircot was associated with Middle Polychrome ceramics while another from Orosi was associated with Late Polychrome ceramics. These two examples are so similar that they are likely contemporary and must be from the late Middle Polychrome or early Late Polychrome Period.

A likely short lived style existed in the Capellades figures from the Central Highlands. These human and animal images are short, stocky, and fleshy but simplified figures. Their facial features relate best to the Group 3 standing human figures having circular or oval eyes, simple slit mouths, and small flattened ears. Their rather obese bodies relate to figures on grave slabs and the seated boulder figures of Las Mercedes and Guayabo. This suggests a late

Stone Cist Period date. However, there is no archaeological information regarding any of the figures.

The few free-standing animal images are nearly identical in body size and proportion to the atlantean figures on circular pedestals. They also have the oval eyes, slit mouths, flat ears, incised eyebrows, and facial lines of Group 3 free-standing human figures and, therefore, are likely contemporary with them.

It is likely that the earliest free-standing figures came from Barriles, Panama. The known examples relate to both Atlantic Watershed/Central Highlands sculptures and figures from the Diquis area. Some are more rounded and fleshy than others and have much in common with Group 1 figures of the Atlantic Watershed/Central Highlands with their broad hips and torsos, heavy legs, and large feet. The others are thinner, flatter and more rigid in appearance, characteristics more in keeping with the peg base figures Lothrop (1963) recovered from the Diquis area. Late Barriles was apparently contemporary with early Period V (c. AD 500-700) of the Atlantic Watershed/Central Highlands of Costa Rica.

The other free-standing sculpture from Panama, what Haberland (1973) called Penenome, Villalba, and Chiriquí styles, are all later than the Barriles figures. Cooke (1972:455) suggests AD 500-800 or perhaps as late as AD 1200 for the Penenome figures while Haberland (1973:138) says San Lorenzo sherds (AD 800-1100) were found at Villalba. It is possible that these sculptures represent a sequence from Barriles to Penenome to Villalba. The remainder of the Chiriquí

figures, however, have no archaeological associations and some may even have been imported from Costa Rica.

CHAPTER VIII

CONCLUSIONS

Over 1400 volcanic stone sculptures from Costa Rica and Panama have been organized into the two primary categories of Ceremonial Objects and Figural Images. The category of Ceremonial Objects has been further divided on the basis of formal similarities. This includes grinding stones, altars, stools, stands, grave slabs, chacmools, bowls, vases, and containers. Similarly, the category of Figural Images has also been divided into standing or seated images and independent heads. However, the major emphasis of this study has been an analysis and seriation of effigy grinding stones and standing human images. The reasons for this were: (1) these were the most common stone objects found in museum collections and appeared to have enough stylistic variation to suggest manufacture over an extended period of time; and (2) it was suggested that a seriation of these, particularly the effigy grinding stones, would allow the other sculptures to be related on the basis of form, modeling, and surface decoration (Snarskis:personal communication).

Two major analytical methodologies were employed in this seriation. The first of these methods was the more traditional art historical approach consisting of a visual analysis and grouping of the sculptures based primarily on formal qualities or visible traits. Over 60 traits were identified for each of the two major categories

of sculpture, effigy grinding stones and standing human images.

The analysis of these two principal categories of carved objects resulted in the placement of 425 sculptures in several distinct yet related groupings. Study of the formal qualities, such as overall body mass, shape, modeling, and surface features, has revealed certain stylistic similarities which allowed the sculptures to be grouped and seriated. Effigy grinding stones have been placed into three major groups containing 32, 98, and 58 sculptures respectively. An additional 17 problematic sculptures have been labeled as Difficult to Categorize since their visible traits do not conform to the apparent sculptural norm. The standing human images have also been divided into three groups containing 36, 96, and 88 sculptures respectively. Within these primary groupings subgroups have been established to deal with the rather minute but important differences.

The second method of analysis was to code each sculpture for the presence or absence of each of the traits originally identified in the formal visual analysis (See Tables 1 and 2, pp. 547-550). Various combinations of these traits were then selected and submitted to Guttman Scale Analysis with the aid of a computer (See Tables 3 through 56, pp. 551-604). The results of this second analysis indicate that certain sculptural traits or characteristics were related as they invariably appeared together. Other traits are shown to develop, change, and eventually disappear from the sculptural inventory. These groupings of traits and the changes encountered confirm that the original grouping of the sculptures was accurate and that there was a developmental sequence from one group to another.

From the outset of this study an attempt was made to limit the

geographic distribution of the sculptures to those from the Central Highlands/Atlantic Watershed Region of Costa Rica. In the case of the effigy grinding stones, the nearly identical and likely related objects from Panama were also included. Nevertheless, in each of the grinding stone groupings, the majority of the pieces came from the Atlantic Watershed area, mostly from the vicinity of the Las Mercedes site. However, nearly one-third of the sculptures classified as Group 2 are recorded in museum catalogs as having been recovered from the Central Highlands. In addition, one-third of those in Group 3 are from the Diquis region. The majority of the Panamanian sculptures are from the western province of Chiriquí.

Most of the free-standing figures also came from the Atlantic Watershed area with over one-third from the site of Las Mercedes. While few of those figures classified as Groups 1 and 2 came from the Central Highlands, about 30% of those placed in Group 3 are recorded as having a Highland provenience.

The changing distribution of the sculptures suggests several possible explanations: (1) the actual transport of carved objects from the Atlantic Watershed to the Central Highlands and the Diquis Region; (2) the movement of peoples and ideas from one area of Lower Central America to another; (3) inadequate archaeological investigation and excavation; and (4) the inevitable consequences of the accidents of preservation and excavation. However, the fact that approximately one-third of the sculptures in each of the groups is from the Las Mercedes Site suggests the continuing importance of this site throughout the time span represented by the effigy grinding stones and the free-standing figural images.

Additionally, both of these sculptural groups argue for the existence of a single archaeological zone in the Atlantic Watershed/Central Highlands Region. The changing percentages of the proveniences of the sculptures likely indicate the development of important sites in the Central Highlands due to an increase in population as Period VI progressed. The archaeological records substantiate this with the presence of large ceremonial sites in both zones during this time, namely, Guayabo, La Cabana, and Las Mercedes. From her study of Curridabat and Concepción ceramics Skirboll (1981:199) concluded that: "Examination of the archaeological records reveals many instances of similarities so marked and constant as to lead to the conclusion that the two zones formed a single cultural unit at some level." The suggested level is that of a mortuary complex. Since the majority of the stone sculptures in this study likely came from burials, the analysis and seriation of them seems to substantiate this claim for one archaeological zone called the Atlantic Watershed/Central Highlands.

The development within and among the three groups of effigy grinding stones and three groups of standing human figures suggests a gradual change in style. Since neither of the methods used to seriate the sculptures was capable of indicating the direction of this change, archaeological evidence was considered. The few pieces of these sculptures which were recovered in context establish that the sequence for the development of the effigy grinding stones was from naturalistic to stylized or from crudely executed to beautifully carved sculptures. If the groups of sculptures are valid chronological groupings, Group 1 is the earliest followed in order by

Group 2 and Group 3.

The three groups of standing human figures also exhibit a developmental sequence. On the basis of archaeological evidence, the progression is from naturalistic to stylized, from great variation in imagery and size to a more generic concept. Group 1 figures possess the greatest variety and individuality while those of Group 3 are the most homogeneous and stereotyped. Those sculptures of Group 2 are the transition from naturalistic to stylized and are then intermediate in time.

The validity of this relative chronology rests primarily on Hartman's (1901) detailed excavation methods and records and Baudez's (1967) analysis and identification of a small portion of the ceramic finds from these Atlantic Watershed/Central Highlands sites. Without Hartman's careful illustrations and documentation the seriation of these sculptures and the relative chronology would have been impossible. With the information provided by his study the developmental progression of the sculptures included in this study has been established.

The archaeological record also suggests the existence of relationships between the different archaeological regions of Costa Rica and Panama. Even before the appearance of the detailed and decorative ceremonial stone carvings most of Costa Rica and at least western Panama shared a ceramic tradition in which incised decoration or Scarified Ware predominated. It is evident that the El Bosque Phase of the Atlantic Watershed of Costa Rica shared many similarities with the Aguas Buenas Phase of Panama. Haberland (1984:240) believes the people of the Aguas Buenas culture actually

came from Central Costa Rica or the Atlantic Watershed area.

The Aguas Buenas culture ended sometime around AD 600/700, probably due to an invasion from the south and east (Haberland 1984:253-254) at which time the stone sculpture complex from Barriles ended. By the time of this event, in large measure, much of the iconography for the rest of the preconquest era had already been established. Among these were the trophy head cult and human sacrifice as well as the fertility cult.

The types of ceremonial objects and images produced by these peoples spread throughout Lower Central America during the next 800 years and influenced most sculpture thereafter. In the early Diquis sculpture (Period V), the zoomorphic effigies and peg base figures, the Barriles ancestry is apparent (Graham 1981:123). However, thematically they are linked to the sculptures of San Agustín, Columbia. By Period VI the stone figural images from this region differ markedly from those of the other Costa Rican or Panamanian areas. In style, form, and motifs they are reminiscent of the Columbian sculptures (Snarskis 1981:81).

Such drastic differences did not exist between the ceremonial stone sculptures of the Diquis Region and those of Central and Atlantic Costa Rica or western Panama. Already in late Period V the effigy grinding stones were identical to those from the rest of these areas. Tetrapod effigy grinding stones, bowls, and circular stands, if not imported from the Central Highlands/Atlantic Watershed, were part of the style which extended from central Costa Rica through western Panama (Graham 1981:131). There is much ceramic evidence to support the existence of cultural and trade links between these

areas.

Much of the imagery found on ceremonial objects and figural sculptures from the Atlantic Watershed/Central Highlands of Costa Rica had its origins in South America. It undoubtedly reached central Costa Rica by way of the Barriles peoples of western Panama. By Period V (AD 500-1000) figural sculpture with southern motifs had emerged. The same is true for the early ceremonial sculptures as grinding stones with stylized trophy heads existed by c. AD 500. However, by late Period V and early Period VI the influence had moved in the opposite direction. Variations of the effigy grinding stones and circular stands were found throughout the entire Greater Chiriqui region. Haberland (1984:250) believes their center of manufacture was central Costa Rica and that they were traded or imported into southern Costa Rica and western Panama.

Considering the archaeological evidence and the stylistic characteristics of all the volcanic stone sculptures included in this study, the following chronological progression is established. During late Period IV times (AD 100-500) the first decorative or ceremonial grinding stones appeared in the Atlantic Watershed/Central Highlands Region. These were tripods with rimmed plates, heavy notched edges, and/or stylized trophy head rims.

Contemporary with these sculptures in the Atlantic Watershed/Central Highlands were grinding stones with round or rectangular plates, notched edges, and rows of geometric projections appended to the lower surface of the plate. Similar examples with bird-like forms appended have come from the Veraguas province of Panama and are datable within the same time frame.

Flying panel altars, both simple and elaborate, undoubtedly developed from these grinding stones. The simpler versions came from both Costa Rica and Panama, while the more elaborate and later examples have been found only in the Atlantic Watershed/Central Highlands area of Costa Rica. Portions of these found in contexts are datable to late Period IV-early Period V times (c. AD 1-800).

Important additions to the sculptural inventory appeared about the same time in the Chiriquí province of Panama. Here during early Period V (c. AD 400-700) the Barriles people carved immense oval ceremonial tables, some having atlantean and caryatid legs and notched trophy head rims. More importantly, they developed the first free-standing figural sculptures in the Costa Rica-Panama area.

It is evident that concepts, if not actual objects, moved in both directions influencing the sculptural output of late Period V and Period VI (c. AD 700-1500). In the central Panamanian and Greater Chiriquí areas this is seen in the figural images from Penenome and Villalba, as well as the ceremonial and figural images from all of the Greater Chiriquí region.

During late Period V (c. AD 800-1000) in the Atlantic Watershed/Central Highlands area other types of stools or grinding stones, now with four legs and decorative rims, replaced the early tripod examples. This was also the time which saw the emergence of the effigy grinding stones and free-standing figural images.

Period VI (c. AD 1000-1500) witnessed the florescence of the Atlantic Watershed/Central Highlands sculptural traditions and the development of many variations on the old themes. Besides standing figures, seated human figures and individual heads are found during

the Stone Cist Period. The greatest variety is, however, to be seen in the ceremonial objects with vases and containers, grave markers, and chacmool figures developing from the great altar traditions and the free-standing sculptures.

With few exceptions it is not possible at this time to be more precise in dating the volcanic stone sculptures from Costa Rica and Panama. This outline and chronological sequence, however, allows placement of the sculptures in a developmental picture. Although the effigy grinding stones and the standing human figures have been grouped and seriated and a developmental progression of these group established, no attempt has been made to place actual dates on any of the groups except to note their continued development throughout the Stone Cist Period from c. AD 800-1500. More precise dating of any of these sculptures will necessitate further archaeological excavation in both highland and lowland sites.

Although emphasis has not been explicitly placed on the specific cultures of this area of Lower Central America, the existence of cultural interconnections and interchange has been emphasized. The importance of this area as a crossroads and cultural meeting ground has only begun to be investigated. It is hoped that this study provides clues for answers to other more anthropological questions while also providing material for further art historical study.

Appendices

APPENDIX A

Museums and Other Locations

1. American Museum of Natural History
2. Anchorage Historical and Fine Arts Museum
3. Baltimore Museum of Art
4. Banco Nacional de Costa Rica, Archaeological Collection
5. The British Museum
6. The Brooklyn Museum
7. Buffalo Museum of Art
8. Carnegie Museum of Natural History
9. Field Museum of Natural History, Chicago
10. Guayabo Park, Costa Rica
11. Instituto Nacional de Seguros, Museo del Jade
12. Metropolitan Museum of Art
13. Musees Royaux d'Art et d'Historie
14. Museo Escuela Felix Olivares, Chiriquí
15. Museo de America, Madrid
16. Museo del Hombre Panamano
17. Museo Nacional de Costa Rica
18. Museum of the American Indian, Heye Foundation
19. National Museum of Natural History, Smithsonian Institution
20. New Orleans Museum of Art
21. Peabody Museum of Archaeology and Ethnology, Harvard University
22. Peabody Museum of Natural History, Yale University
23. The Royal Ethnographical Museum, Stockholm
24. Seattle Art Museum
25. Staatliches Museum für Völk Kunde, Munich
26. Universidad de Costa Rica, Department of Anthropology
27. University of Pennsylvania Museum, Philadelphia
28. Yale University Art Gallery
29. Villalba Island, Panama

Private Collections

1. Arensberg
2. Berman
3. Ebstein
4. Hemmerling
5. Hine
6. Jimenez-Alvarado
7. Kieswetter
8. Lankaster
9. Laurencich
10. Lines
11. Mannil
12. Mayer
13. Muller
14. Oduber
15. Paez
16. Price
17. de Roy
18. Stearn
19. Stendahl
20. Trejos
21. Wilke

APPENDIX B

Effigy Grinding Stone Groupings, Costa Rica

<u>MUSEUM COLLECTION</u>	<u>CATALOG NUMBER</u>	<u>FIGURE NO. OF THIS STUDY</u>
<u>Group 1a</u>		
American Museum of Natural History	7023	
American Museum of Natural History	7038	4
American Museum of Natural History	7019	5
Carnegie Museum of Natural History	2793/2079	
Instituto Nacional de Seguros, Museo del Jade	4250	
Carnegie Museum of Natural History	2439/3007	
American Museum of Natural History	7018	
Banco Nacional de Costa Rica	877	
<u>Group 1b</u>		
American Museum of Natural History	7022	7
American Museum of Natural History	6876	8
New Orleans Museum of Art	no number	
Carnegie Museum of Natural History	2439/3004	6
Carnegie Museum of Natural History	2439/3009	
Seattle Art Museum	no number	
<u>Group 1c-Cluster 1</u>		
American Museum of Natural History	6854	
The Brooklyn Museum	12530	
American Museum of Natural History	7015	9
Private Collection		
Museo Nacional de Costa Rica	14828	
The Brooklyn Museum	7024	10
<u>Group 1c-Cluster 2</u>		
The Brooklyn Museum	7031	11
Carnegie Museum of Natural History	2439/2994	12
Museum Nacional de Costa Rica	no number	
<u>Group 1c-Cluster 3</u>		
National Museum of Natural History Smithsonian Institution	15389	
Private Collection		
Carnegie Museum of Natural History	2793/2076	
Banco Nacional de Costa Rica	912	13
Banco Nacional de Costa Rica	909	15

Peabody Museum, Harvard University	no number	14
Peabody Museum, Harvard University	no number	
Museo Nacional de Costa Rica	no number	
American Museum of Natural History	7034	

Group 2a-Cluster 1

Museo Nacional de Costa Rica	18600	18
Museum of the American Indian, Heye Foundation	23/5780	16
Carnegie Museum of Natural History	2439/2992	
Carnegie Museum of Natural History	2439/3001	
Museo Nacional de Costa Rica	no number	
Museo de America, Madrid	1471	
The Brooklyn Museum	6875	
Museo Nacional de Costa Rica	21916	17

Group 2a-Cluster 2

Carnegie Museum of Natural History	2439/3030	19
Museum of the American Indian, Heye Foundation	3/3520	
Museum of the American Indian, Heye Foundation	23/7243	
National Museum of Natural History, Smithsonian Institution	97711	

Group 2a-Cluster 3

Carnegie Museum of Natural History	2439/2991	21
Carnegie Museum of Natural History	2439/3002	20
Peabody Museum of Natural History, Yale University	2943/18684	
Museo de America, Madrid	1470	
Museo Nacional de Costa Rica	21840	22
American Museum of Natural History	11397	
Peabody Museum, Harvard University	no number	
American Museum of Natural History	11396	23
Private Collection		
The Brooklyn Museum	11394	
Museo Nacional de Costa Rica	no number	

Group 2b-Cluster 1

The Royal Ethnographical Museum, Stockholm, Sweden	107	167
Carnegie Museum of Natural History	2439/3008	
Carnegie Museum of Natural History	2439/3015	24
Museum of the American Indian, Heye Foundation	3/3519	27
American Museum of Natural History	6634	
American Museum of Natural History	11391	
American Museum of Natural History	11390	

Carnegie Museum of Natural History	2792/567	
Carnegie Museum of Natural History	2439/2998	
Museum of the Amedrican Indian, Heye Foundation	7/9866	
American Museum of Natural History	12516	
American Museum of Natural History	7020	

Group 2b-Cluster 2

The Brooklyn Museum	13705	
Carnegie Museum of Natural History	2439/2996	
National Museum of Natural History, Smithsonian Institution	59121	
American Museum of Natural History	11389	30
Peabody Museum of Natural History, Yale University	2943/18683	28
American Museum of Natural History	6856	31
The Brooklyn Museum	11393	
Buffalo Museum	7037	
The Brooklyn Museum	7030	
American Museum of Natural History	no number	
Musees Royaux d'Artet d'Historie, Brussells	AAM 47.11	
American Museum of Natural History	14604	
Carnegie Museum of Natural History	2439/2990	29
The Brooklyn Museum	12527	
The Brooklyn Museum	12476	
The Brooklyn Museum	6869	
Banco Nacional de Costa Rica	921	

Group 2b-Cluster 3

American Museum of Natural History	6881	33
Museum of the American Indian, Heye Foundation	5/904	
American Museum of Natural History	70	
American Museum of Natural History	6860	32
The Brooklyn Museum	6857	35
Museum of the American Indian, Heye Foundation	6/3521	34
American Museum of Natural History	6880	
Carnegie Museum of Natural History	2439/3005	
The Brooklyn Museum	6855	

Transition 2-3 Group

American Museum of Natural History	1757	37
Carnegie Museum of Natural History	2439/3034	36
American Museum of Natrual History	2439/3013	38
The Brooklyn Museum	7039	
The Royal Ethnographical Museum, Stockholm, Sweden	100	166
The Royal Ethnographical Museum,		

Stockholm, Sweden	102	165
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Group 3a-Cluster 1

American Museum of Natural History	6904	39
Banco Nacional de Costa Rica	926	
American Museum of Natural History	11401	41
American Museum of Natural History	1313	
Museum of the American Indian, Heye Foundation	24/9301	40
Peabody Museum of Archaeology and Ethnology, Harvard University	no number	
Banco Nacional de Costa Rica	921	

Group 3a-Cluster 2

American Museum of Natural History	30.0/754	
The Brooklyn Museum	1833	
Private Collection		
American Museum of Natural History	10361	
Carnegie Museum of Natural History	2793/2077	42
National Museum of Natural History, Smithsonian Institution	137025	
American Museum of Natural History	7029	
Carnegie Museum of Natural History	2439/2995	
Banco Nacional de Costa Rica	924	45
Baltimore Museum of Art	no number	
The Brooklyn Museum	12469	43
The Brooklyn Museum	11403	
Field Museum of Natural History, Chicago	191602	
University of Pennsylvania Museum	no number	

Group 3b

The Royal Ethnographical Museum, Stockholm, Sweden	108	46, 163
Carnegie Museum of Natural History	2439/3017	
Musees Royaux d'Art et d'Histoire, Belgium	48.2.1	
Carnegie Museum of Natural History	no number	
British Museum, London	no number	
The Brooklyn Museum	7025	47
Museum of the American Indian, Heye Foundation	7/8179	
American Museum of Natural History	7003	52
The Brooklyn Museum	7057	51
Private Collection		

Group 3c

Instituto Nacional de Seguros, Museo del Jade	3860	
The Brooklyn Museum	6906	53

Carnegie Museum of Natural History	2439/3000	54
American Museum of Natural History	30.0/5959	55
American Museum of Natural History	30.0/1897	
The Royal Ethnographical Museum, Stockholm, Sweden	103	56, 164
Carnegie Museum of Natural History	2793/2248	
Carnegie Museum of Natural History	2439/2999	58
Museo Nacional de Costa Rica	no number	
American Museum of Natural History	11398	57
American Museum of Natural History	30.0/10886	
Field Museum of Natural History, Chicago	191603	

Difficult-to-Group Examples

The Brooklyn Museum	7010	84
American Museum of Natural History	1755	85
American Museum of Natural History	7033	81
Banco Nacional de Costa Rica	898	
Banco Nacional de Costa Rica	904	87
The Brooklyn Museum	7032	
National Museum of Natural History, Smithsonian Institution	1193	86
Banco Nacional de Costa Rica	911	
Banco Nacional de Costa Rica	1465	
Museum of the American Indian, Heye Foundation	7/8152	82
The Brooklyn Museum	13183	83
St. Louis Museum	387	
Peabody Museum of Archaeology and Ethnology, Harvard University	no number	

Related Objects

Carnegie Museum of Natural History	2439/3040	44
The Brooklyn Museum	7149	25
National Museum of Natural History, Smithsonian Institution	60897	48
National Museum of Natural History, Smithsonian Institution	60896	49
The Royal Ethnographical Museum, Stockholm, Sweden	109	50

PANAMA

Group 2a

Museo del Hombre Panamano	1AL-9-00020	59
Peabody Museum of Natural History, Yale University	342/94	60
Peabody Museum of Natural History, Yale University	2876/21686	
Museum of the American Indian,		

Heye Foundation	7056	
Peabody Museum of Natural History, Yale University	342/89	61
Peabody Museum of Natural History, Yale University	4405/12482	

Group 2b

Peabody Museum of Natural History, Yale University	787/90	62
Museo del Hombre Panamaneo	AL-X-0017	
Peabody Museum of Natural History, Yale University	1132/91	
Peabody Museum of Archaeology and Ethnology, Harvard University	40-35-20/7644	64
Peabody Museum of Natural History, Yale University	1132/1/232	63
Peabody Museum of Natural History, Yale University	342/289-54	65
Museo del Hombre Panamaneo	82-AL-CH	
National Museum of Natural History, Smithsonian Institution	98583	
Museum of the American Indian, Heye Foundation	8250	66

Group 2c

Private Collection		71
Peabody Museum of Archaeology and Ethnology, Harvard University	40-35-20/7643	
Museo del Hombre Panamaneo	AL-9-00081	
Peabody Museum of Natural History, Yale University	1313/51	69
National Museum of Natural History, Smithsonian Institution	98582	
Peabody Museum of Natural History, Yale University	1193-55	67
National Museum of Natural History, Smithsonian Institution	132335	68
Private Collection		
Museo del Hombre Panamaneo	167AL-V	70
National Museum of Natural History, Smithsonian Institution	507894	72
Museo del Hombre Panamaneo	AL-9-00003	
Private Collection		
Peabody Museum of Natural History, Yale University	4425/12483	
Museo del Hombre Panamaneo	63P75	
Museo del Hombre Panamaneo	no number	
Museo del Hombre Panamaneo	2AL-9-059	

Transition 2-3 Group

Private Collection		
Museo del Hombre Panamaneó	125-AL-V	
Museo del Hombre Panamaneó	1AL-00081	
Private Collection		

Group 3a

National Museum of Natural History, Smithsonian Institution	248532	
Museum of the American Indian, Heye Foundation	15/5600	74
Peabody Museum of Natural History, Yale University	1132/96	75
Museo del Hombre Panamaneó	1AL-9-00037	73
Museo del Hombre Panamaneó	AL-00003	
Museo del Hombre Panamaneó	1AL-9-00019	

Group 3b

Museo del Hombre Panamaneó	1AL-9-00031	76
Museo del Hombre Panamaneó	AL-9-0051	
Peabody Museum of Archaeology and Ethnology, Harvard University	40-35-20/7645	
Peabody Museum of Natural History, Yale University	1132-1-55311	78
National Museum of Natural History, Smithsonian Institution	98581	77

Group 3c

Peabody Museum of Natural History, Yale University	2876/21685	
National Museum of Natural History, Smithsonian Institution	248533	79
Private Collection		80
Peabody Museum of Natural History, Yale University	342/45	
Peabody Museum of Natural History, Yale University	1193/57	
National Museum of Natural History, Smithsonian Institution	248534	

Difficult-to-Group Examples

Private Collection		88
Museo del Hombre Panamaneó	125-AL-V	
Museo del Hombre Panamaneó	1AL-00081	
Private Collection		

APPENDIX C

Standing Human Figure Groupings, Costa Rica

<u>MUSEUM COLLECTION</u>	<u>CATALOG NUMBER</u>	<u>FIGURE NO. OF THIS STUDY</u>
<u>Group 1a-Masked Figures</u>		
Museo Nacional de Costa Rica	24075	89
Banco Nacional de Costa Rica	985	90
Museum of the American Indian	22/7150	
Instituto Nacional de Seguros, Museo del Jade	6399	
Private Collection		
Museo Nacional de Costa Rica	14435	
Private Collection		
Private Collection		
Private Collection		
Musees Royaux d'Art et d'Historie	48.2.5	
Museum of the American Indian	7/9867	
<u>Group 1a-Warrior Figures</u>		
Private Collection		
Private Collection		
Private Collection		
Private Collection		
Museo Nacional de Costa Rica	11697	92
Carnegie Museum of Natural History	2793/1487	
Instituto Nacional de Seguros, Museo del Jade	3910	95
FieldMuseum of Natural History, Chicago	49171	
Instituto Nacional de Seguros, Museo del Jade	256	93
National Museum of Natural History, Smithsonian Institution	59117	
Musees Royaux d'Art et d'Historie	47.18.1	
Museo Nacional de Costa Rica	12504	91
University of Pennsylvania Museum	no number	
National Museum of Natural History, Smithsonian Institution	59116	
Museum of the American Indian,		

Heye Foundation	21/8275	
Banco Nacional de Costa Rica	866	
Museo Nacional de Costa Rica	14993	94
Musees Royaux d' Art et d' Historie	48.31.1	
Private Collection		96
Museum of the American Indian, Heye Foundation	7/3427	
Carnegie Museum of Natural History	2793/1486	
Musees Royaux d' Art et d' Historie	44.1	

Group 1a-Bound Prisoners

Private Collection		
Banco Nacional de Costa Rica	977	97
Museo Nacional de Costa Rica	6408	98

Group 1a-Figures with Trophy Heads

Private Collection		
Banco Nacional de Costa Rica	873	99
Museo de America, Madrid	3059	
Field Museum of Natural History, Chicago	no number	
Museo de America, Madrid	3061	

Group 1a-Miscellaneous Male Figures

Private Collection		101
Private Collection		
Museum of the American Indian, Heye Foundation	7/3438	
Museo Nacional de Costa Rica	22996	100
Private Collection		102
American Museum of Natural History	319268	103

Group 1a-Female Figures

Museum fur Volkukunde, Vienna	no number	
Museo Escolar Felix Olivares	no number	
Private Collection		106
Museo Nacional de Costa Rica	14820	105
The Brooklyn Museum	1690	
Private Collection		
Musees Royaux d' Art et d' Historie	48.31.2	
Museo de America, Madrid	24	
Museum of the American Indian,		

Heye Foundation	7/3429	104
Peabody Museum of Archaeology and Ethnology, Harvard University	no number	
Carnegie Museum of Natural History	2793/1488	

Figures with Arcs

Museo Nacional de Costa Rica	14926	107
Private Collection		

Group 1b-Warrior Figures

Museo Nacional de Costa Rica	no number	
Yale Univeristy Art Museum	1958.15.6	108
Field Museum of Natural History, Chicago	no number	
University of Pennsylvania Museum	no number	
Private Collection		109
Private Collection		
Museo Nacional de Costa Rica	14994	
Private Collection		
Private Collection		
Private Collection		
Museum of the American Indian, Heye Foundation	13/5364	
Museo Nacional de Costa Rica	no number	
Museo Nacional de Costa Rica	4824	
Instituto Nacional de Seguros, Museo del Jade	3872	
Museo Nacional de Costa Rica	10006	110
Museo Nacional de Costa Rica	10002	

Group 1b-Prisoner Figures

Private Collection		111
Museo Nacional de Costa Rica	no number	112

Group 1b-Female Figures

Banco Nacional de Costa Rica	981	114
Museo Nacional de Costa Rica	no number	113
Instituto Nacional de Seguros, Museo del Jade	6400	115
Instituto Nacional de Seguros, Museo del Jade	2541	

Group 1c-Anthropomorphic Figures

American Museum of Natural History	7094	117
National Museum of Natural History, Smithsonian Institution	60887	116
The Brooklyn Museum	15345	118
Museo Nacional de Costa Rica	22997	119
Museo Nacional de Costa Rica	no number	120
Museo Nacional de Costa Rica	no number	
National Museum of Natural History, Smithsonian Institution	60889	121
Carnegie Museum of Natural History	2793/1490	122
Museo Nacional de Costa Rica	116	123
Museum of the American Indian, Heye Foundation	7/8193	124
British Museum, London	no number	
Museum of the American Indian, Heye Foundation	7/4792	
Museum of the American Indian, Heye Foundation	22/9580	
American Museum of Natural History	7083	

Group 2a-Female Figures

American Museum of Natural History	1695	125
American Museum of Natural History	1696	
Banco Nacional de Costa Rica	863	126
Carnegie Museum of Natural History	243/2961	
Banco Nacional de Costa Rica	982	127
The Brooklyn Museum	7091	
American Museum of Natural History	7089	
The Brooklyn Museum	13175	
The Brooklyn Museum	1697	
Peabody Museum of Natural History, Yale University	2943/18764	

Group 2a-Male Figures

Banco Nacional de Costa Rica	1559	128
American Museum of Natural History	6818	
American Museum of Natural History	6819	
Museo Nacional de Costa Rica	12697	
American Museum of Natural History	7085	
The Brooklyn Museum	7101	
American Museum of Natural History	1686	130
National Museum of Natural History, Smithsonian Institution	61814	
Museum of the American Indian,		

Heye Foundation	7/3437	131
National Museum of Natural History, Smithsonian Institution	1196	
American Museum of Natural History	7086	
American Museum of Natural History	7098	
American Museum of Natural History	7102	129
Banco Nacional de Costa Rica	975	132
Private Collection		
National Museum of Natural History, Smithsonian Institution	61813	
Private Collection		
Banco Nacional de Costa Rica	884	

Group 2b-Female Figures

Museo Nacional de Costa Rica	20490	133
Peabody Museum of Archaeology and Ethnology, Harvard University	no number	
Museum of the American Indian, Heye Foundation	7/3431	
American Museum of Natural History	7100	
American Museum of Natural History	7088	

Group 2b-Male Figures

Museo Nacional de Costa Rica	14832	134
American Museum of Natural History	7096	
The Brooklyn Museum	7075	
American Museum of Natural History	7078	

Group 3a-Female Figures

Museo Nacional de Costa Rica	4775	135
The Brooklyn Museum	7095	140
Carnegie Museum of Natural History	2439/2956	136
Private Collection		
Banco Nacional de Costa Rica	978	
Carnegie Museum of Natural History	2439/2955	
Private Collection		
Museo Nacional de Costa Rica	121	137
Banco Nacional de Costa Rica	979	138
Banco Nacional de Costa Rica	974	139
Museum of the American Indian, Heye Foundation	23/5783	
Museum of the American Indian, Heye Foundation	7/3436	
National Museum of Natural History,		

Smithsonian Institution 247225

Group 3a-Male Figures

Private Collection		
Carnegie Museum of Natural History	2439/2954	141
Museum of the American Indian, Heye Foundation	7/3428	
The Brooklyn Museum	7074	145
The Royal Ethnographical Museum, Stockholm, Sweden	1900.3-1.39	
Museum of the American Indian, Heye Foundation	24/3067	144
Carnegie Museum of Natural History	2439/2968	
Carnegie Museum of Natural History	2439/2964	
Museum of the American Indian, Heye Foundation	4/900	
Museo de America, Madrid	3064	
Banco Nacional de Costa Rica	868	143
The Royal Ethnographical Museum, Stockholm, Sweden	no number	
Baltimore Museum of Art	no number	
Museum of the American Indian, Heye Foundation	7/3430	142
Instituto Nacional de Seguros, Museo del Jade	2542	
Private Collection		
Museum of the American Indian, Heye Foundation	7/3498	146
The Royal Ethnographical Museum, Stockholm, Sweden	no number	
Carnegie Museum of Natural History	2793/1491	
Museum of the American Indian, Heye Foundation	7/3436	147

Group 3b-Female Figures

Carnegie Museum of Natural History	2793/2099	148
American Museum of Natural History	no number	156
The Brooklyn Museum	6821	
The Brooklyn Museum	7092	
American Museum of Natural History	1688	150
American Museum of Natural History	10097	
The Royal Ethnographical Museum, Stockholm, Sweden	no number	
American Museum of Natural History	1692	
American Museum of Natural History	1039	
American Museum of Natural History	1691	154, 387
Carnegie Museum of Natural History	2439/2966	157

American Museum of Natural History	7092	
American Museum of Natural History	7093	
Banco Nacional de Costa Rica	990	
Museo Nacional de Costa Rica	2726	151
Carnegie Museum of Natural History	2793/1489	
The Brooklyn Museum	1587	
Banco Nacional de Costa Rica	964	
Private Collection		
Private Collection		

Group 3b-Male and Asexual Figures

Private Collection		
The Brooklyn Museum	1683	
The Royal Ethnographical Museum, Stockholm, Sweden	1900.3-1.37	152, 174
The Royal Ethnographical Museum, Stockholm, Sweden	1900.3-1.38	153, 175
The Royal Ethnographical Museum, Stockholm, Sweden	no number	
Carnegie Museum of Natural History	2439/2960	
Carnegie Museum of Natural History	2439/2969	
Carnegie Museum of Natural History	2439/2970	
The Royal Ethnographical Museum, Stockholm, Sweden	no number	
Carnegie Museum of Natural History	2439/2962	149
American Museum of Natural History	1681	159
Museum of the American Indian, Heye Foundation	7/8150	
The Royal Ethnographical Museum, Stockholm, Sweden	no number	
National Museum of Natural History, Smithsonian Institution	59119	
The Royal Ethnographical Museum, Stockholm, Sweden	no number	
The Brooklyn Museum	1680	
Carnegie Museum of Natural History	2439/2953	158
The Brooklyn Museum	7076	
Private Collection		
Peabody Museum of Archaeology and Ethnology, Harvard University	no number	
National Museum of Natural History, Smithsonian Institution	no number	

Group 3c

Private Collection		160
Museum of the American Indian, Heye Foundation	19/531	162

Museum of the American Indian, Heye Foundation	57/898	
Museum of the American Indian, Heye Foundation	19/529	
The Royal Ethnographical Museum, Stockholm, Sweden	no number	
Musees Royaux d'Art et d'Histoire	44.16	
Carnegie Museum of Natural History	2793/1492	
Banco Nacional de Costa Rica	964	161

APPENDIX D

Other Ceremonial Objects

<u>MUSEUM COLLECTION</u>	<u>CATALOG NUMBER</u>	<u>FIGURE NO. OF THIS STUDY</u>
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Simple Tripod Grinding Stones, Costa Rica

The Brooklyn Museum	2835	
The Brooklyn Museum	2885	
Museum of the American Indian, Heye Foundation	7/3462	176
Museo Nacional de Costa Rica	No Number	
Museo Nacional de Costa Rica	No Number	
American Museum of Natural History	6865	
American Museum of Natural History	11405	

Simple Tripod Grinding Stones, Panama

Private Collection		
Museo Nacional de Costa Rica	No Number	
American Museum of Natural History	2834	
Peabody Museum of Natural History, Yale University	1313/98	
Peabody Museum of Natural History, Yale University	1313/49	177
Peabody Museum of Natural History, Yale University	1313/92	
Peabody Museum of Natural History, Yale University	1193/53	181
Museo del Hombre Panamaneo	AL-9-00016	180
Museum of the American Indian, Heye Foundation	22/8332	
Private Collection		
Museo del Hombre Panamaneo	No Number	179
Museum of the American Indian, Heye Foundation	23/4859	
Peabody Museum of Archaeology and Ethnology, Harvard University	No Number	178
Private Collection		
Museo Escuela Felix Olivares	No Number	

Tripod Metates with Low Rims, Notches, and Trophy Heads, Costa Rica

American Museum of Natural History	12470	
The Brooklyn Museum	11400	
The Brooklyn Museum	12472	
National Museum of Natural History, Smithsonian Institution	97713	
Carnegie Museum of Natural History	2793/1453	
The Brooklyn Museum	26.685	
The Brooklyn Museum	31.900	

The Brooklyn Museum	31.900	
Universidad de Costa Rica	No Number	184
Universidad de Costa Rica	No Number	185
Peabody Museum of Natural History, Yale University	2943/18084	
Banco Nacional de Costa Rica	932	186
The Brooklyn Museum	7026	
Carnegie Museum of Natural History	2439/3198	187
Carnegie Museum of Natural History	2439/21A	
Museo Nacional de Costa Rica	14575	
Field Museum of Natural History, Chicago	No Number	
The Brooklyn Museum	34.5276	
National Museum of Natural History, Smithsonian Institution	18121	
Banco Nacional de Costa Rica	1470	
Museo Nacional de Costa Rica	No Number	183
Banco Nacional de Costa Rica	1469	
Museo Nacional de Costa Rica	No Number	188
Banco Nacional de Costa Rica	1466	191
National Museum of Natural History, Smithsonian Institution	60873	192
Museo Nacional de Costa Rica	No Number	182
Museo Nacional de Costa Rica	No Number	182
Museo Nacional de Costa Rica	No Number	182
Museo Nacional de Costa Rica	No Number	189
Museo Nacional de Costa Rica	No Number	190
American Museum of Natural History	12524	
Universidad de Costa Rica	No Number	
Carnegie Museum of Natural History	2439/3045	
Carnegie Museum of Natural History	2439/3048	

Grinding Stones with Drum Base or Slab Legs, Panama

Peabody Museum of Natural History, Yale University	3034-618	196
Peabody Museum of Natural History, Yale University	1313-47	195
Peabody Museum of Natural History, Yale University	1313-39	193
Private Collection		
Peabody Museum of Natural History, Yale University	1132-44	194

Grinding Stones with Drum Base or Slab Legs, Costa Rica

American Museum of Natural History	7012	
The Brooklyn Museum	1748	
American Museum of Natural History	7014	
The Brooklyn Museum	7013	

Metates with Lower Appendages, Panama

Museo del Hombre Panamaneó	1A1-9-00080	201
Museo del Hombre Panamaneó	1AL-9-00082	199
Museo del Hombre Panamaneó	1AL-9-00070	200
Museo del Hombre Panamaneó	No Number	198

Metates with Lower Appendages, Costa Rica

Museo Nacional de Costa Rica	No Number	
Museo Nacional de Costa Rica	21916	197
Museo de America, Madrid	1463	
National Museum of Natural History, Smithsonian Institution	377465	

Marimba Metates, Panama

Museum of the American Indian, Heye Foundation	28/6735	205
American Museum of Natural History	30.0/5332	

Marimba Metates, Costa Rica

Instituto Nacional de Seguros, Museo del Jade	4120	203
Museo Nacional de Costa Rica	20.895	202
Museo Nacional de Costa Rica	No Number	
Instituto Nacional de Seguros, Museo del Jade	3915	
Instituto Nacional de Seguros, Museo del Jade	3494	204
Banco Nacional de Costa Rica	914	
Private Collection		

Simple Flying Panel Altars, Panama

Museo del Hombre Panamaneó	1AL-9-00104	
Museo del Hombre Panamaneó	1AL-9-00050	
Museo del Hombre Panamaneó	25-AL-V	208
Yale University Art Gallery	1973.88.3	
Museo del Hombre Panamaneó	1AL-9-00093	207
Museum of the American Indian, Heye Foundation	22/9431	206
Museo del Hombre Panamaneó	1AL-9-00086	
Museo del Hombre Panamaneó	No Number	
Museo del Hombre Panamaneó	56	
Peabody Museum of Natural History, Harvard University	40-35-20/7672	
Peabody Museum of Natural History,		

Harvard University	37-49-20/5042	
Collection Unknown		209

Simple Flying Panel Altars, Costa Rica

Museum of the American Indian, Heye Foundation	24/9307	
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Elaborate Flying Panel Altars, Costa Rica

Instituto Nacional de Seguros, Museo del Jade	306	
Instituto Nacional de Seguros, Museo del Jade	4388	210
Instituto Nacional de Seguros, Museo del Jade	4259	
Instituto Nacional de Seguros, Museo del Jade	4123	
Instituto Nacional de Seguros, Museo del Jade	73981	211
Instituto Nacional de Seguros, Museo del Jade	308	
Banco Nacional de Costa Rica	931	
Banco Nacional de Costa Rica	1557	
Banco Nacional de Costa Rica	927	
Banco Nacional de Costa Rica	1568	213
Banco Nacional de Costa Rica	923	
Banco Nacional de Costa Rica	1569	217
Museum of the American Indian, Heye Foundation	23/5782	
Musees Royaux d'Art et d'Histoire	AAM48.18.2	
The Brooklyn Museum	73.152.1	
Museo Nacional de Costa Rica	23009	216
Museo Nacional de Costa Rica	25679	212
Museo Nacional de Costa Rica	15150	214
Museo Nacional de Costa Rica	20787	219
Museo Nacional de Costa Rica	20786	
Museo Nacional de Costa Rica	No Number	
Museo Nacional de Costa Rica	20788	220
Museo Nacional de Costa Rica	24084	221
Metropolitan Museum of Art	No Number	
New Orleans Museum of Art	67.34	218
Private Collection		
Private Collection		
Private Collection		
Collection Unknown		215

Barriles Ceremonial Grinding Stones, Panama

Museo del Hombre Panamaneó	1AL-4-00009	222
Museo del Hombre Panamaneó	1AL-4-00017	223
Museo del Hombre Panamaneó	1AL-4-00018	223
Museo del Hombre Panamaneó	1AL-4-00019	223
Museo del Hombre Panamaneó	AL-9-00054	228
Museo del Hombre Panamaneó	AL-00046	229
Museo del Hombre Panamaneó	1AL-9-00092	230
Location Unknown		224, 225
Museo Escuela Felix Olivares	No Number	226
Museo Escuela Felix Olivares	No Number	
National Museum of Natural History Smithsonian Institution	98584	227

Tetrapod Grinding Stones/Stools, Costa Rica

Museum of the American Indian, Heye Foundation	7/9873	238
Museum of the American Indian, Heye Foundation	7/3460	
Museum of the American Indian, Heye Foundation	7/9861	
Museum of the American Indian, Heye Foundation	7/8188	
The Brooklyn Museum	34.5024	
The Brooklyn Museum	12526	
The Brooklyn Museum	31.907	
The Brooklyn Museum	34.5108	
The Brooklyn Museum	7046	
The Brooklyn Museum	7028	
American Museum of Natural History	1747	
American Museum of Natural History	30.0/1525	
American Museum of Natural History	30.0/750	
American Museum of Natural History	13185	
American Museum of Natural History	7044	
American Museum of Natural History	7050	
American Museum of Natural History	12475	235
American Museum of Natural History	13182	
Banco Nacional de Costa Rica	925	
Banco Nacional de Costa Rica	919	239
Banco Nacional de Costa Rica	922	
Banco Nacional de Costa Rica	1273	231
Banco Nacional de Costa Rica	1528	232
Banco Nacional de Costa Rica	1526	234
Banco Nacional de Costa Rica	994	
Banco Nacional de Costa Rica	918	237
Carnegie Museum of Natural History	2439/3037	
Carnegie Museum of Natural History	2439/3036	
National Museum of Natural History, Smithsonian Institution	1194	
National Museum of Natural History,		

Smithsonian Institution	61773	
National Museum of Natural History, Smithsonian Institution	280992	
Musees Royaux d'Art et d'Histoire	AAM48.18.15	
Peabody Museum of Natural History, Yale University	2943/18762	
Museo Nacional de Costa Rica	14884	
Museo Nacional de Costa Rica	18644	
Museo Nacional de Costa Rica	18616	233
Museo Nacional de Costa Rica	21838	236
British Museum, London	No Number	
Univeridad de Costa Rica Collection	No Number	
University of Pennsylvania Museum	No Number	
Museo de America, Madrid	1462	
Instituto Nacional de Seguros, Museo del Jade	4112	
Banco Nacional de Costa Rica	992	
American Museum of Natural History	12474	

Circular Stands/Atlantean, Panama

Peabody Museum of Natural History, Yale University	342/62	268
Peabody Museum of Natural History, Yale University	1193/61	
Peabody Museum of Natural History, Yale University	342-72-286	273
Peabody Museum of Natural History, Yale University	1098-284	274
Peabody Museum of Natural History, Yale University	1098-215	275
Peabody Museum of Natural History, Yale University	1098-283	
Peabody Museum of Natural History, Yale University	1098-1214	
Peabody Museum of Natural History, Yale University	1132-287	
Peabody Museum of Natural History, Yale University	4425-12484	
Peabody Museum of Natural History, Yale University	342-62-285	
Peabody Museum of Natural History, Yale University	1132-288	
Museo del Hombre Panamaneo	60-AL-CH	
Museo del Hombre Panamaneo	AL-9-00007	271
Museo del Hombre Panamaneo	81-AL-CH	
National Museum of Natural History, Smithsonian Institution	132334	269
Portland Art Museum	No Number	
Field Museum of Natural History	191594	
Carnegie Museum of Natural History	No Number	
American Museum of Natural History	30/8425	276

American Museum of Natural History	30/5310	
Museo Escuela Felix Olivares	No Number	
Private Collection		
Private Collection		
Private Collection		
National Museum of Natural History, Smithsonian Institution	131478	272
National Museum of Natural History, Smithsonian Institution	131479	

Circular Stands/Atlantean, Costa Rica

The Brooklyn Museum	12477	
The Brooklyn Museum	6909	
The Brooklyn Museum	1834	
Museo Nacional de Costa Rica	110	241
Museo Nacional de Costa Rica	14943	245
Museo Nacional de Costa Rica	20446	270
Banco Nacional de Costa Rica	933	242
Banco Nacional de Costa Rica	930	243
Carnegie Museum of Natural History	2439/3076	
Carnegie Museum of Natural History	2793/2085	
Carnegie Museum of Natural History	2792/566	277
Museum of the American Indian, Heye Foundation	16/9711	240
Museum of the American Indian, Heye Foundation	7/3465	244
Museum of the American Indian, Heye Foundation	7/3492	
Museum of the American Indian, Heye Foundation	3/3522	
Private Collection		
American Museum of Natural History	7062	
American Museum of Natural History	6848	
American Museum of Natural History	14417	
British Museum, London	No Number	
British Museum, London	No Number	
Instituto Nacional de Seguros, Museo del Jade	6386	
Instituto Nacional de Seguros, Museo del Jade	4260	
The Royal Ethnographical Museum, Stockholm, Sweden	111	
Peabody Museum of Natural History, Yale University	2943/18680	

Circular Stands/Trophy Head, Panama

National Museum of Natural History, Smithsonian Institution	132744	259
National Museum of Natural History, Smithsonian Institution	115352	260

National Museum of Natural History, Smithsonian Institution	248536	
National Museum of Natural History, Smithsonian Institution	109762	
Museo del Hombre Panamaneó	1AL-X-00001	265
Museo del Hombre Panamaneó	AL-4-00009	
Private Collection		261
Private Collection		267
Private Collection		
Private Collection		
Museum of the American Indian, Heye Foundation	7054	262
Museum of the American Indian, Heye Foundation	4/3191	
Museum of the American Indian, Heye Foundation	8286	264
Museum of the American Indian, Heye Foundation	7053	266
Peabody Museum of Archaeology and Ethnology, Harvard University	No Number	
Peabody Museum of Natural History, Yale University	1098/88	
Peabody Museum of Natural History, Yale University	1132/59	263
Peabody Museum of Natural History, Yale University	1132-58	
Peabody Museum of Natural History, Yale University	1313-60	

Circular Stands/Trophy Head, Costa Rica

American Museum of Natural History	No Number	256
American Museum of Natural History	30/8459	
American Museum of Natural History	E-66-C	246
American Museum of Natural History	7069	255
American Museum of Natural History	30/10906	
Collection Unknown		
Collection Unknown		
Collection Unknown		
The Royal Ethnographical Museum, Stockholm, Sweden	104	
The Royal Ethnographical Museum, Stockholm, Sweden	106	
The Royal Ethnographical Museum, Stockholm, Sweden	110	
The Royal Ethnographical Museum, Stockholm, Sweden	105	247
The Brooklyn Museum	7063	
The Brooklyn Museum	31.1691	
The Brooklyn Museum	31.1688	
Carnegie Museum of Natural History	2439/3066	250
Carnegie Museum of Natural History	2439/3065	250
Carnegie Museum of Natural History	2439/3061	251

Carnegie Museum of Natural History	2439/3058	
Carnegie Museum of Natural History	2439/3059	251
Carnegie Museum of Natural History	2439/3060	
Carnegie Museum of Natural History	2439/3056	254
Carnegie Museum of Natural History	2439/3054	257
Carnegie Museum of Natural History	2439/3057	
Museo Nacional de Costa Rica	14387	252
Museo Nacional de Costa Rica	108	258
Museo Nacional de Costa Rica	6384	
Museo Nacional de Costa Rica	4134	249
Museum of the American Indian, Heye Foundation	19/521	
Museum of the American Indian, Heye Foundation	19/6649	
Museo de America, Madrid	1453	
British Museum, London	No Number	
University of Pennsylvania Museum	No Number	
Instituto Nacional de Seguros, Museo del Jade	6420	253
The Brooklyn Museum	6850	248

Pot Ring Rests, Costa Rica

American Museum of Natural History	6847	
American Museum of Natural History	6844	
American Museum of Natural History	1740	280
American Museum of Natural History	6845	
American Museum of Natural History	1741	281
American Museum of Natural History	6843	
American Museum of Natural History	7065	
American Museum of Natural History	7073	
American Museum of Natural History	6846	
Museum of the American Indian, Heye Foundation	7/3467	278
Museum of the American Indian, Heye Foundation	7/8174	
Museum of the American Indian, Heye Foundation	7/3468	
Museum of the American Indian, Heye Foundation	7/3851	
Museum of the American Indian, Heye Foundation	7/3495	282
Museum of the American Indian, Heye Foundation	19/520	283
Banco Nacional de Costa Rica	970	
The Brooklyn Museum	2836	
National Museum of Natural History, Smithsonian Institution	59184	
The Royal Ethnographical Museum, Stockholm, Sweden	No Number	
The Brooklyn Museum	6885	279

Bowls with Figural Supports, Costa Rica

Museo Nacional de Costa Rica	10402	292
Museo Nacional de Costa Rica	14934	293
Carnegie Museum of Natural History	2439/3049	284
Carnegie Museum of Natural History	2439/3079	
Carnegie Museum of Natural History	2793/2083	
Carnegie Museum of Natural History	2439/3050	
Museum of the American Indian, Heye Foundation	7/3497	285
Museum of the American Indian, Heye Foundation	23/7291	289
Museum of the American Indian, Heye Foundation	1872	
Museum of the American Indian, Heye Foundation	7/3496	
American Museum of Natural History	6861	290
American Museum of Natural History	7021	291
The Brooklyn Museum	6862	
Private Collection		
Private Collection		
Private Collection		
Musees Royaux d'Art et d'Histoire	AAM.49.10	
Banco Nacional de Costa Rica	902	
Banco Nacional de Costa Rica	907	
Peabody Museum of Archaeology and Ethnology, Harvard University	No Number	
The Brooklyn Museum	7043	286
Museum of the American Indian, Heye Foundation	7/4153	287
American Museum of Natural History	7042	288

Grave Markers, Costa Rica

American Museum of Natural History	7006	294
American Museum of Natural History	6996	300
American Museum of Natural History	7000	298
American Museum of Natural History	7008	302
American Museum of Natural History	7001	
American Museum of Natural History	7004	303
American Museum of Natural History	6995	
American Museum of Natural History	No Number	
The Brooklyn Museum	6999	297
The Brooklyn Museum	6995	
The Brooklyn Museum	7009	301
The Brooklyn Museum	6997	
The Brooklyn Museum	7007	
The Brooklyn Museum	7002	
The Brooklyn Museum	7005	
The Brooklyn Museum	2918	
The Brooklyn Museum	6998	

Staatliches Museum fur Volkukunde	No Number	
Museo Nacional de Costa Rica	104	296
Museo Nacional de Costa Rica	23002	299
Museo Nacional de Costa Rica	No Number	
Museo Nacional de Costa Rica	23017	295
Museum of the American Indian, Heye Foundation	No Number	

Chacmool Figures and Related Objects, Costa Rica

American Museum of Natural History	15346	308
Collection Unknown		
Museo Nacional de Costa Rica	No Number	304
Museo Nacional de Costa Rica	No Number	306
Museo Nacional de Costa Rica	No Number	
Museo Nacional de Costa Rica	No Number	
National Museum of Natural History, Smithsonian Institution	179120	305
Private Collection		307

Vases and Containers, Costa Rica

Museo Nacional de Costa Rica	18646	313
Museo Nacional de Costa Rica	12628	311
Museo Nacional de Costa Rica	2932	310
Museo Nacional de Costa Rica	No Number	
Museo Nacional de Costa Rica	No Number	
Museo Nacional de Costa Rica	No Number	
National Museum of Natural History, Smithsonian Institution	2347	
Carnegie Museum of Natural History	2438/1399	312
Carnegie Museum of Natural History	2439/3075	309
Museum of the American Indian, Heye Foundation	7/4154	

APPENDIX E

Seated Figures, Costa Rica

<u>MUSEUM COLLECTION</u>	<u>CATALOG NUMBER</u>	<u>FIGURE NO. OF THIS STUDY</u>
<u>Group 1a</u>		
Museum of the American Indian, Heye Foundation	7/3433	316
Private Collection		326
Private Collection		
Private Collection		
Carnegie Museum of Natural History	2439/2952	318
The Brooklyn Museum	31.144	
Museo Nacional de Costa Rica	No Number	
Instituto Nacional de Seguros, Museo del Jade	3865	
Instituto Nacional de Seguros, Museo del Jade	3151	
Banco Nacional de Costa Rica	986	317
Banco Nacional de Costa Rica	875	315
Banco Nacional de Costa Rica	883	
Banco Nacional de Costa Rica	967	
Banco Nacional de Costa Rica	969	
Museo Nacional de Costa Rica	12.889	
<u>Group 1b</u>		
Instituto Nacional de Seguros, Museo del Jade	3867	319
American Museum of Natural History	6805	320
American Museum of Natural History	14436	
The Brooklyn Museum	1702	
<u>Group 2a</u>		
Banco Nacional de Costa Rica	973	322
Banco Nacional de Costa Rica	876	
Banco Nacional de Costa Rica	971	323
The Brooklyn Museum	14439	
The Brooklyn Museum	14437	
The Brooklyn Museum	7104	
American Museum of Natural History	1709	321
American Museum of Natural History	6813	
Museo Nacional de Costa Rica	20.803	
Museo Nacional de Costa Rica	4829	324

Museo Nacional de Costa Rica	23101	
Anchorage Historical and Fine Arts Museum	79.108.83	
Carnegie Museum of Natural History	2439/2937	327
Instituto Nacional de Seguros, Museo del Jade	6408	

Group 2b

Banco Nacional de Costa Rica	882	328
Banco Nacional de Costa Rica	984	325
Banco Nacional de Costa Rica	965	314
Banco Nacional de Costa Rica	870	
Banco Nacional de Costa Rica	966	332
Private Collection		
Private Collection		
Private Collection		
Private Collection		
Private Collection		331
Private Collection		
Anchorage Historical and Fine Arts Museum	79.108.13	
Collection Unknown		
American Museum of Natural History	No Number	
Museo Nacional de Costa Rica	11689	
Museo Nacional de Costa Rica	12.501	
The Royal Ethnographical Museum, Stockholm, Sweden	No Number	
National Museum of Natural History, Smithsonian Institution	247224	
National Museum of Natural History, Smithsonian Institution	61771	
National Museum of Natural History, Smithsonian Institution	377460	
Instituto Nacional de Seguros, Museo del Jade	3327	
Instituto Nacional de Seguros, Museo del Jade	830	
Musees Royoux d'Art et d'Histoire, Museum of the American Indian, Heye Foundation	AAM48.2.8 15/7448	329
Museum of the American Indian, Heye Foundation	7/3445	
Baltimore Museum of Art	No Number	
Carnegie Museum of Natural History	2439/2936	330
Carnegie Museum of Natural History	2439/2939	333
Carnegie Museum of Natural History	2439/2940	
Carnegie Museum of Natural History	2439/14A	
Carnegie Museum of Natural History	2439/2929	

Group 3a

Banco Nacional de Costa Rica	865	334
Instituto Nacional de Seguros, Museo del Jade	835	

Instituto Nacional de Seguros, Museo del Jade	828	
Instituto Nacional de Seguros, Museo del Jade	3251	
The Royal Ethnographical Museum, Stockholm, Sweden	No Number	
The Royal Ethnographical Museum, Stockholm, Sweden	No Number	
The Royal Ethnographical Museum, Stockholm, Sweden	No Number	
The Royal Ethnographical Museum, Stockholm, Sweden	No Number	
The Royal Ethnographical Museum, Stockholm, Sweden	No Number	
Peabody Museum of Natural History, Yale University	2943/18765	337
Peabody Museum of Archaeology and Ethnology, Havard University Private Collection	No Number	
Museo Nacional de Costa Rica	No Number	
Museo Nacional de Costa Rica	2791	339
Museo de America, Madrid	3069	336
Carnegie Museum of Natural History	2434/2934	335
Carnegie Museum of Natural History	No Number	
Carnegie Museum of Natural History	2439/2935	338
Carnegie Museum of Natural History	2439/2932	
Carnegie Museum of Natural History	2439/2928	
Carnegie Museum of Natural History	2439/2931	
Museum of the American Indian, Heye Foundation	7/3500	340
American Museum of Natural History	7108	

Group 3b

Museum of the American Indian, Heye Foundation	5/899	341
Museum of the American Indian, Heye Foundation	No Number	
Peabody Museum of Natural History, Yale University	2943/1866	342
American Museum of Natural History	30/8455	
American Museum of Natural History	30/11854	
American Museum of Natural History	1704	
American Museum of Natural History	6811	
American Museum of Natural History	7111	
American Museum of Natural History	300/1526	
American Museum of Natural History	13174	
Carnegie Museum of Natural History	2439/2925	
Carnegie Museum of Natural History	No Number	
Carnegie Museum of Natural History	2439/2915	
Carnegie Museum of Natural History	2439/2933	
Carnegie Museum of Natural History	2439/2923	
Carnegie Museum of Natural History	2439/2927	

Field Museum of Natural History	191608	343
Field Museum of Natural History	No Number	
National Museum of Natural History, Smithsonian Institution	59120	344
Private Collection		

Group 3c

National Museum of Natural History, Smithsonian Institution	61803	346
National Museum of Natural History, Smithsonian Institution	61804	347
National Museum of Natural History, Smithsonian Institution	60892	
National Museum of Natural History, Smithsonian Institution	61806	
American Museum of Natural History	No Number	345
The Royal Ethnographical Museum, Stockholm, Sweden	1900.3-1.1117	
The Royal Ethnographical Museum, Stockholm, Sweden	1900.3-118	
The Royal Ethnographical Museum, Stockholm, Sweden	1900.3-119	
The Royal Ethnographical Museum, Stockholm, Sweden	1900.3-1.130b	
The Royal Ethnographical Museum, Stockholm, Sweden	No Number	
Carnegie Museum of Natural History	2793/1494	348
Carnegie Museum of Natural History	2438/2972	
Carnegie Museum of Natural History	2793/1493	
Guayabo Park	No Number	349a
Guayabo Park	No Number	349b
Guayabo Park	No Number	349c
Guayabo Park	No Number	349d
Guayabo Park	No Number	349e
Guayabo Park	No Number	
Guayabo Park	No Number	
Guayabo Park	No Number	
Guayabo Park	No Number	

APPENDIX F

Individual Heads, Costa Rica

<u>MUSEUM COLLECTION</u>	<u>CATALOG NUMBER</u>	<u>FIGURE NO. OF THIS STUDY</u>
<u>Group 1a</u>		
Instituto Nacional de Seguros, Museo del Jade	4082	351
Instituto Nacional de Seguros, Museo del Jade	3870	
American Museum of Natural History	14427	350
American Museum of Natural History	7137	
American Museum of Natural History	14429	
American Museum of Natural History	1717	353
American Museum of Natural History	14449	
Carnegie Museum of Natural History	No Number	
Carnegie Museum of Natural History	2793/2107	354
Carnegie Museum of Natural History	2793/1500	
National Museum of Natural History, Smithsonian Institution	60884	352
The Brooklyn Museum	14447	
<u>Group 1b</u>		
Instituto Nacional de Seguros, Museo del Jade	3485	356
Instituto Nacional de Seguros, Museo del Jade	3483	
Instituto Nacional de Seguros, Museo del Jade	3794	
The Brooklyn Museum	7148	355
The Brooklyn Museum	7136	357
National Museum of Natural History, Smithsonian Institution	60885	
Museo Nacional de Costa Rica	35001	
Museo Nacional de Costa Rica	2866	358
American Museum of Natural History	30/8466	
<u>Group 2a</u>		
Museum of the American Indian, Heye Foundation	1/9749	359
American Museum of Natural History	30.0/762	
American Museum of Natural History	14448	
Museo Nacional de Costa Rica	24195	360
Museo Nacional de Costa Rica	21369	362

The Royal Ethnographical Museum, Stockholm, Sweden	No Number	
Carnegie Museum of Natural History	2439/2982	
Carnegie Museum of Natural History	2793/1498	361
Carnegie Museum of Natural History	2439/22A	
Carnegie Museum of Natural History	2793/2112	
Collection Unknown		

Group 3a

Carnegie Museum of Natural History	2439/2981	363
Carnegie Museum of Natural History	2793/1496	
The Royal Ethnographical Museum, Stockholm, Sweden	1900.3-1.41	365
The Royal Ethnographical Museum, Stockholm, Sweden	1900.3-1.41	
The Royal Ethnographical Museum, Stockholm, Sweden	1900.3-1.121	
The Royal Ethnographical Museum, Stockholm, Sweden	No Number	
Museum of the American Indian, Heye Foundation	3/3127	
American Museum of Natural History	2841	364
American Museum of Natural History	6840	366
American Museum of Natural History	300/1433	367
American Museum of Natural History	7130	368
American Museum of Natural History	7132	
American Museum of Natural History	7133	
The Brooklyn Museum	7134	
Private Collection		
Private Collection		

Group 3b

American Museum of Natural History	1735	371
American Museum of Natural History	7135	
American Museum of Natural History	7131	
American Museum of Natural History	7122	
American Museum of Natural History	303/1013	
American Museum of Natural History	6834	369
American Museum of Natural History	7121	370
American Museum of Natural History	1736	
American Museum of Natural History	1738	
American Museum of Natural History	1729	373
American Museum of Natural History	6829	374
American Museum of Natural History	6835	375
American Museum of Natural History	6826	
American Museum of Natural History	6839	
American Museum of Natural History	7632	
American Museum of Natural History	6823	376
American Museum of Natural History	30/8458	
American Museum of Natural History	300/5816	
The Brooklyn Museum	6836	

The Brooklyn Museum	7117	
The Brooklyn Museum	34.5161	377
The Brooklyn Museum	7123	
The Brooklyn Museum	6828	
Carnegie Museum of Natural History	2439/2980	
Carnegie Museum of Natural History	No Number	
Carnegie Museum of Natural History	2439/2978	381
Carnegie Museum of Natural History	2439/2979	378
Carnegie Museum of Natural History	2793/2108	
Carnegie Museum of Natural History	2793/2110	
Carnegie Museum of Natural History	2439/2986	
Carnegie Museum of Natural History	2793/2111	
Carnegie Museum of Natural History	2439/2989	
Carnegie Museum of Natural History	2792/541	
Carnegie Museum of Natural History	No Number	
Carnegie Museum of Natural History	2439/2983	
Carnegie Museum of Natural History	2793/1499	
Instituto Nacional de Seguros, Museo del Jade	3862	
Museum of the American Indian, Heye Foundation	7/3449	372
Museum of the American Indian, Heye Foundation	24/3067	
Museum of the American Indian, Heye Foundation	15/3550	380
Museum of the American Indian, Heye Foundation	21/9040	379
Private Collection		382
Private Collection		
Field Museum of Natural History	No Number	
Field Museum of Natural History	No Number	
Field Museum of Natural History	No Number	
Collection Unknown		
Museo Nacional de Costa Rica	7701	
Museo Nacional de Costa Rica	2863	
Museo Nacional de Costa Rica	6525	
The Royal Ethnographical Museum, Stockholm, Sweden	No Number	
The Royal Ethnographical Museum, Stockholm, Sweden	No Number	
The Royal Ethnographical Museum, Stockholm, Sweden	No Number	
The Royal Ethnographical Museum, Stockholm, Sweden	No Number	
The Royal Ethnographical Museum, Stockholm, Sweden	1900.3-1-130	
National Museum of Natural History, Smithsonian Institution	97715	

APPENDIX G

Other Figural Images

<u>MUSEUM COLLECTION</u>	<u>CATALOG NUMBER</u>	<u>FIGURE NO. OF THIS STUDY</u>
<u>Capellades Figures, Costa Rica</u>		
American Museum of Natural History	6465	383, 155
American Museum of Natural History	10862	
American Museum of Natural History	6460	
American Museum of Natural History	6466	
American Museum of Natural History	10864	
American Museum of Natural History	10865	
American Museum of Natural History	300/1375	
American Museum of Natural History	6467	384
American Museum of Natural History	6472	385
American Museum of Natural History	6473	
American Museum of Natural History	6478	386
American Museum of Natural History	6476	
The Brooklyn Museum	6463	
The Brooklyn Museum	6464	
The Brooklyn Museum	6462	
The Brooklyn Museum	6471	
The Brooklyn Museum	6469	
Museum of the American Indian, Heye Foundation	1/9731	
Museum of the American Indian, Heye Foundation	1/9732	
Museo Nacional de Costa Rica	18.642	

Animal Figures and Animal Heads, Costa Rica

Museum of the American Indian, Heye Foundation	7/8159	
Museum of the American Indian, Heye Foundation	22/1639	
American Museum of Natural History	7080	
American Museum of Natural History	7144	391
The Brooklyn Museum	7112	
The Brooklyn Museum	7142	
The Brooklyn Museum	7150	
The Brooklyn Museum	7138	
The Brooklyn Museum	7149	
The Brooklyn Museum	7143	
Carnegie Museum of Natural History	No Number	
Carnegie Museum of Natural History	2793/1514	390
Carnegie Museum of Natural History	2793/1515	

Carnegie Museum of Natural History	2793/1513	
Private Collection		392
Private Collection		
Private Collection		
Museo Nacional de Costa Rica		
Museo Nacional de Costa Rica	23100	
Museum of the American Indian, Heye Foundation	22/1639	
The Royal Ethnographical Museum, Stockholm, Sweden	1900.3-1-131	
The Royal Ethnographical Museum, Stockholm, Sweden	1900.3-1.27	
Peabody Museum of Natural History, Yale University	2943/18679	
Carnegie Museum of Natural History	2792/412	389
Carnegie Museum of Natural History	2439/2953	388
Field Museum of Natural History, Chicago	49168	
The Brooklyn Museum	1699	
The Brooklyn Museum	6822	
The Brooklyn Museum	7113	
Carnegie Museum of Natural History	2439/2963	

Figural Images, Chiriqui, Panama

National Museum of Natural History, Smithsonian Institution	248537	410
National Museum of Natural History, Smithsonian Institution	98600	
Private Collection		
Peabody Museum of Natural History, Yale University	1132-63	
Peabody Museum of Natural History, Yale University	1193-66	
Peabody Museum of Natural History, Yale University	1132-42	
Peabody Museum of Natural History, Yale University	1132-41	
Peabody Museum of Natural History, Yale University	1193-67	
Peabody Museum of Natural History, Yale University	1193-65	
Museo del Hombre Panamaneó	1AL-00002	411
Museo del Hombre Panamaneó	30-AL-CH	
Museo del Hombre Panamaneó	1AL-4-00001	
Museum of the American Indian, Heye Foundation	24/624	
The Brooklyn Museum	34.2894	404
The Brooklyn Museum	No Number	
Museo Escuela Felix Olivares	No Number	405
Museo Escuela Felix Olivares	No Number	

Venus Images, Panama

Peabody Museum of Natural History, Yale University	1132-64	
Yale University Art Gallery	302-292	400
Museo del Hombre Panamaneó	313-AL-V	402
National Museum of Natural History, Smithsonian Institution	98599	401
Villalba Island	No Number	403

Figural Images, Barriles, Panama

Museo Escuela Felix Olivares	No Number	
Museo del Hombre Panamaneó	1AL-4-00010	394
Museo del Hombre Panamaneó	1AL-4-00011	395
Museo del Hombre Panamaneó	1AL-4-00013	
Museo del Hombre Panamaneó	1AL-4-00025	
Museo del Hombre Panamaneó	1AL-4-00006	
Museo del Hombre Panamaneó	1AL-4-00026	
Museo del Hombre Panamaneó	1AL-4-00008	393
Museo del Hombre Panamaneó	1AL-4-00009	
Museo del Hombre Panamaneó	1AL-4-00022	
Museo del Hombre Panamaneó	1AL-4-00033	396
Museo del Hombre Panamaneó	1AL-4-00015	
Museo del Hombre Panamaneó	1AL-4-00012	
Museo del Hombre Panamaneó	1AL-4-00002	397
San Vito die Java		398
Metropolitan Museum of Art	No Number	399

Figural Images, El Cano/Cocle, Panama

Museo del Hombre Panamaneó	No Number	
Museo del Hombre Panamaneó	282-AL-C	
Museo del Hombre Panamaneó	No Number	
Museo del Hombre Panamaneó	No Number	
Museo del Hombre Panamaneó	77-AL-C	407
Museo del Hombre Panamaneó	78-AL-C	
Museo del Hombre Panamaneó	76-AL-C	
Museo del Hombre Panamaneó	1AL-2-00003	406
Museo del Hombre Panamaneó	1AL-2-00001	
Reitberg Museum, Zurich	No Number	
Museum of the American Indian, Heye Foundation	14/6205	
Museum of the American Indian, Heye Foundation	14/6217	
Museum of the American Indian, Heye Foundation	14/6043	
Museum of the American Indian, Heye Foundation	14/6008	409
Museum of the American Indian, Heye Foundation	14/5170	
Museum of the American Indian,		

Heye Foundation	14/5169	408
Museum of the American Indian, Heye Foundation	14/6009	
Museum of the American Indian, Heye Foundation	14/5171	
Museum of the American Indian, Heye Foundation	14/5167	
Museum of the American Indian, Heye Foundation	14/6007	
Museum of the American Indian, Heye Foundation	14/6006	
Museum of the American Indian, Heye Foundation	14/9746	
Museum of the American Indian, Heye Foundation	14/5168	
Museum of the American Indian, Heye Foundation	14/6093	
Museum of the American Indian, Heye Foundation	No Number	

Figural Images Related to El Cano, Panama

Banco Nacional de Costa Rica	1659
Villalba Island	No Number

Figures



Figure 1: Map of Archaeological Regions of Costa Rica and Panama.



Figure 2: Map of Important Archaeological Sites in Costa Rica and Panama.

ARCHAEOLOGICAL PERIODS and PHASES						
Dates	Santa Fe Seminar Periods	Nicoya Area Periods	Atlantic Watershed/ Central Highlands Periods	Atlantic Phases	Highland Phases	Greater Chiriquí Phases
1500	PERIOD VI	Late Polychrome	Late	La Cabaña B	Cartago B	Chiriquí B
1000		Middle Polychrome		La Cabaña A	Cartago A	Chiriquí A
	PERIOD V	Early Polychrome	Transitional	La Selva B	Curridabat B	Burica
500				La Selva A	Curridabat A	
AD-BC	PERIOD IV	Linear Decorated	Zoned Bichrome II	El Bosque B	Pavas B	Aguas Buenas
		Zoned Bichrome		El Bosque A		
				Zoned Bichrome I	La Montaña B	Barba B
500			Middle Formative	La Montaña A	Barba A	
1000						

Figure 3: Archaeological Periods and Phases for Costa Rica.
Adapted from Snarskis 1981.



Figure 4. Effigy Grinding Stone. Costa Rica. Group 1a. 23 cm long x 8.5 cm high. American Museum of Natural History 7038.



Figure 5. Effigy Grinding Stone. Costa Rica. Group 1a. 24 cm long x 8 cm high. American Museum of Natural History 7019.



Figures 6a and 6b. Effigy Grinding Stone. Costa Rica. Group 1b. 30 cm long x 9 cm high. Carnegie Museum of Natural History 2439/3004.

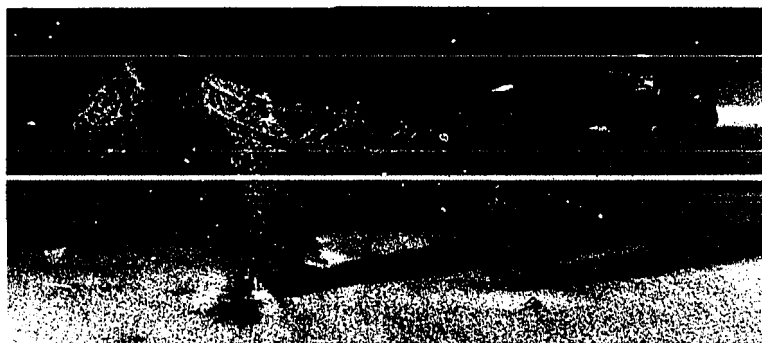


Figure 7. Effigy Grinding Stone. Costa Rica. Group 1b. 20 cm long x 8 cm high. American Museum of Natural History 7022.

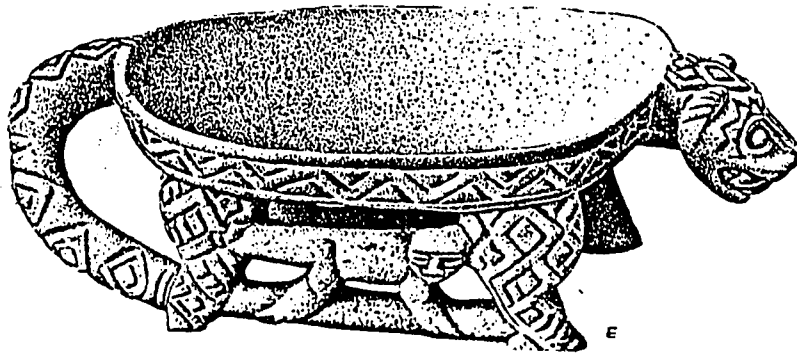


Figure 8. Effigy Grinding Stone. Costa Rica. Group 1b. 32 cm long. American Museum of Natural History 6876. From Mason 1945, Pl. 22E.

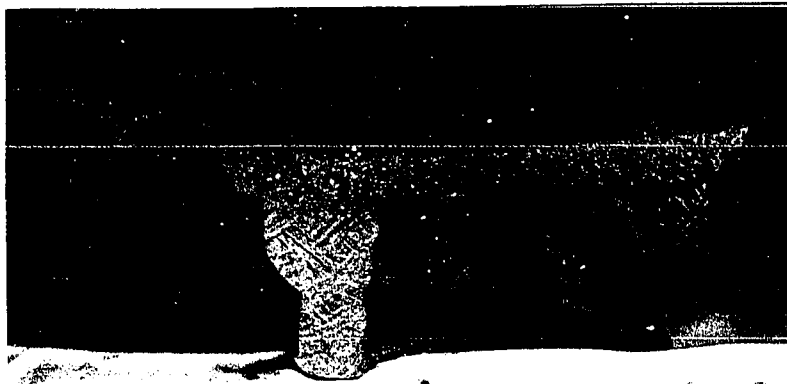


Figure 9. Effigy Grinding Stone. Costa Rica. Group 1c. 27 cm long x 10 cm high. American Museum of Natural History 7015.

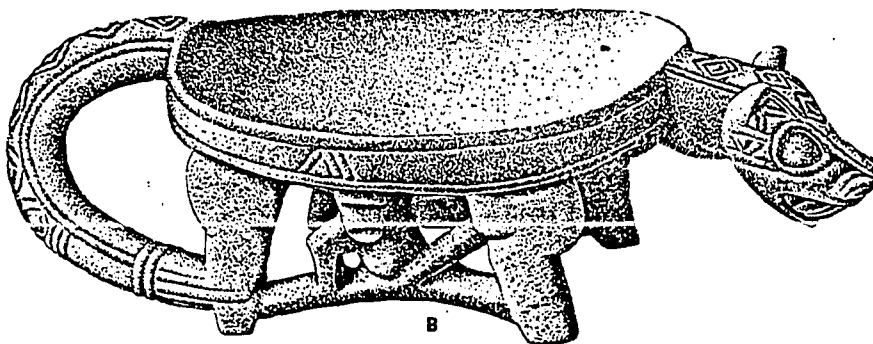
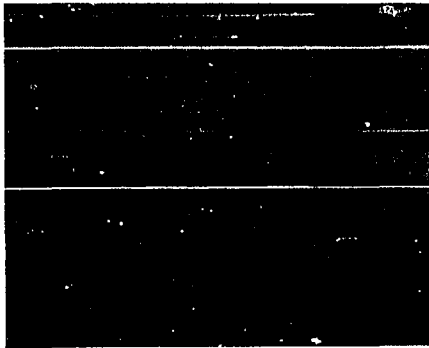
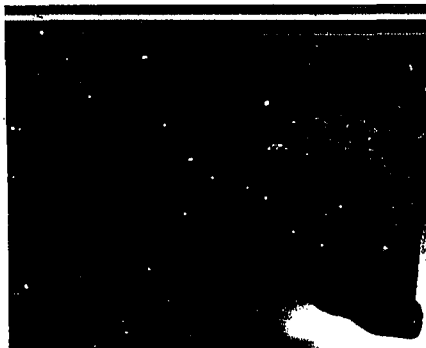
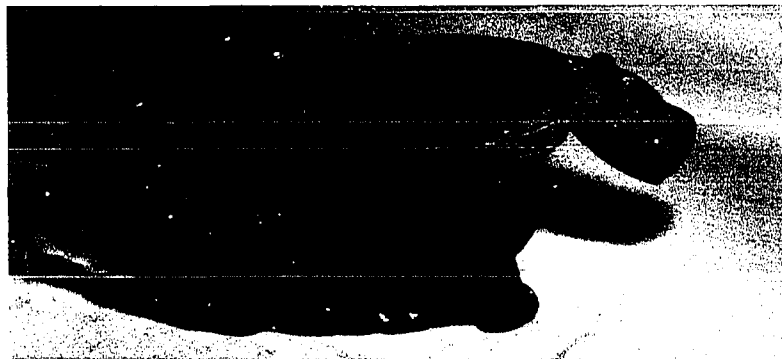


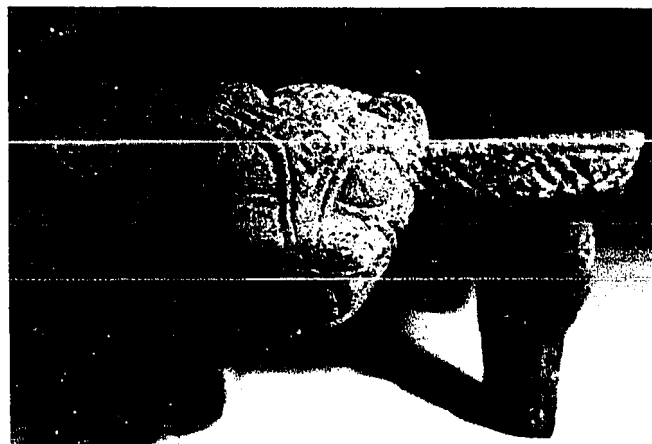
Figure 10. Effigy Grinding Stone. Costa Rica. Group 1c. 32 cm long. The Brooklyn Museum 7024. From Mason 1945, Pl. 22B.



Figures 11a and 11b. Effigy
Grinding Stone. Costa Rica. Group
1c. 60 cm long x 19 cm high. The
Brooklyn Museum 7031.



Figures 12a and 12b. Effigy
Grinding Stone. Costa Rica. Group
1c. 37.5 cm long x 13 cm high.
Carnegie Museum of Natural History
2439/2994.



Figures 13a and 13b. Effigy Grinding Stone. Costa Rica. Group 1c. 47.5 cm long x 16 cm high. Banco Nacional de Costa Rica 912.

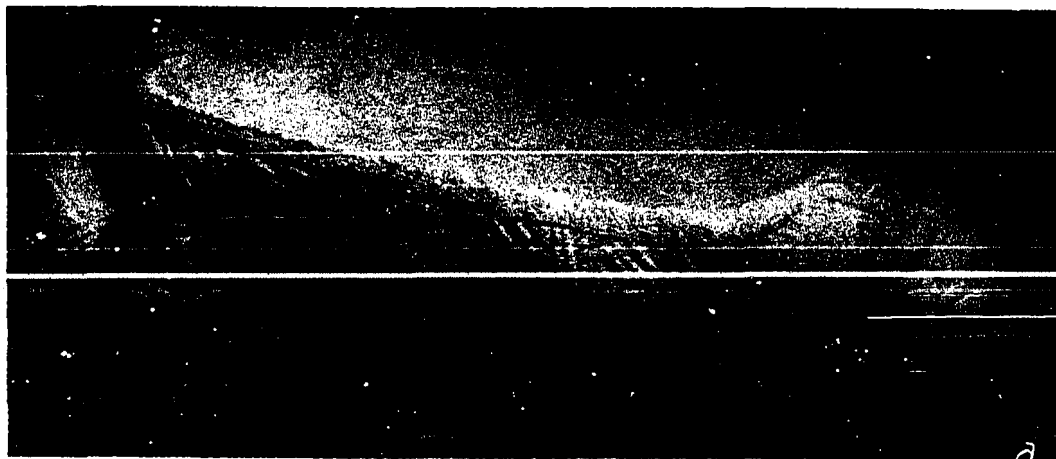


Figure 14. Effigy Grinding Stone. Costa Rica. Group 1c. 27 cm long. Peabody Museum of Archaeology and Ethnology, Harvard University. From Lothrop 1963, Pl. XXVa.

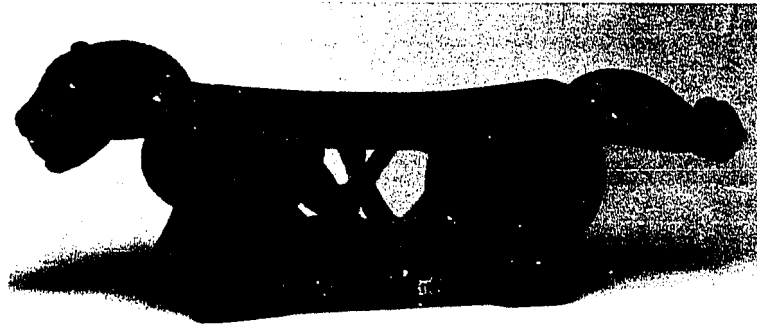


Figure 15. Effigy Grinding Stone. Costa Rica. Group 1c. 56 cm long x 19.5 cm high. Banco Nacional de Costa Rica 909. From Between Continents/ Between Seas exhibition catalog, 1981, No. 229.

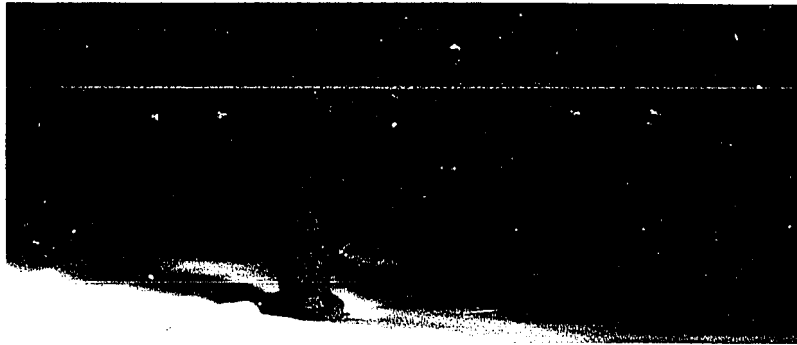
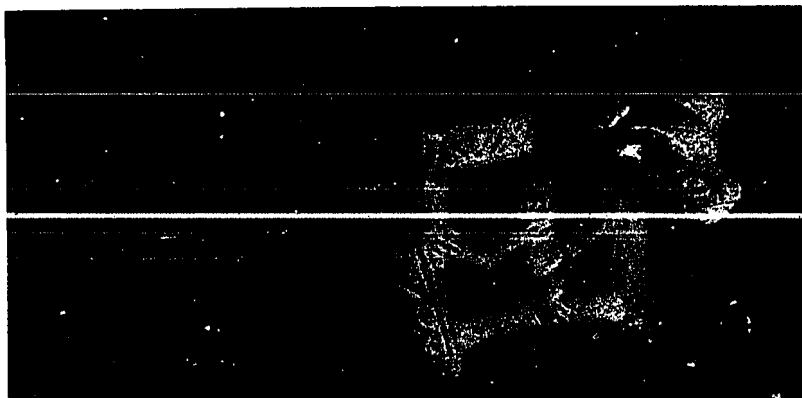


Figure 16. Effigy Grinding Stone. Costa Rica. Group 2a. 57 cm long x 19.5 cm high. Museum of the American Indian, Heye Foundation 23/5780.



Figures 17. Effigy Grinding Stone. Costa Rica. Group 2a. 64 cm long x 16.5 cm high. Museo Nacional de Costa Rica 21916.

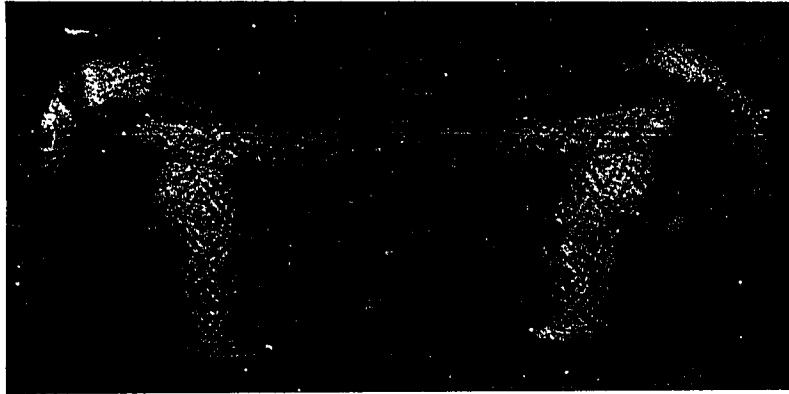


Figure 18. Effigy Grinding Stone. Costa Rica.
Group 2a. 46 cm long x 17.5 cm high. Museo
Nacional de Costa Rica 18600.



Figure 19. Effigy Grinding Stone. Costa Rica.
Group 2a. 41 cm long x 11.5 cm high. Carnegie
Museum of Natural History 2439/3030.

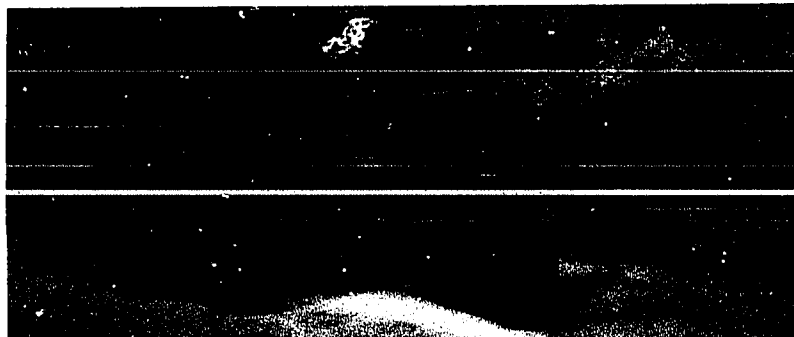
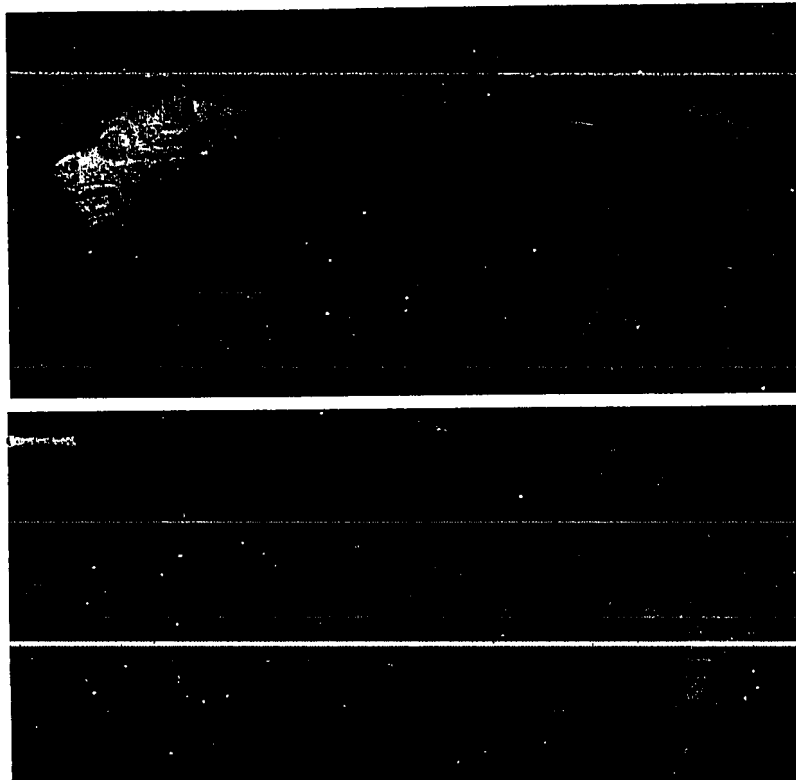


Figure 20. Effigy Grinding Stone. Costa Rica. Group
2a. 30 cm long x 11 cm high. Carnegie Museum of
Natural History 2439/3002.



Figure 21. Effigy Grinding Stone. Costa Rica. Group 2a. 44.5 cm long x 18 cm high. Carnegie Museum of Natural History 2439/2991.



Figures 22a and 22b. Effigy Grinding Stone. Costa Rica. Group 2a. 55 cm long x 17 cm high. Museo Nacional de Costa Rica 21840.

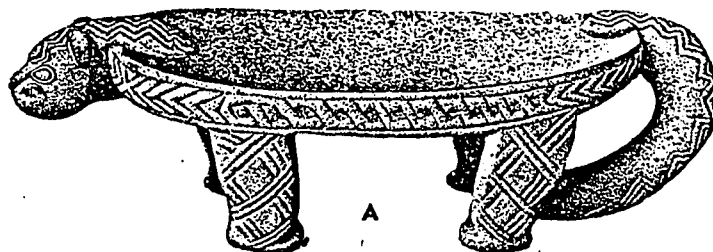


Figure 23. Effigy Grinding Stone. Costa Rica. Group 2a. 49.5 cm long. American Museum of Natural History 11396. From Mason 1945, Pl. 15A.

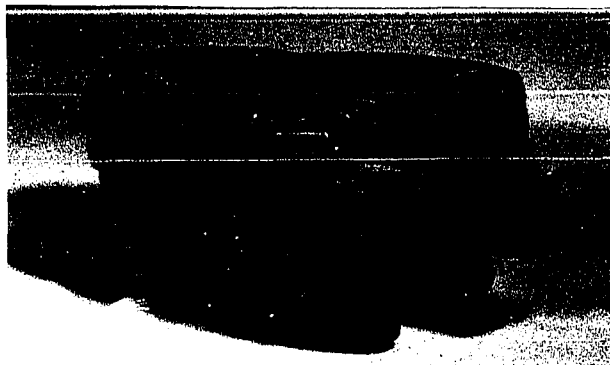


Figure 24. Effigy Grinding Stone. Costa Rica. Group 2b. 25 cm long x 10 cm high. Carnegie Museum of Natural History 2439/3015.

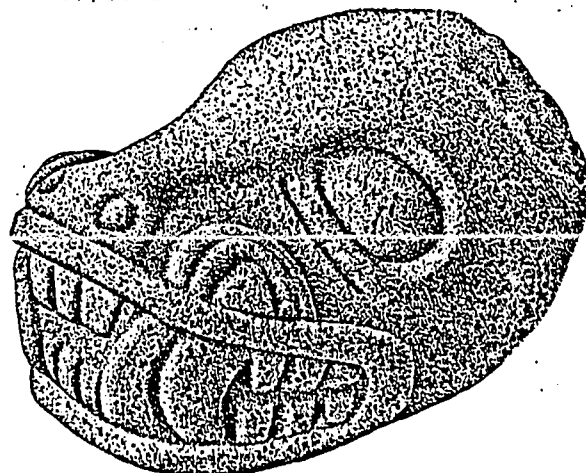


Figure 25. Effigy Grinding Stone Head. Costa Rica. Group 2b. 20 cm long. The Brooklyn Museum 7149. From Mason 1945, Pl. 48B.



Figure 26. Jaguar. Costa Rica. National Museum of Natural History, Smithsonian Institution.

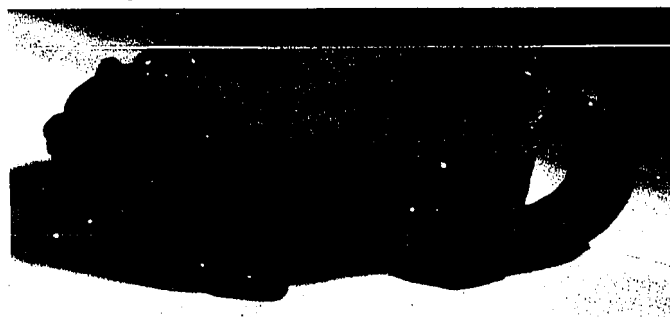


Figure 27. Effigy Grinding Stone. Costa Rica. Group 2b. 23.5 cm long x 8 cm high. Museum of the American Indian, Heye Foundation 3/3519.

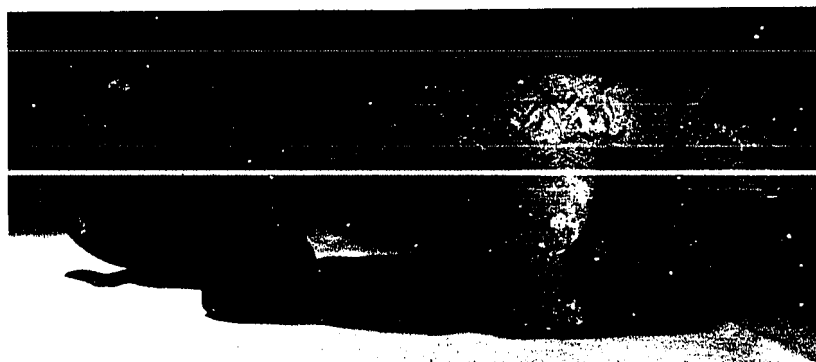
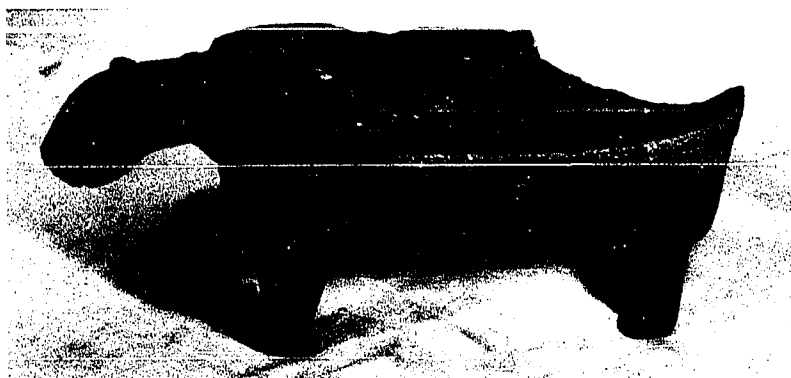


Figure 28. Effigy Grinding Stone. Costa Rica. Group 2b. 40.5 cm long x 12.5 cm high. Peabody Museum of Natural History, Yale University 2943/18683.



Figures 29a and 29b. Effigy Grinding Stone. Costa Rica. Group 2b. 51 cm long x 16.5 cm high. Carnegie Museum of Natural History 2439/2990.



Figure 30. Effigy Grinding Stone. Costa Rica. Group 2b. 23.5 cm long x 6.5 cm high. American Museum of Natural History 11389. From Mason 1945, Pl. 20A.

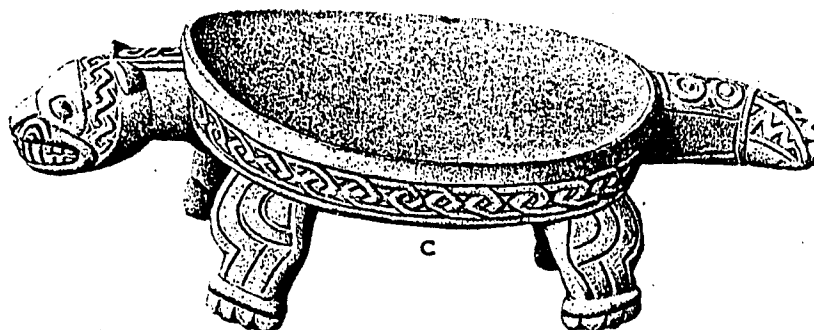


Figure 31. Effigy Grinding Stone. Costa Rica. Group 2b. 38 cm long x 11 cm high. American Museum of Natural History 6856. From Mason 1945, Pl. 19C.

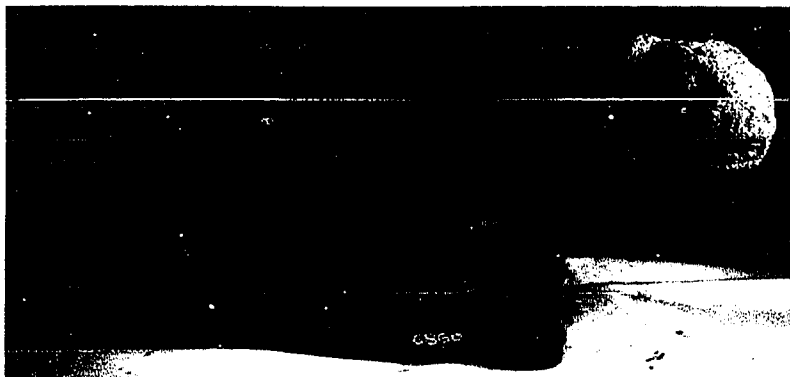


Figure 32. Effigy Grinding Stone. Costa Rica. Group 2b. 40 cm long x 16 cm high. American Museum of Natural History 6860.

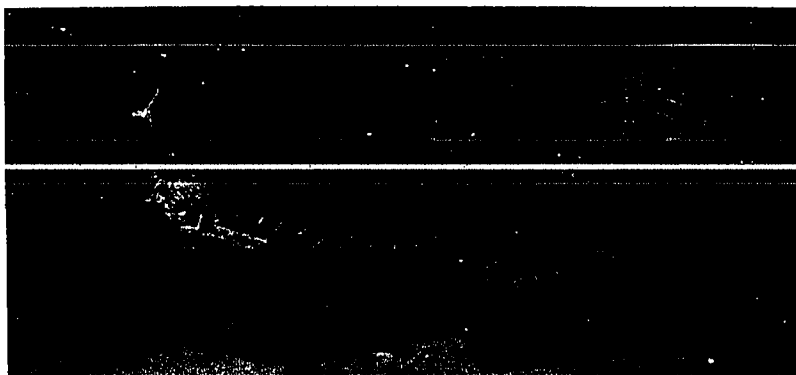


Figure 33. Effigy Grinding Stone. Costa Rica. Group 2b. 36.5 cm long x 9 cm high. American Museum of Natural History 6881.



Figure 34. Effigy Grinding Stone. Costa Rica. Group 2b. 35.5 cm long x 7 cm high. Museum of the American Indian, Heye Foundation 6/3521.

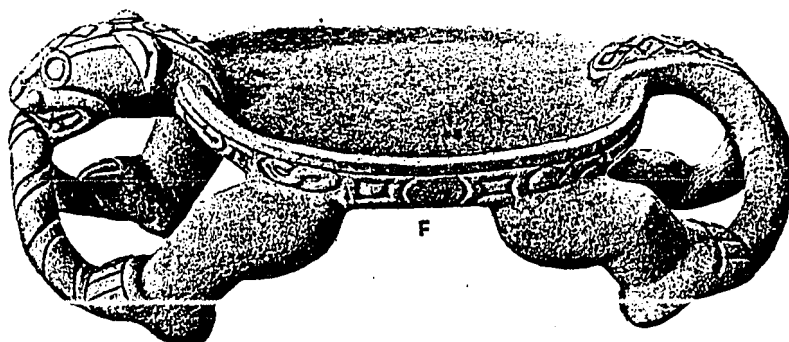
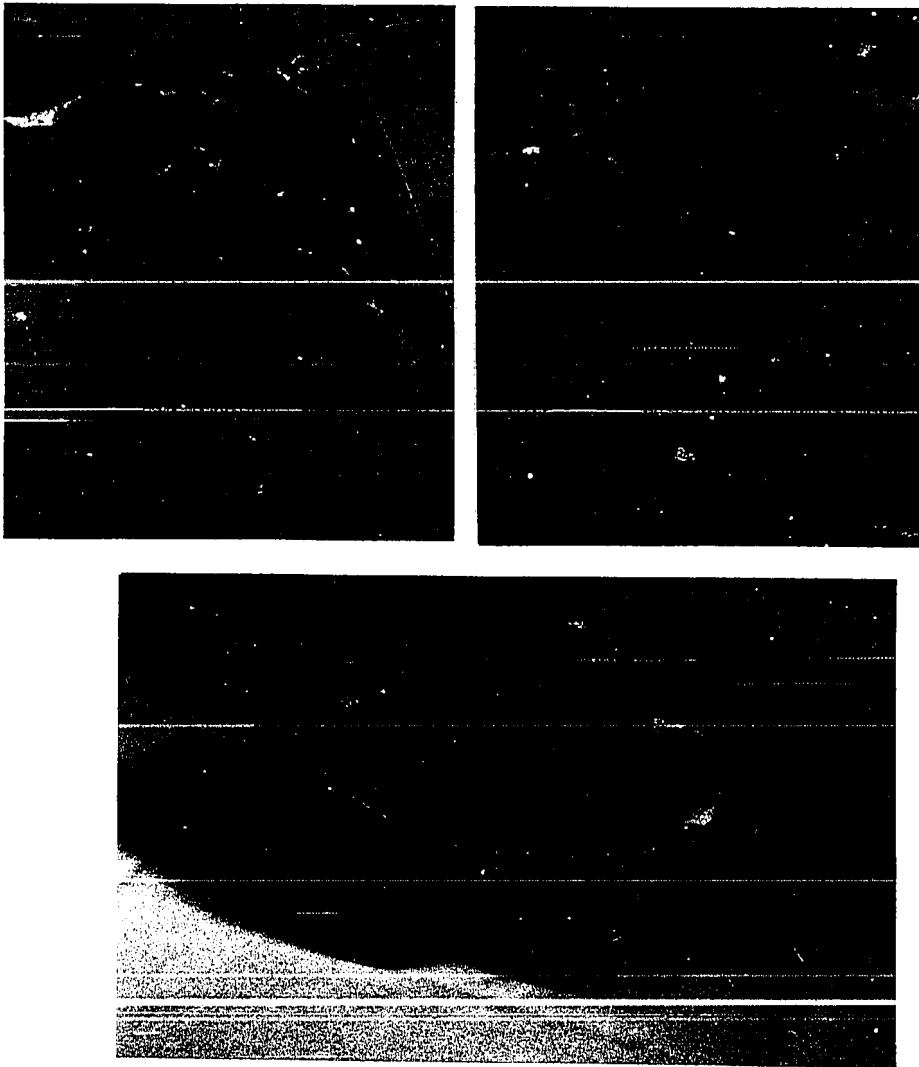


Figure 35. Effigy Grinding Stone. Costa Rica. Group 2b. 47 cm long x 13 cm high. The Brooklyn Museum 6857. From Mason 1945, Pl. 19F.



Figures 36a, 36b and 36c. Effigy Grinding Stone.
Costa Rica. Transition Group. 23.5 cm long x 9 cm
high. Carnegie Museum of Natural History 2439/3034.

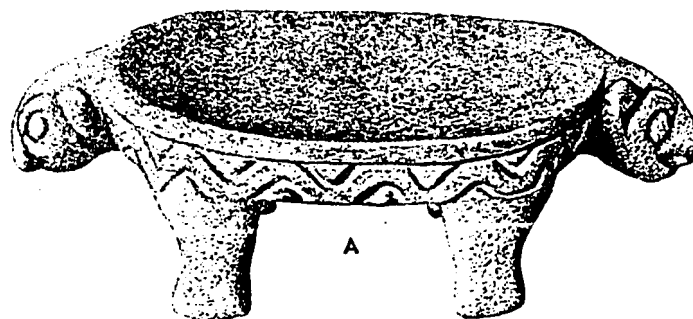


Figure 37. Effigy Grinding Stone. Costa Rica. Transition Group. 27 cm long x 9 cm high. American Museum of Natural History 1757. From Mason 1945, Pl. 18A.



Figures 38a and 38b. Effigy Grinding Stone. Costa Rica. Transition Group. 24 cm long x 9 cm high. American Museum of Natural History 2439/3013.



Figure 39. Effigy Grinding Stone. Costa Rica. Group 3a. 44.5 cm long x 12.5 cm high. American Museum of Natural History 6904.

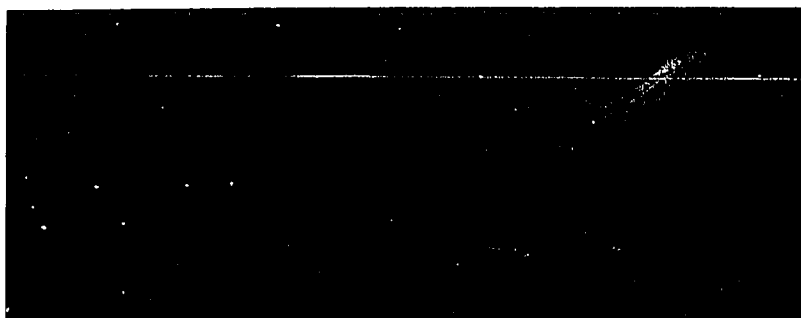


Figure 40. Effigy Grinding Stone. Costa Rica. Group 3a. 30 cm long x 13 cm high. Museum of the American Indian, Heye Foundation 24/9301.



Figures 41a and 41b. Effigy Grinding Stone. Costa Rica. Group 3a. 40.5 cm long x 8 cm high. American Museum of Natural History 11401.



Figure 42. Effigy Grinding Stone. Costa Rica.
Group 3a. 40 cm long x 11.5 cm high. Carnegie
Museum of Natural History 2793/2077.

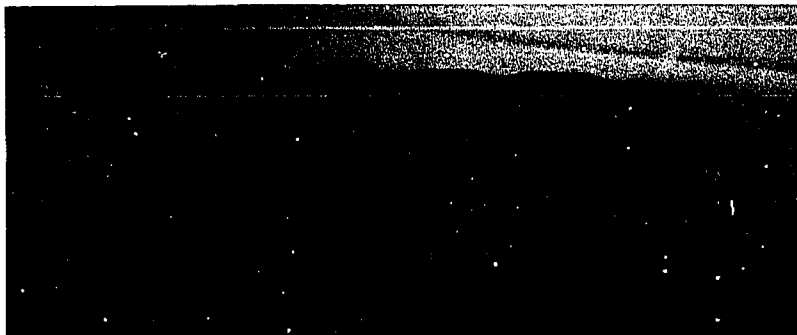


Figure 43. Effigy Grinding Stone. Costa Rica.
Group 3a. 61 cm long x 18 cm high. The Brooklyn
Museum 12469.



Figure 44. Oval Grinding Stone. Costa Rica.
Group 3a. 24 cm long x 10 cm high. Carnegie
Museum of Natural History 2439/3040.

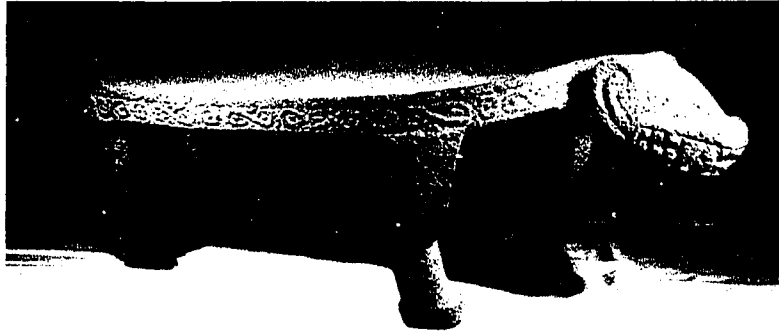


Figure 45. Effigy Grinding Stone. Costa Rica.
Group 3a. 70 cm long x 21 cm high. Banco Nacional
de Costa Rica 924.

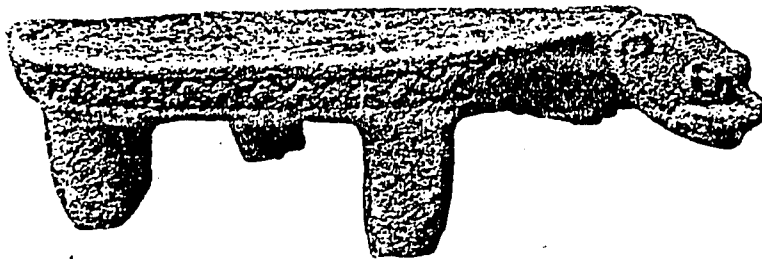


Figure 46. Effigy Grinding Stone. Costa Rica. Group
3b. 43.5 cm long x 8 cm high. Royal Ethnographical
Museum, Stockholm 108. From Hartman 1901, Pl. 62,
No. 4.

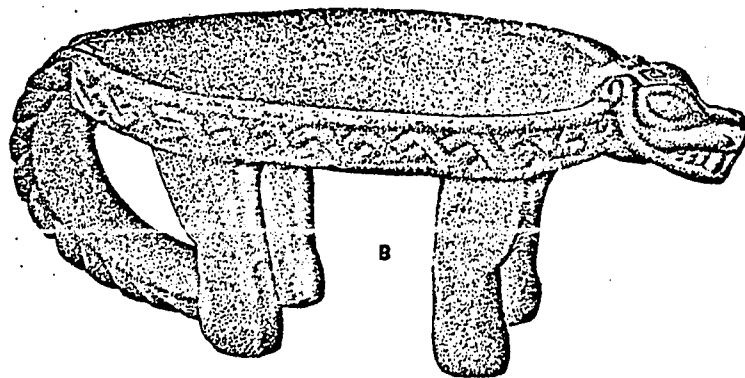


Figure 47. Effigy Grinding Stone. Costa Rica. Group
3b. 43 cm long x 17.5 cm high. The Brooklyn Museum
7025. From Mason 1945, Pl. 18B.



Figure 48. Effigy Grinding Stone Head. Costa Rica. Group 3b. National Museum of Natural History, Smithsonian Institution 60897.

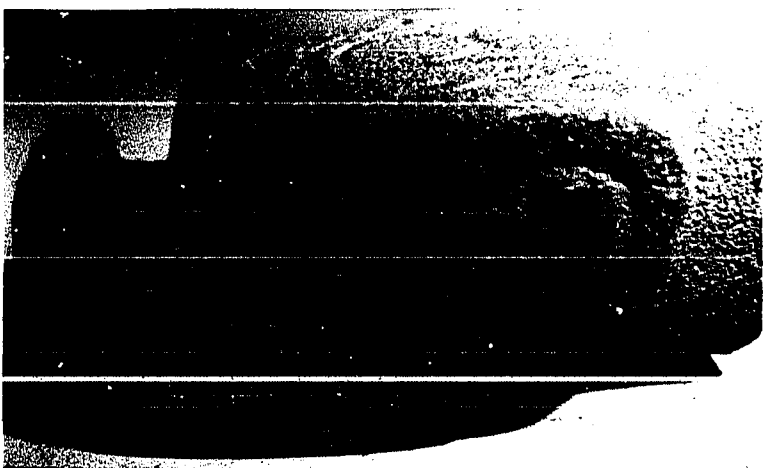
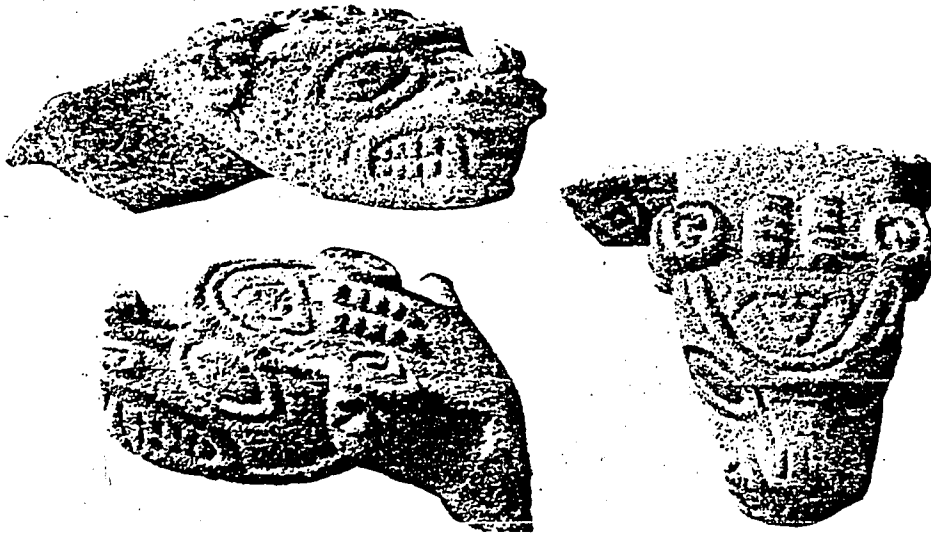


Figure 49. Effigy Grinding Stone Head. Costa Rica. Group 3b. National Museum of Natural History, Smithsonian Institution 60896.



Figures 50a, 50b and 50c. Effigy Grinding Stone. Costa Rica. Group 3b. Royal Ethnographical Museum, Stockholm 109. From Hartman 1901, Pl. 66, No. 1, 2, 3.

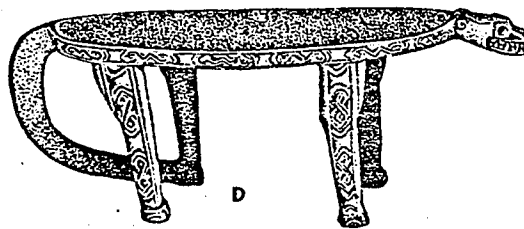


Figure 51. Effigy Grinding Stone. Costa Rica. Group 3b. 126 cm long. The Brooklyn Museum 7057. From Mason 1945, Pl. 21D.

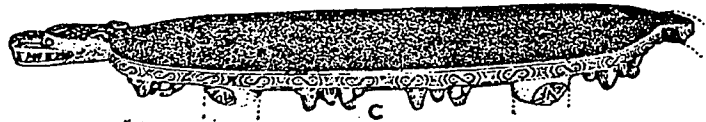
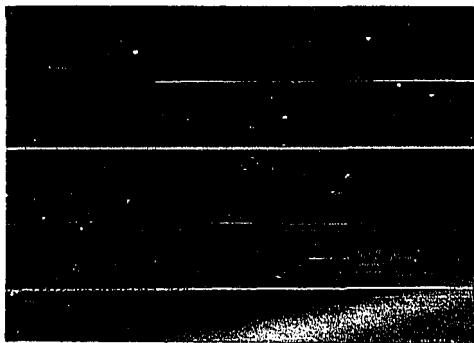
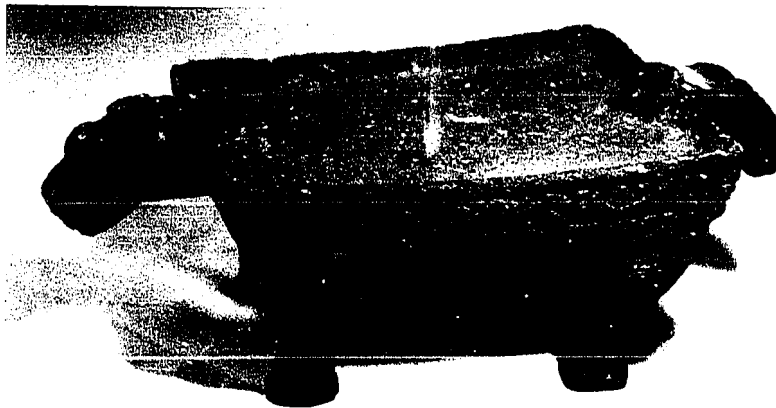


Figure 52. Effigy Grinding Stone. Costa Rica. Group 3b. 188 cm long. American Museum of Natural History 7003. From Mason 1945, Pl. 21C.



Figures 53a and 53b. Effigy
Grinding Stone. Costa Rica.
Group 3c. 42 cm long x 10.5
cm high. The Brooklyn Museum
6906.



Figures 54a and 54b. Effigy
Grinding Stone. Costa Rica.
Group 3c. 32 cm long x 10 cm
high. Carnegie Museum of
Natural History 2439/3000.

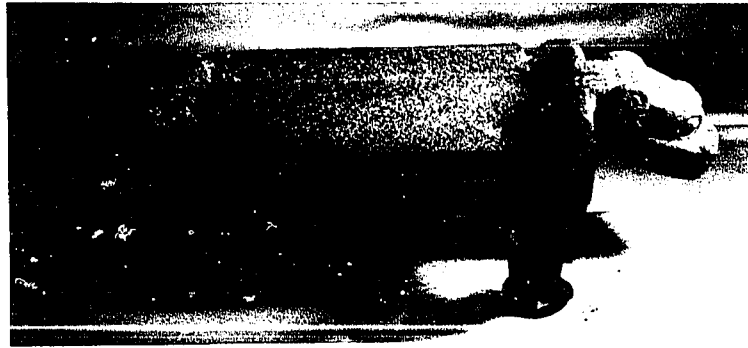


Figure 55. Effigy Grinding Stone. Costa Rica. Group 3c. 39.5 cm long x 10 cm high. American Museum of Natural History 30.0/5959.

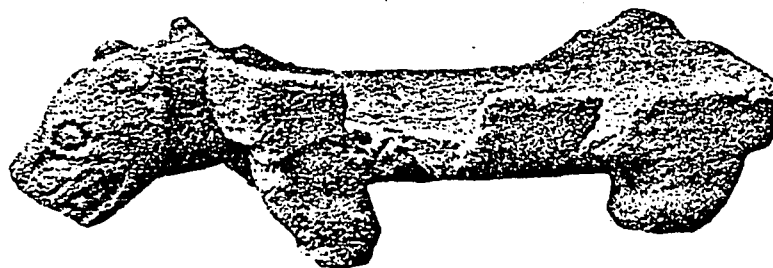


Figure 56. Effigy Grinding Stone. Costa Rica. Group 3c. 32 cm long x 6.5 cm high. Royal Ethnographical Museum, Stockholm 103. From Hartman 1901, Pl. 16, No. 2.

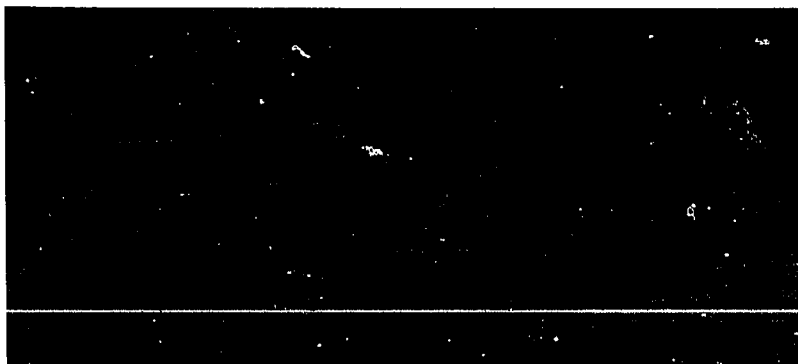


Figure 57. Effigy Grinding Stone. Costa Rica. Group 3c. 46 cm long x 14 cm high. American Museum of Natural History 11398.

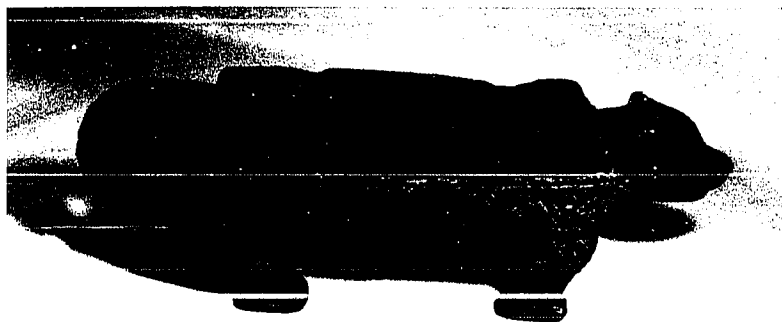
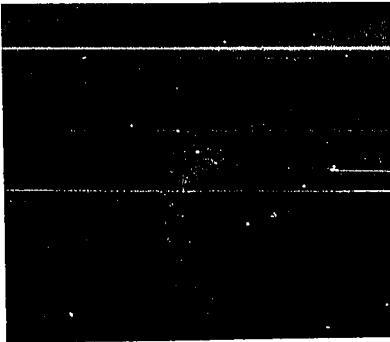
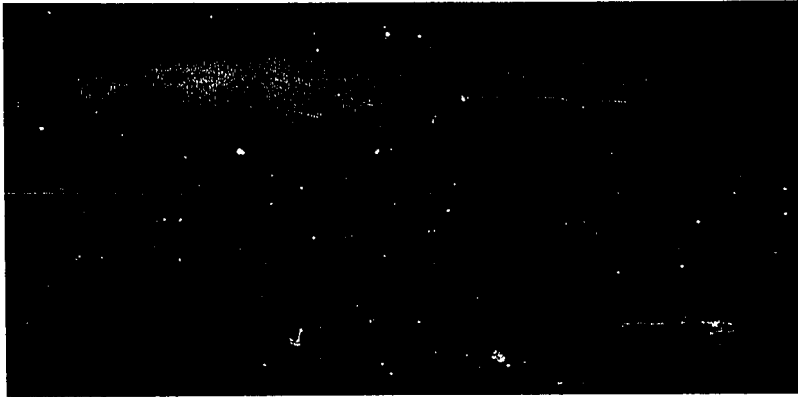
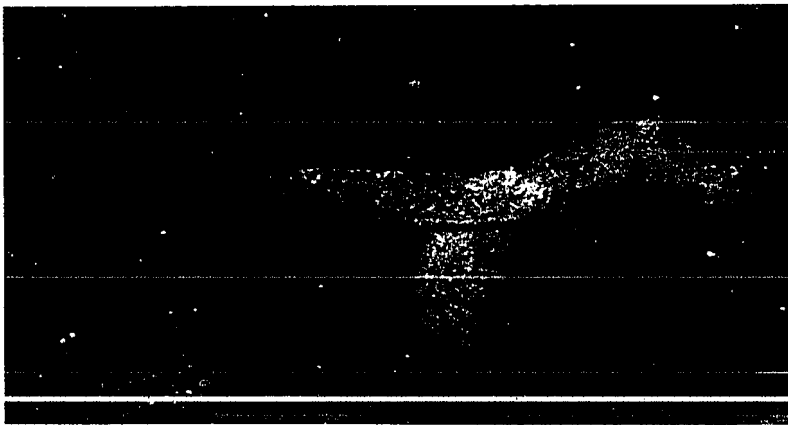


Figure 58. Effigy Grinding Stone. Costa Rica. Group 3c. 36 cm long x 10.5 cm high. Carnegie Museum of Natural History 2439/2999.



Figures 59a and 59b. Effigy
Grinding Stone. Panama. Group 2. 47
cm long x 16 cm high. Museo del
Hombre Panamaneó 1AL-9-00020.



Figures 60a and 60b. Effigy
Grinding Stone. Panama. Group 2. 49
cm long x 18.5 cm high. Peabody
Museum of Natural History, Yale
University 342/94.

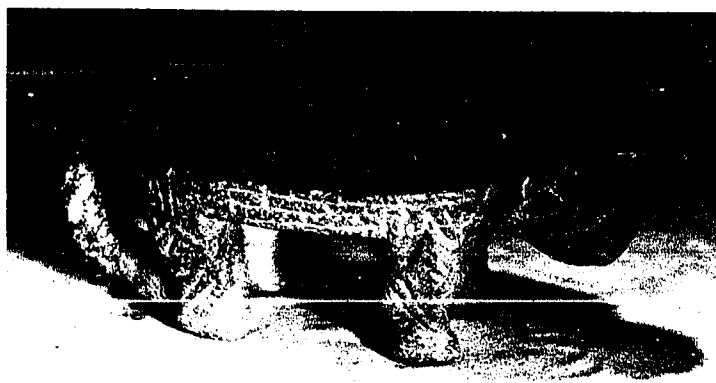


Figure 61. Effigy Grinding Stone. Panama. Group 2a. 26 cm long x 9.5 cm high. Peabody Museum of Natural History, Yale University 324/89.



Figure 62. Effigy Grinding Stone. Panama. Group 2a. 39 cm long x 14 cm high. Peabody Museum of Natural History, Yale University 787/90.

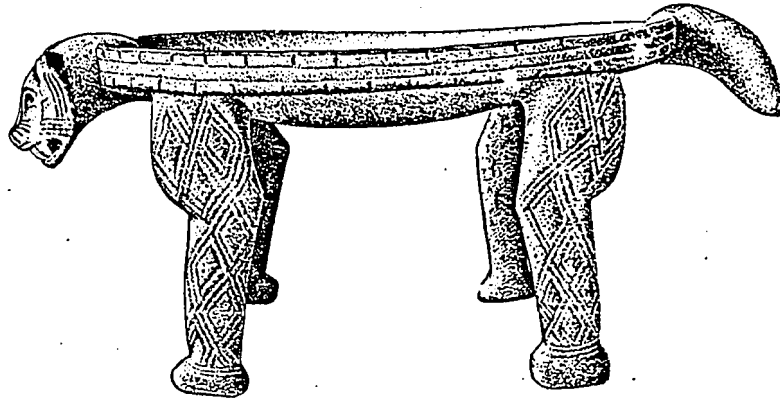


Figure 63. Effigy Grinding Stone. Panama. Group 2a. 92 cm long x 15 cm high. Peabody Museum of Natural History, Yale University 1132-1-232. From MacCurdy 1911, Pl. IIIB.

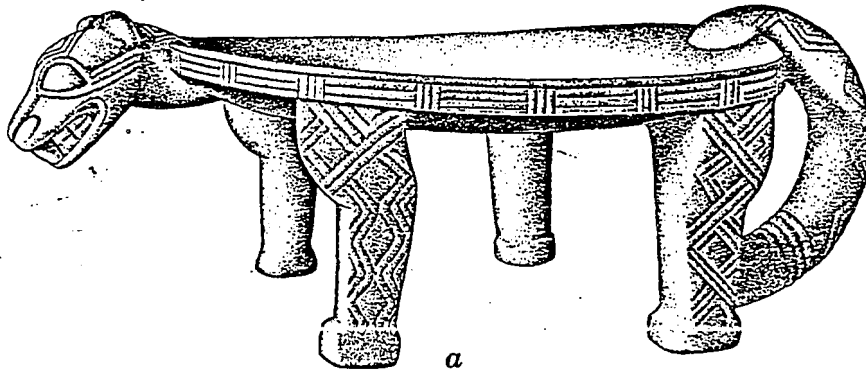
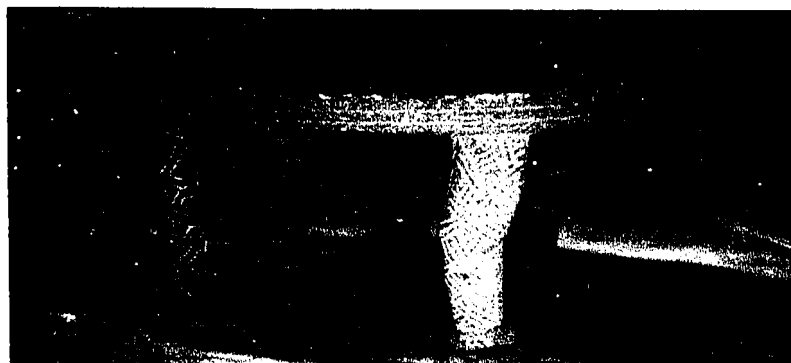


Figure 64. Effigy Grinding Stone. Panama. Group 2a. 80 cm long x 27.5 cm high. Peabody Museum of Natural History, Yale University 40-35-20/7644. From Lothrop 1950, Fig. 29a.



Figures 65a and 65b. Effigy Grinding Stone. Panama. Group 2a. 62 cm long x 20 cm high. Peabody Museum of Natural History, Yale University 342/289.

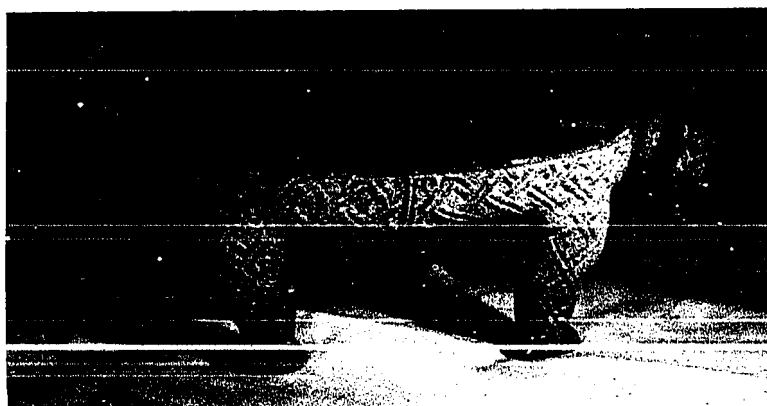
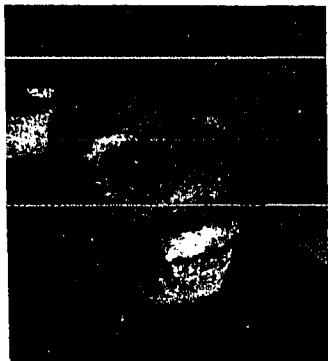
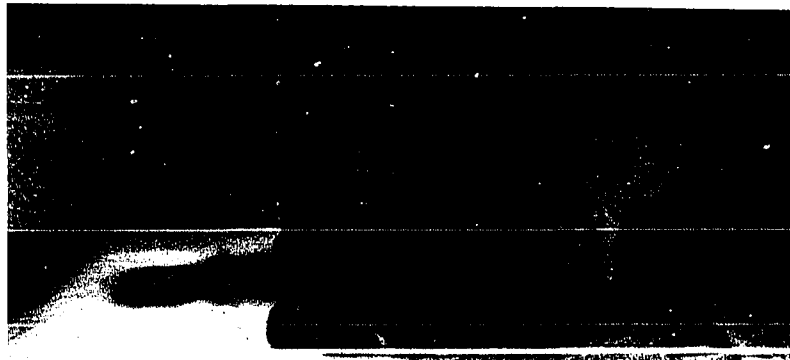


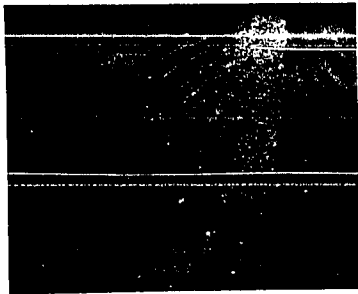
Figure 66. Effigy Grinding Stone. Panama. Group 2b. 43 cm long x 12.5 cm high. Museum of the American Indian, Heye Foundation 8250.



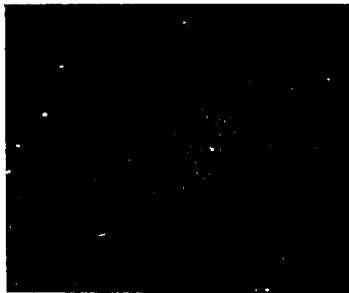
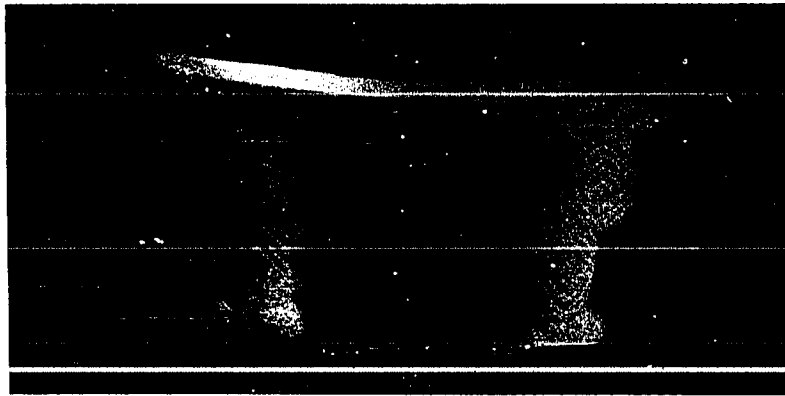
Figures 67a and 67b. Effigy
Grinding Stone. Panama. Group 2c.
56.5 cm long x 18 cm high. Peabody
Museum of Natural History, Yale
University 1193-55.



Figures 68a and 68b. Effigy
Grinding Stone. Panama. Group 2c.
45 cm long x 16 cm high. National
Museum of Natural History,
Smithsonian Institution 132335.



Figures 69a and 69b. Effigy
Grinding Stone. Panama. Group 2c.
46 cm long x 15 cm high. Peabody
Museum of Natural History, Yale
University 1313-51.



Figures 70a and 70b. Effigy
Grinding Stone. Panama. Group 2c.
45.5 cm long x 16 cm high. Museo
del Hombre Panamano 167-AL-V.



Figure 71. Effigy Grinding Stone. Panama. Group 2c.
32.5 cm long x 11 cm high. Private Collection.

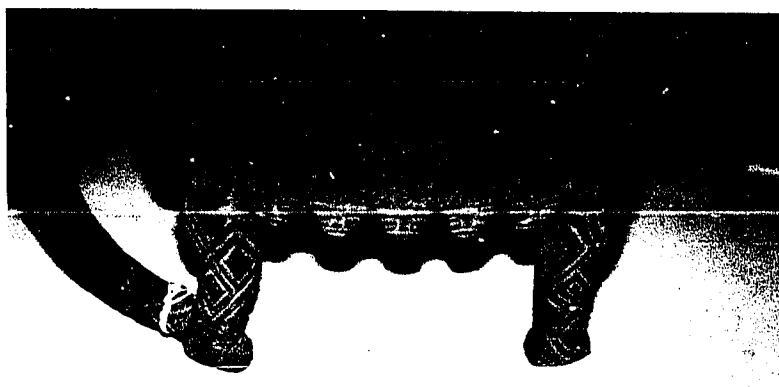


Figure 72. Effigy Grinding Stone.
Panama. Group 2. 54.5 cm long x 17
cm high. National Museum of
Natural History, Smithsonian
Institution 507894.



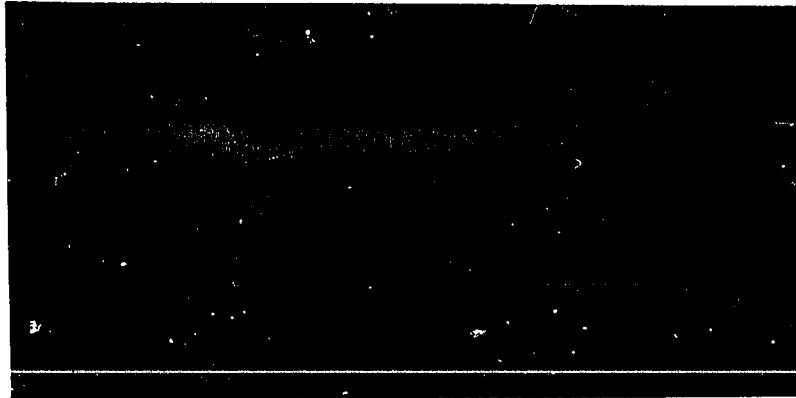
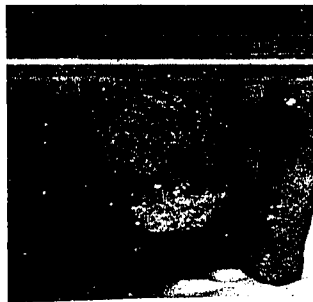
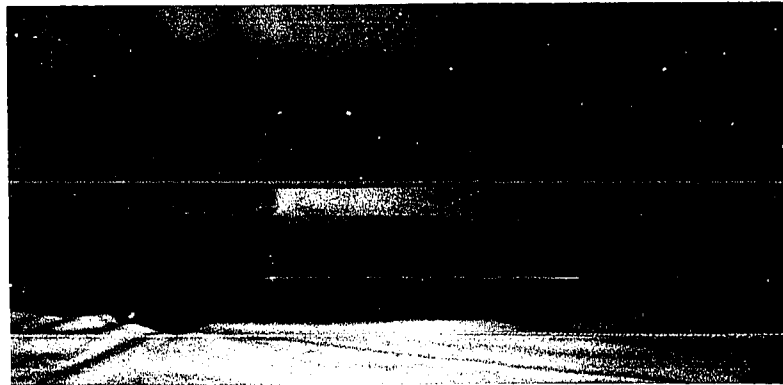


Figure 73. Effigy Grinding Stone. Panama. Group 3a.
73.5 cm long x 18 cm high. Museo del Hombre Panameño
1AL-9-00037.



Figures 74a and 74b. Effigy Grinding
Stone. Panama. Group 3a. 71 cm long x
17 cm high. Museum of the American
Indian, Heye Foundation 15/5600.

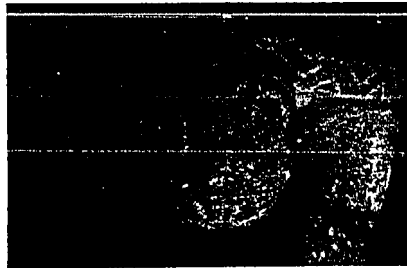
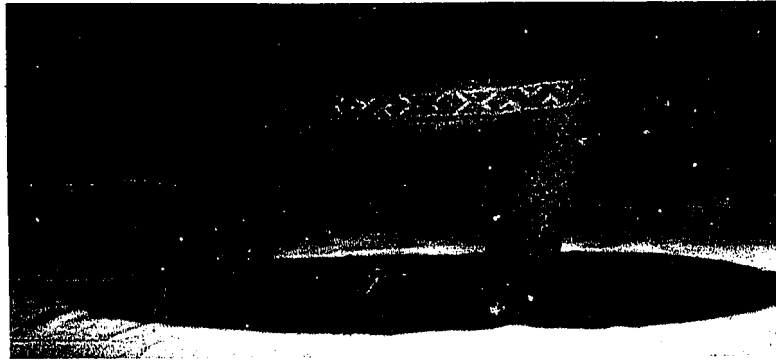


Figure 75. Effigy Grinding Stone. Panama. Group 3a. 53 cm long x 16.5 cm high. Peabody Museum of Natural History, Yale University 1132/96.

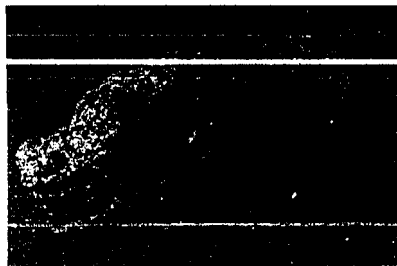
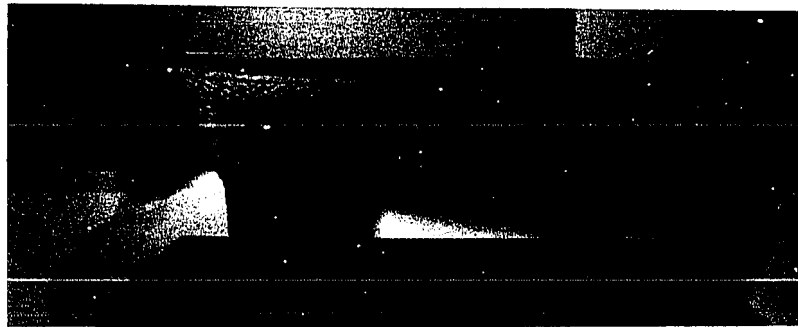


Figure 76. Effigy Grinding Stone. Panama. Group 3b. 77 cm long x 22.5 cm high. Museo del Hombre Panamaneño 1AL-9-00031.

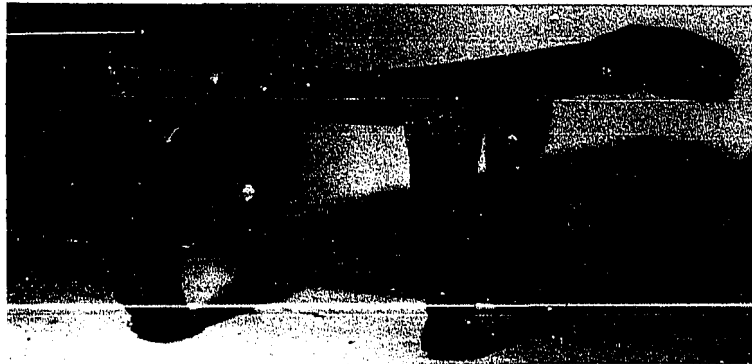


Figure 77. Effigy Grinding Stone. Panama. Group 3b. 82.5 cm long x 29.5 cm high. National Museum of Natural History, Smithsonian Institution 98581.

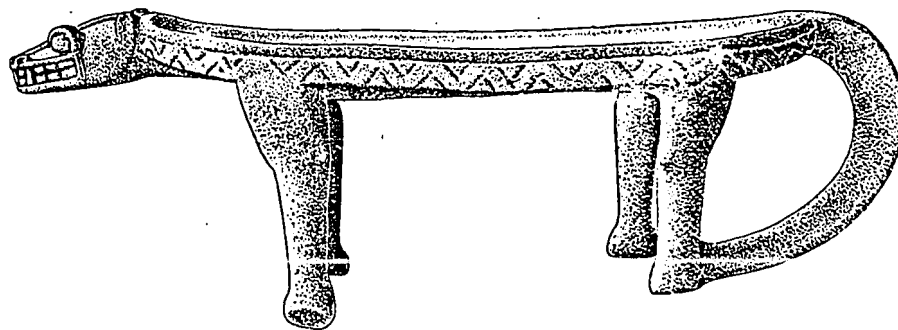
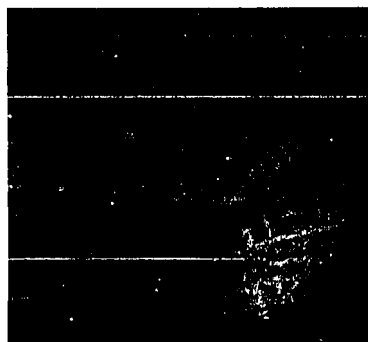


Figure 78. Effigy Grinding Stone. Panama. Group 3b. 117 cm long x 37 cm high. Peabody Museum of Natural History, Yale University 1132-1-55311. From MacCurdy 1911, Pl. IIIc.



Figures 79a and 79b. Effigy
Grinding Stone. Panama. Group 3c.
41 cm long x 16.5 cm high. National
Museum of Natural History,
Smithsonian Institution 248533.

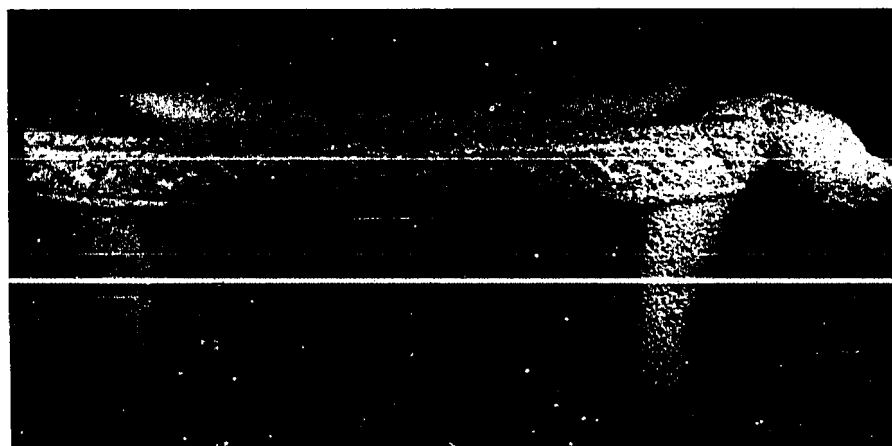


Figure 80. Effigy Grinding Stone. Panama. Group 3c. 34.5
cm long x 11 cm high. Private Collection.

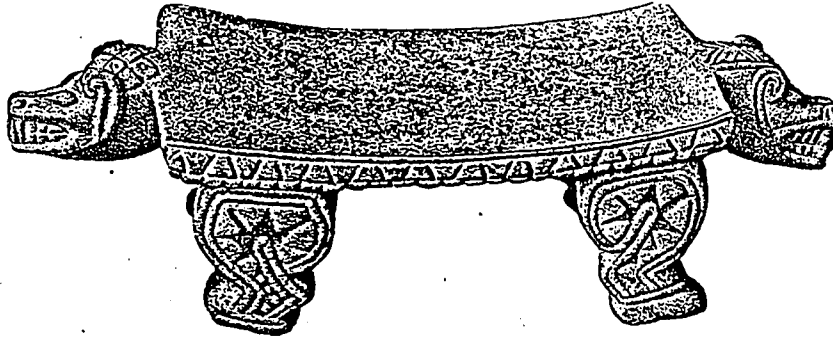
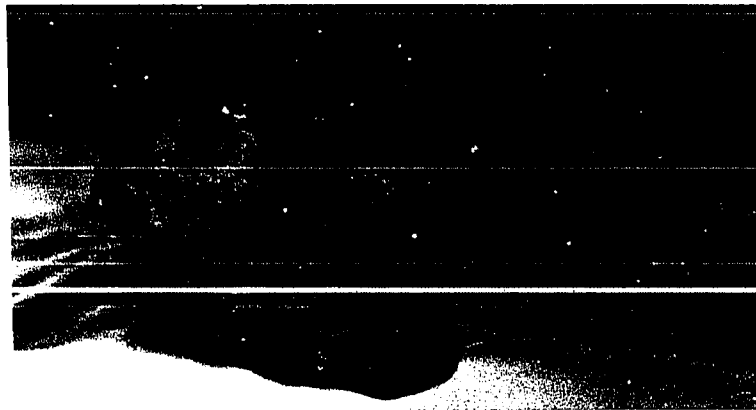


Figure 81. Effigy Grinding Stone. Costa Rica. Difficult to Group. 51.5 cm long x 15 cm high. American Museum of Natural History 7033. From Mason 1945, Pl. 21A.



Figures 82a and 82b. Effigy Grinding Stone. Costa Rica. Difficult to Group. 39.5 cm long x 12 cm high. Museum of the American Indian, Heye Foundation 7/8152.

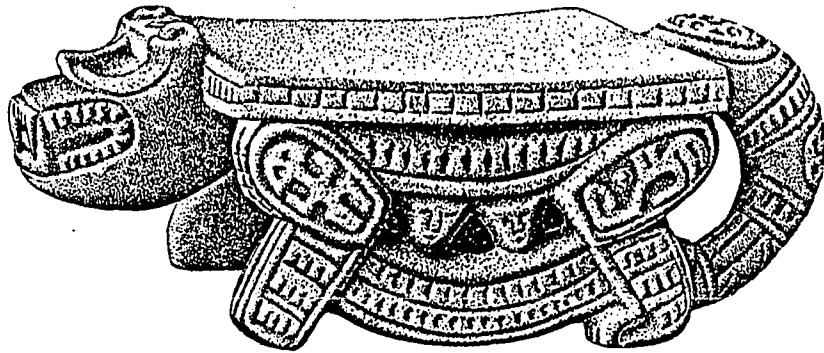


Figure 83. Effigy Grinding Stone. Costa Rica. Difficult to Group. 37.5 cm long x 12 cm high. The Brooklyn Museum 13183. From Mason 1945, Pl. 23D.

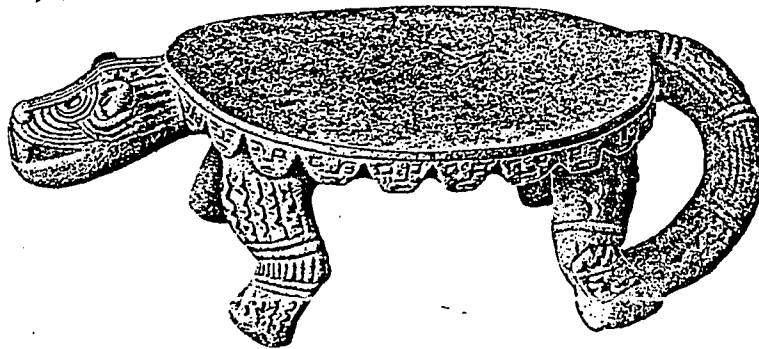
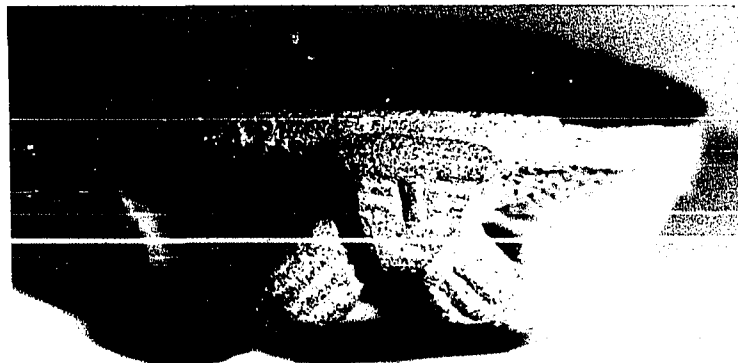


Figure 84. Effigy Grinding Stone. Costa Rica. Difficult to Group. 59.5 cm long x 18 cm high. The Brooklyn Museum 7010. From Mason 1945, Pl. 21E.



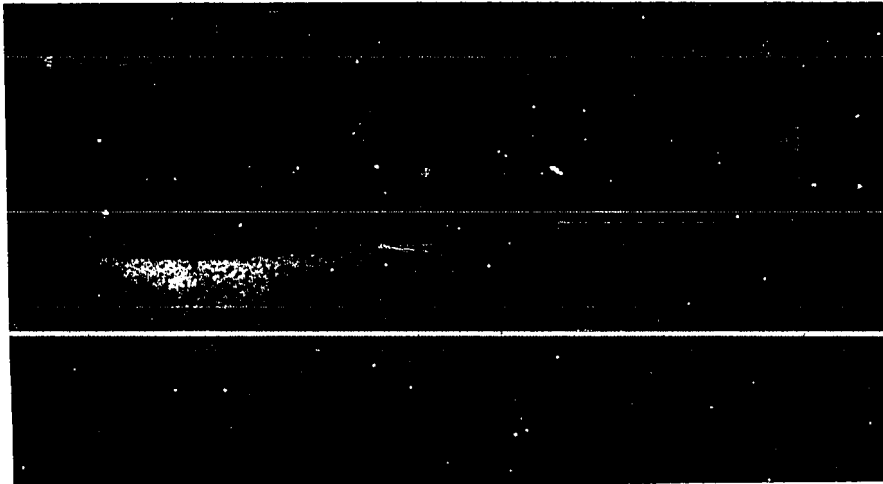
Figure 85. Effigy Grinding Stone. Costa Rica.
Difficult to Group. 35.5 cm long x 9.5 cm high.
American Museum of Natural History 1755.



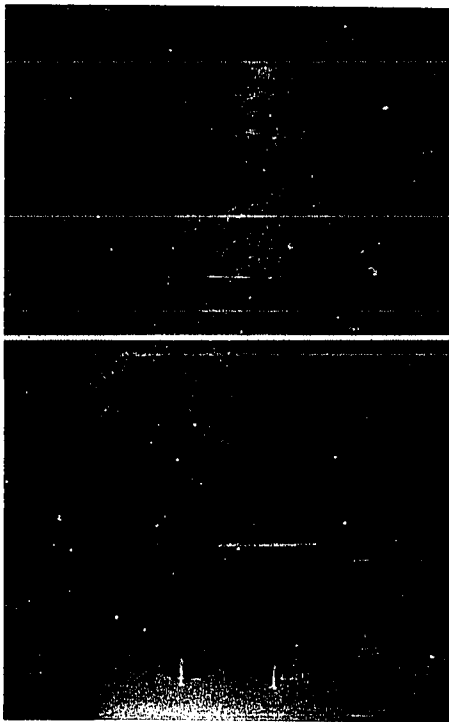
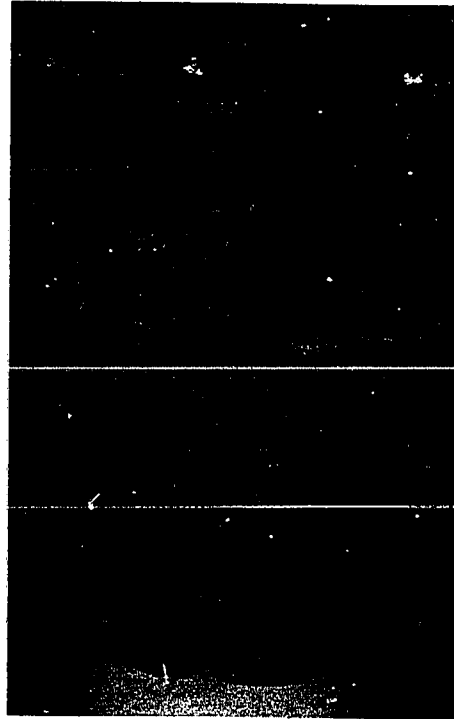
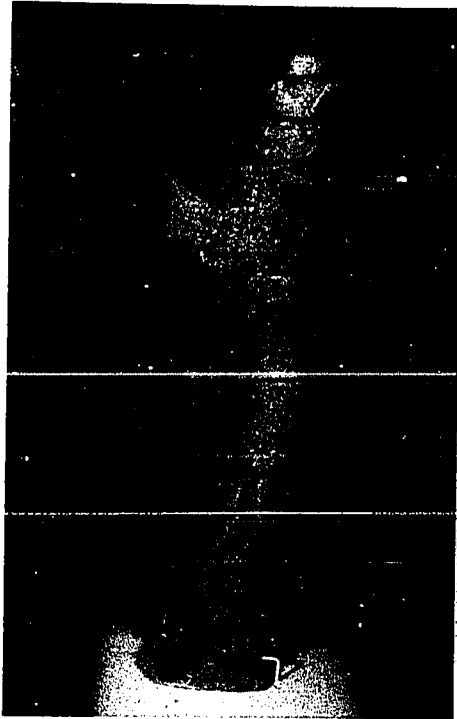
Figures 86a and 86b. Effigy Grinding Stone.
Costa Rica. Difficult to Group. 40 cm long x 9
cm high. National Museum of Natural History,
Smithsonian Institution 1193.



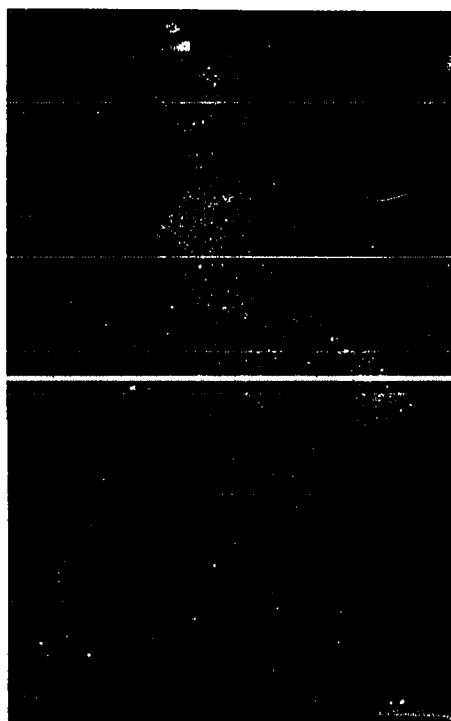
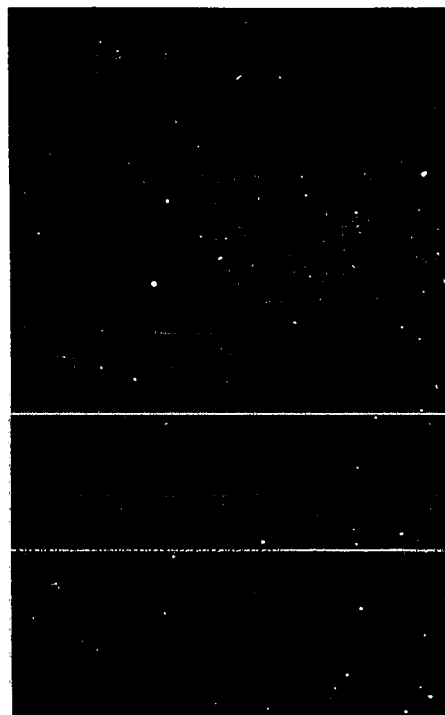
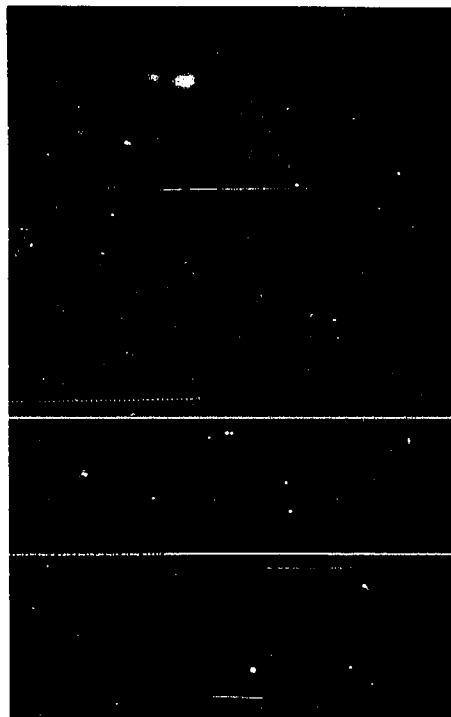
Figure 87. Effigy Grinding Stone. Costa Rica.
Difficult to Group. 21 cm long x 8 cm high. Banco
Nacional de Costa Rica 904.



Figures 88a and 88b. Effigy Grinding Stone. Panama.
Difficult to Group. 33 cm long x 11.5 cm high. Private
Collection.



Figures 89a, 89b and 89c.
Standing Figure. Costa Rica.
Group 1a. 34.5 cm high. Museo
Nacional de Costa Rica
24075.



Figures 90a, 90b and 90c.
Standing Figure. Costa Rica.
Group 1a. 34 cm high. Banco
Nacional de Costa Rica 985.

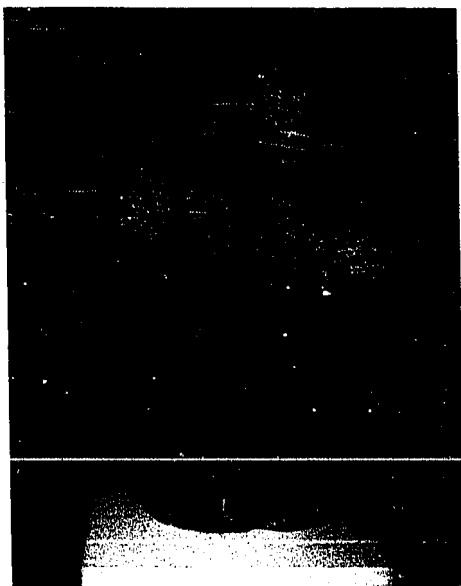


Figure 91. Standing Figure. Costa Rica. Group 1a. 28.5 cm high. Museo Nacional de Costa Rica 12504.

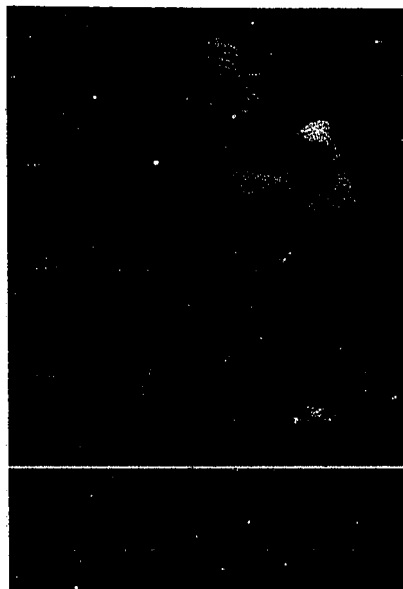
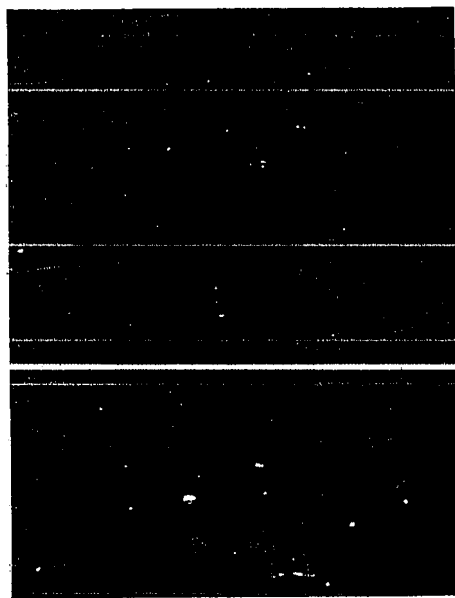
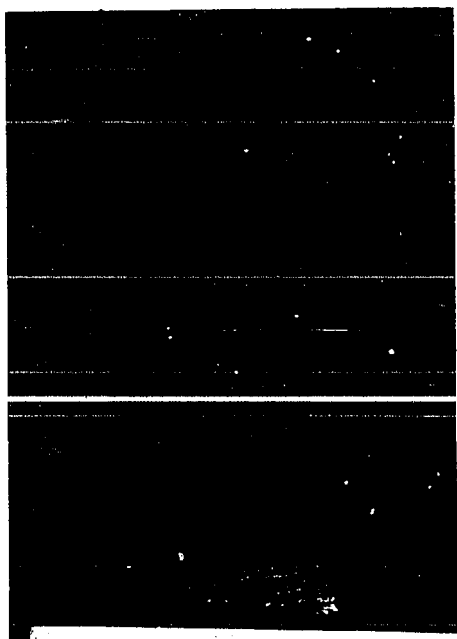
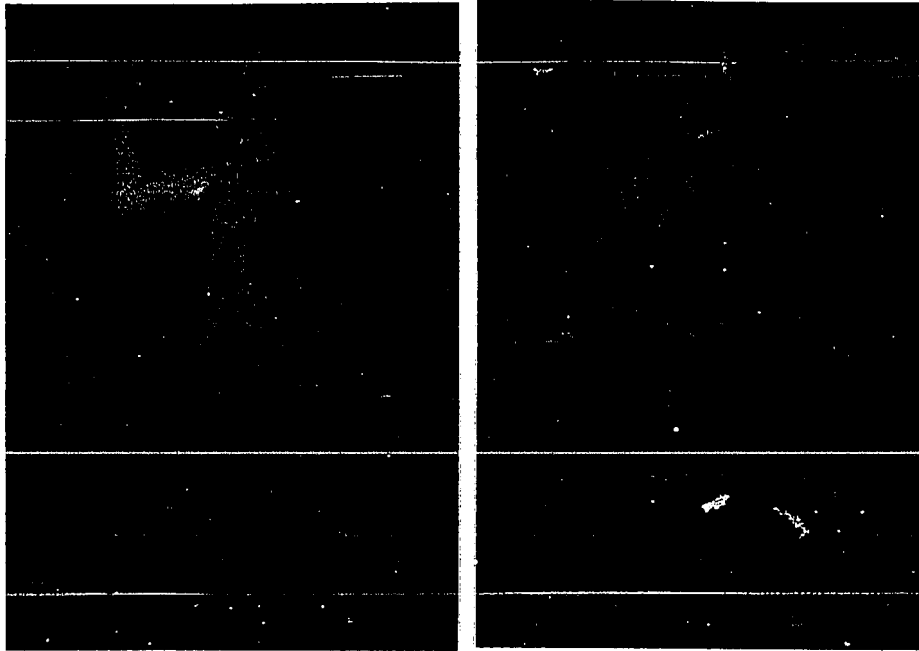


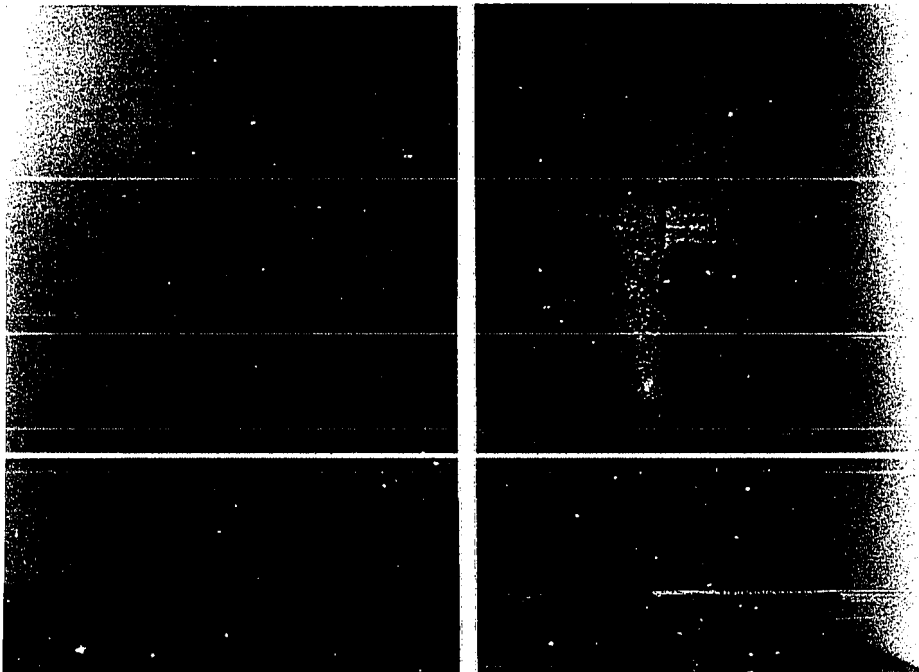
Figure 92. Standing Figure. Costa Rica. Group 1a. 61 cm high. Museo Nacional de Costa Rica 11697. From Between Continents: Between Seas exhibition catalog, 1981, No. 205.



Figures 93a and 93b. Standing Figure. Costa Rica. Group 1a. 49 cm high. Instituto Nacional de Seguros, Museo del Jade 256.



Figures 94a and 94b. Standing Figure. Costa Rica. Group 1a.
76 cm high. Museo Nacional de Costa Rica 14993.



Figures 95a and 95b. Standing Figure. Costa Rica. Group 1a.
70.5 cm high. Instituto Nacional de Seguros, Museo del Jade
3910.

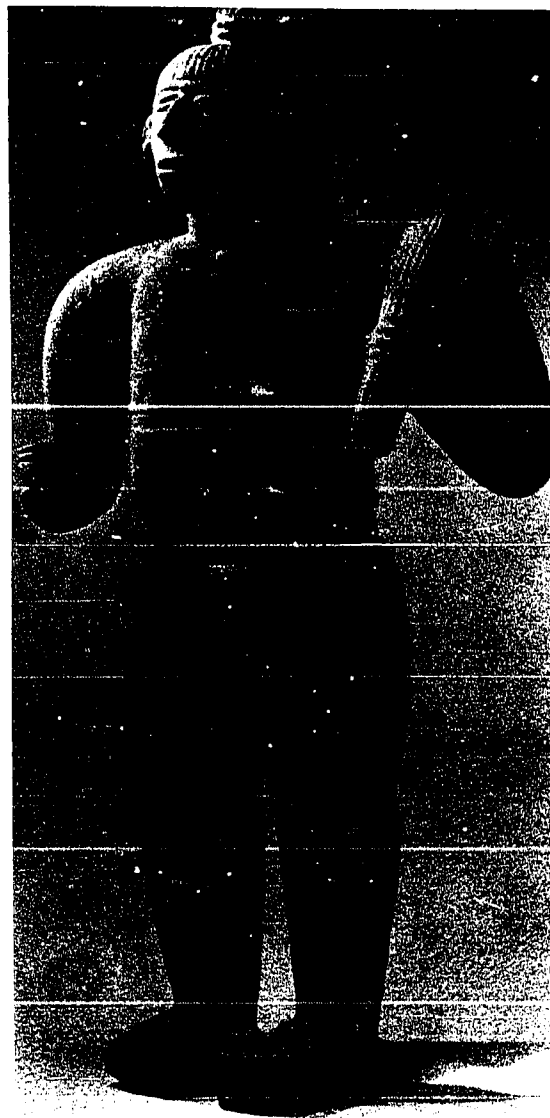


Figure 96. Standing Figure. Costa Rica. Group 1a. 129 cm high. Private Collection. From Stone 1972, p. 179.

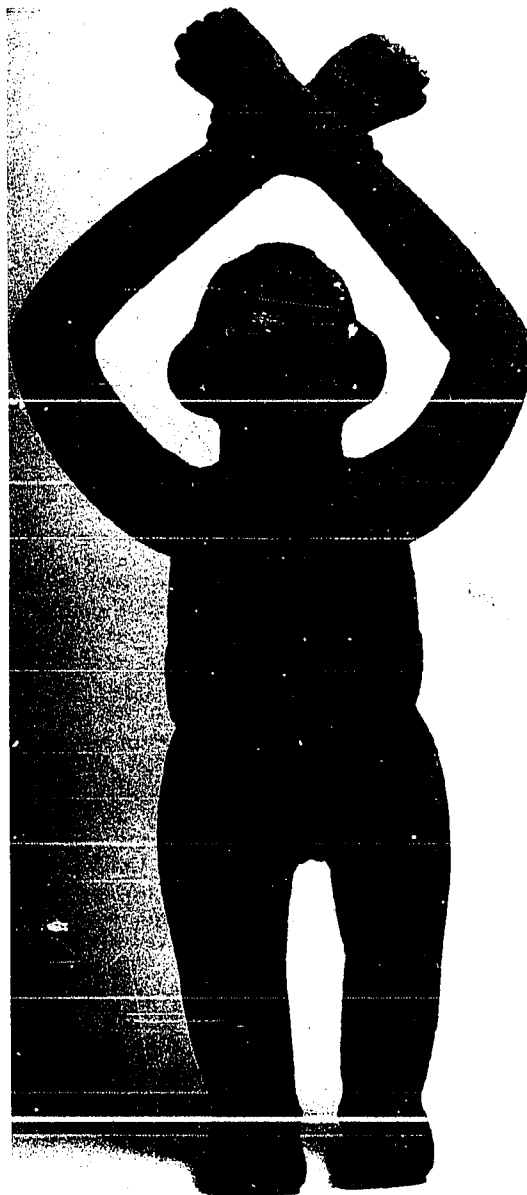
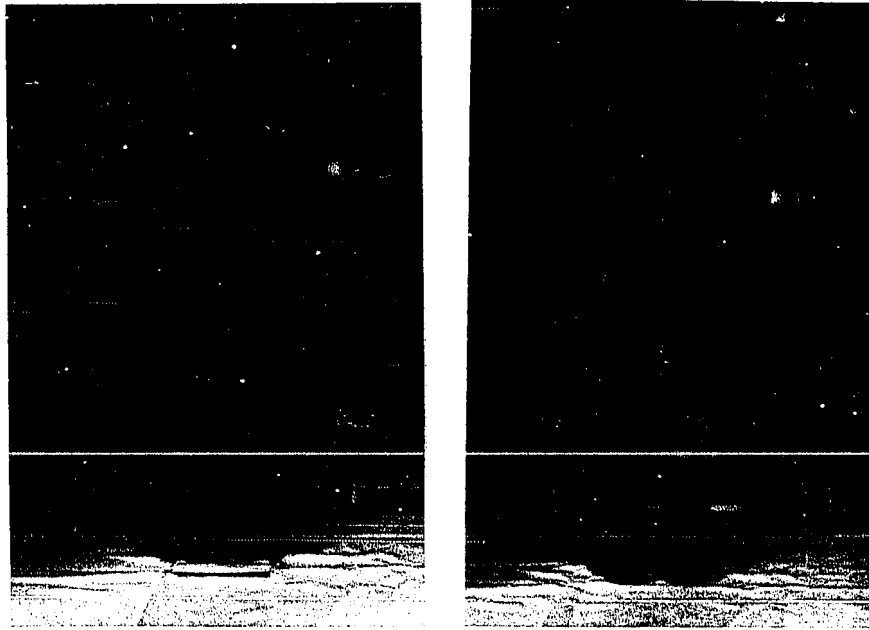
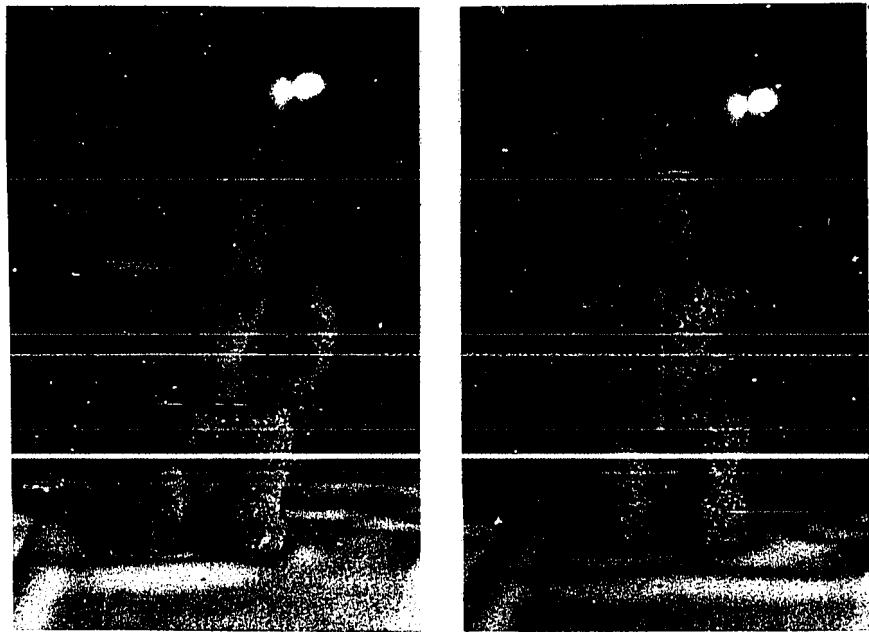


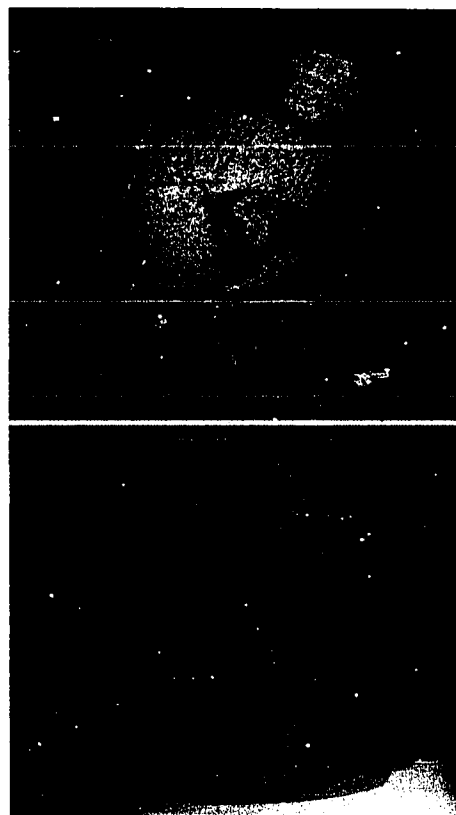
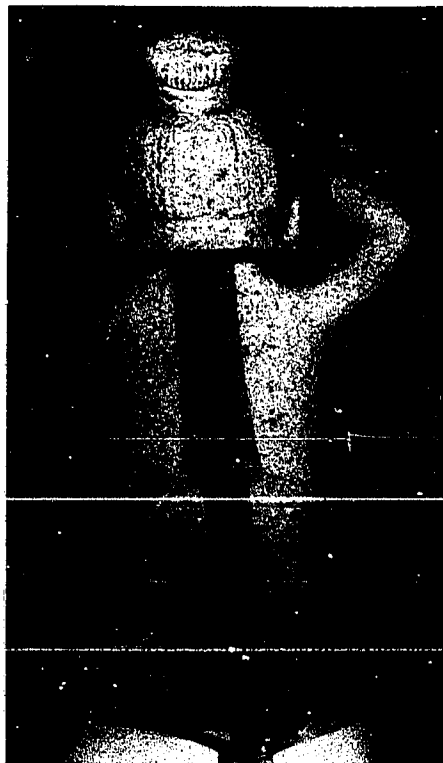
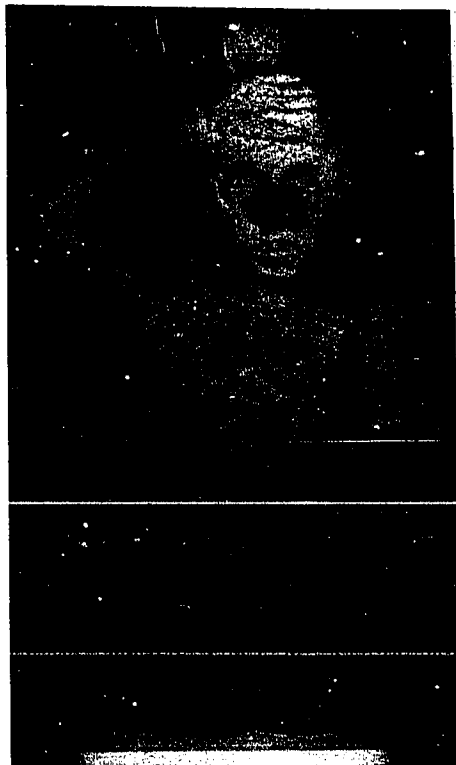
Figure 97. Standing Figure. Costa Rica. Group 1a. 98 cm high. Private Collection. From Between Continents/Between Seas exhibition catalog, 1981, No. 204.



Figures 98a and 98b. Standing Figure. Costa Rica. Group 1a. 47 cm high. Banco Nacional de Costa Rica 977.



Figures 99a and 99b. Standing Figure. Costa Rica. Group 1a. 19 cm high. Banco Nacional de Costa Rica 873.



Figures 100a, 100b and 100c.
Standing Figure. Costa Rica.
Group 1a. 42 cm high. Museo
Nacional de Costa Rica
22996.

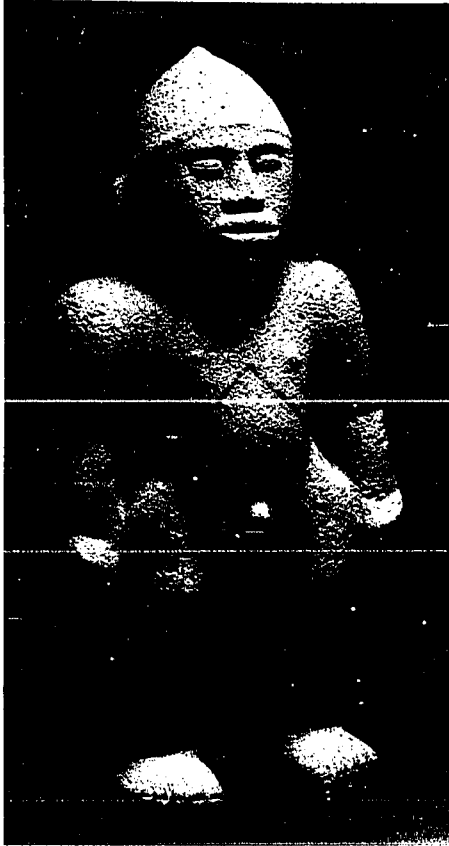


Figure 101. Standing Figure.
Costa Rica. Group 1a. 56 cm
high. Private Collection.
From Between Continents/
Between Seas exhibition
catalog, 1981, No. 194.

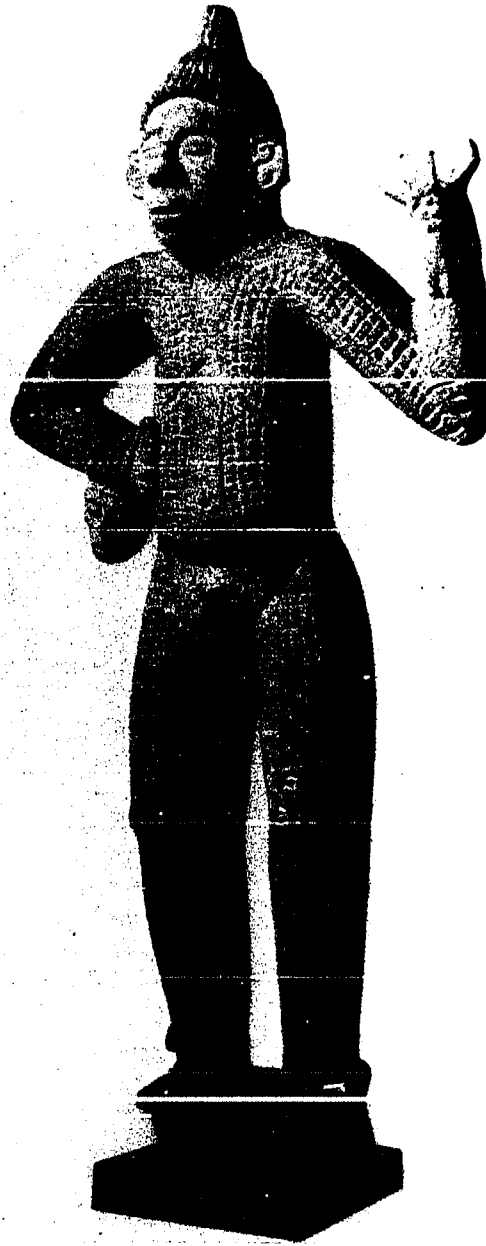
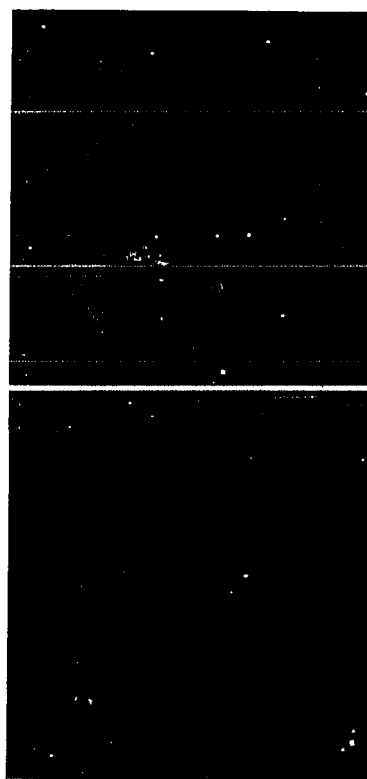
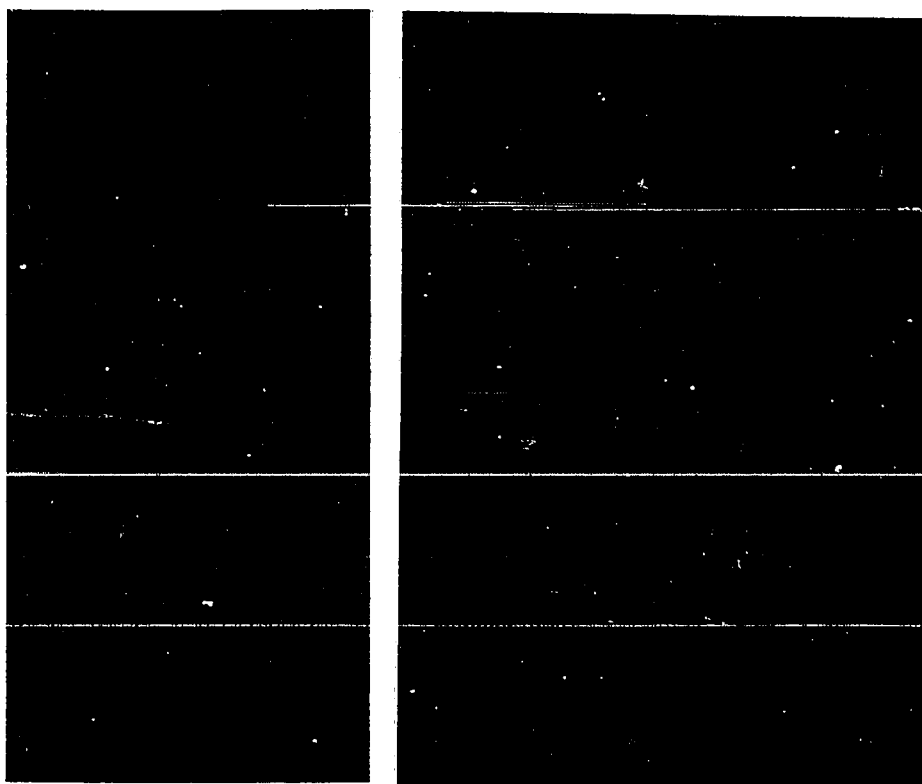
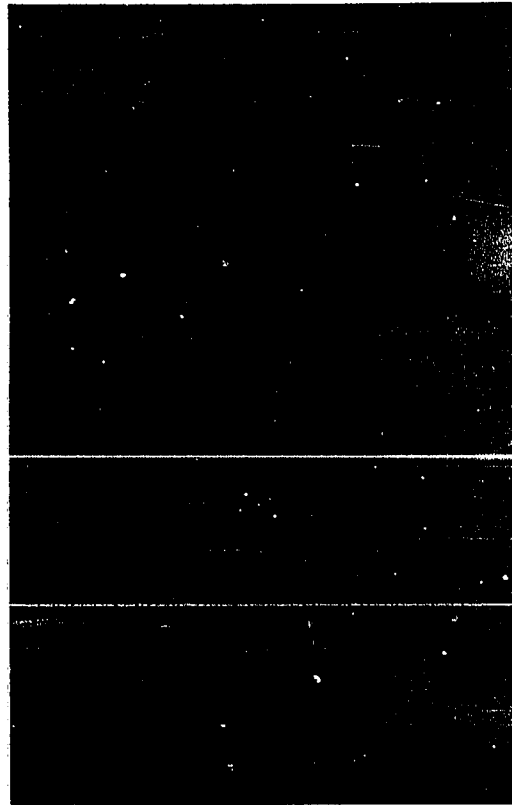
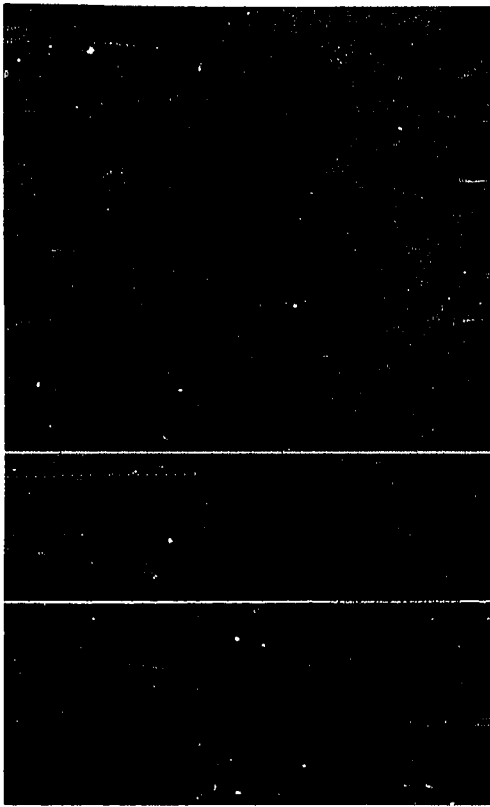


Figure 102. Standing Figure.
Costa Rica. Group 1a. 158 cm high.
Private Collection. From Between
Continents/Between Seas
exhibition catalog, 1981, No. 193.



Figures 103a, 103b and 103c.
Standing Figure. Costa Rica. Group
1a. 152 cm high. American Museum of
Natural History 319268.



Figures 104a and 104b.
Standing Figure. Costa Rica.
Group 1a. 56 cm high. Museum
of the American Indian, Heye
Foundation 7/3429.

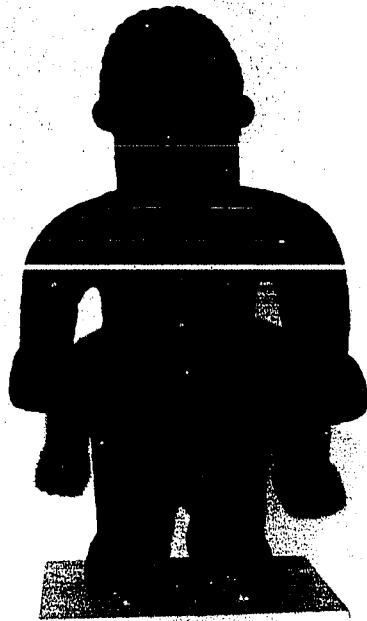
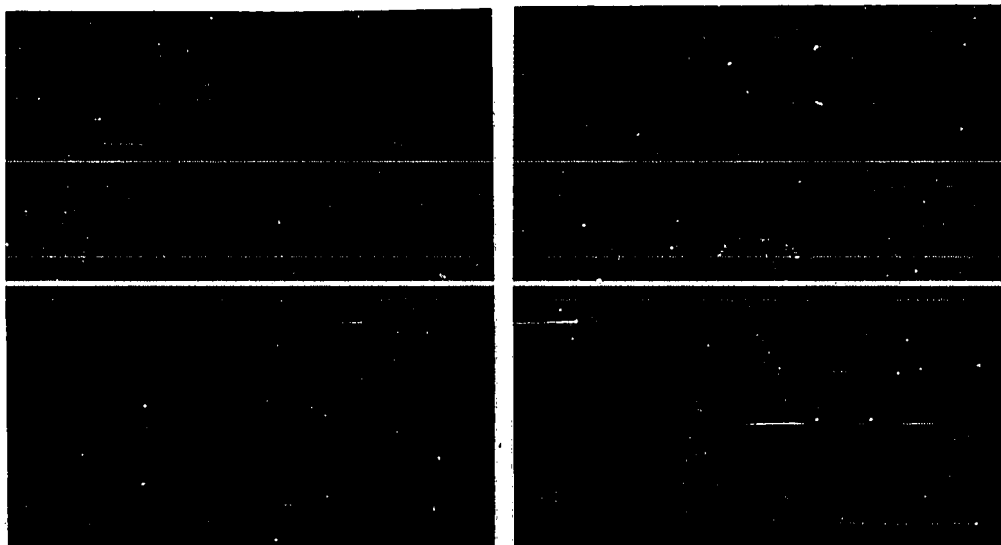


Figure 105. Standing Figure.
Costa Rica. Group 1a. 40 cm
high. Museo Nacional de Costa
Rica 14820.

woman with conical cap or
tattoo marks on arms and
legs, Costa Rica. 1000-1500(?).
Fig. 17.



Figure 106. Standing Figure.
Costa Rica. Group Ia. 43 cm
high. Private Collection. From
Von Winning 1968, Fig. 518.



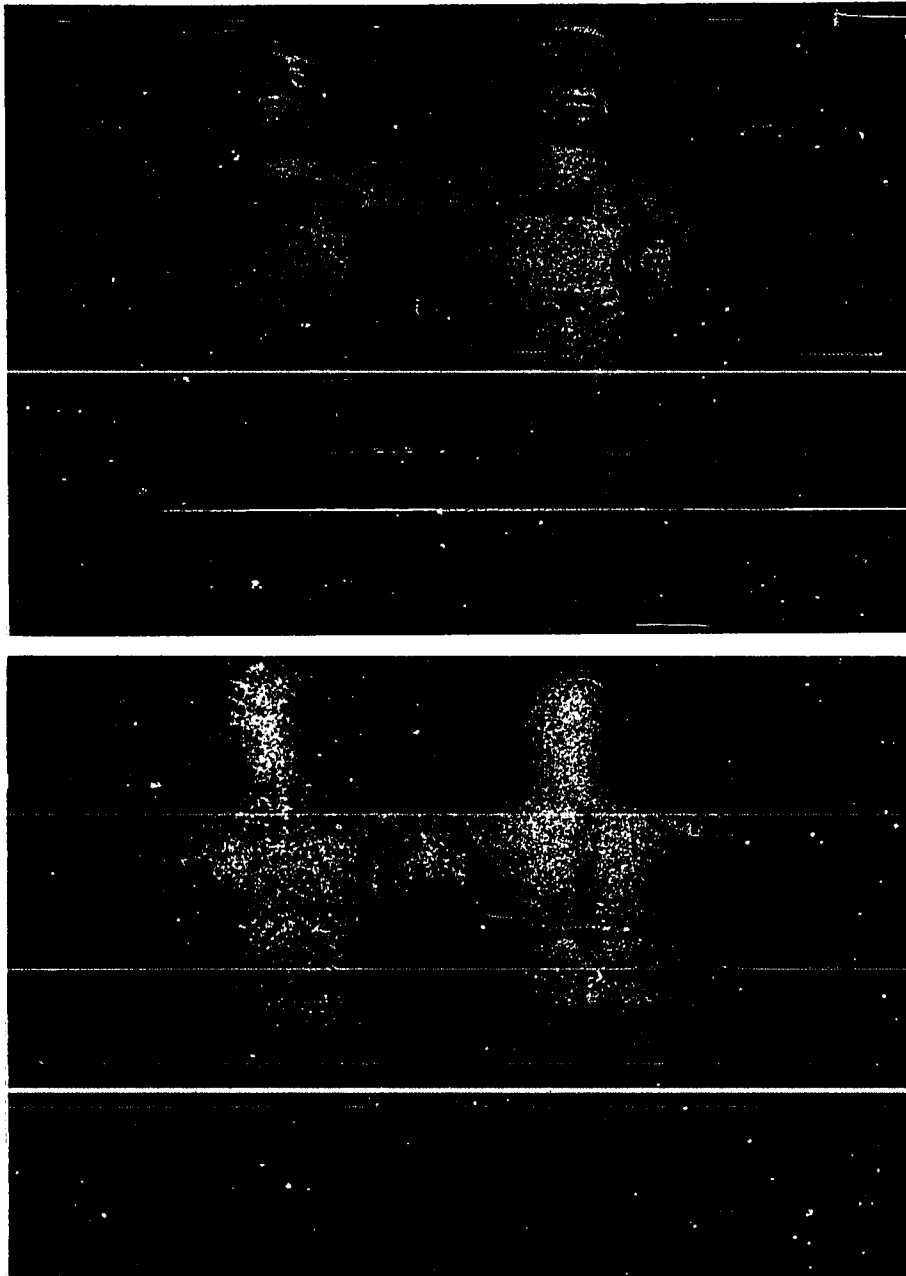
Figures 107a and 107b. Standing Figure. Costa Rica. Group Ia. 18
cm high. Museo Nacional de Costa Rica 14926.



Figure 108. Standing Figure.
Costa Rica. Group 1b. 39.5 cm
high. Yale University Art
Gallery 1958.15.6.



Figure 109. Standing Figure.
Costa Rica. Group 1b. 84 cm high.
Private Collection. From Von
Winning 1968, Fig. 522.



Figures 110a and 110b. Standing Figure. Costa Rica. Group 1b. 35.5 cm high. Museo Nacional de Costa Rica 10.006.

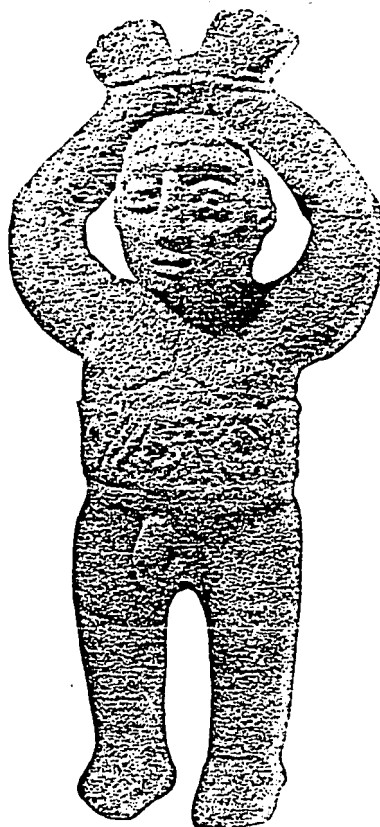


Figure 111. Standing Figure. Costa Rica.
Group 1b. 50 cm high. Private Collection.
From Baudez 1970, Fig. 148.



Figure 112. Standing Figure. Costa Rica. Group 1b. 147.5 cm high.
Museo Nacional de Costa Rica.

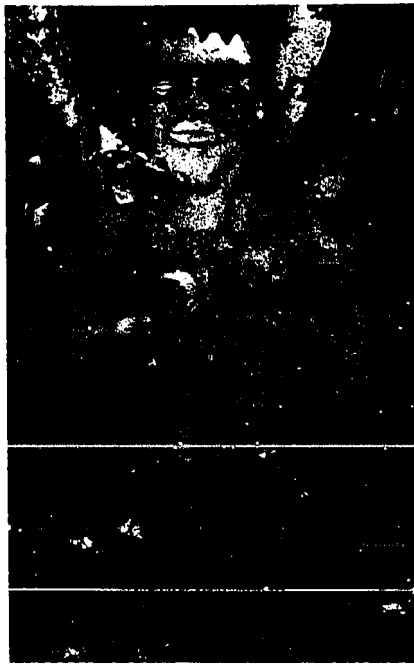


Figure 113. Standing Figure.
Costa Rica. Group 1b. 115.5
cm high. Museo Nacional de
Costa Rica.

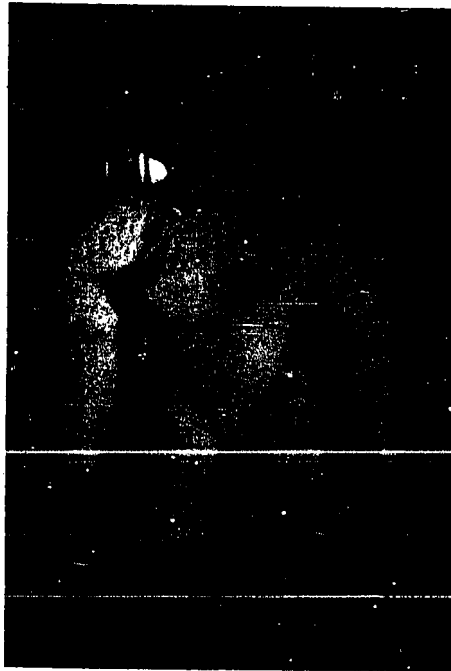


Figure 114. Standing Figure.
Costa Rica. Group 1b. 45 cm
high. Banco Nacional de
Costa Rica 981.

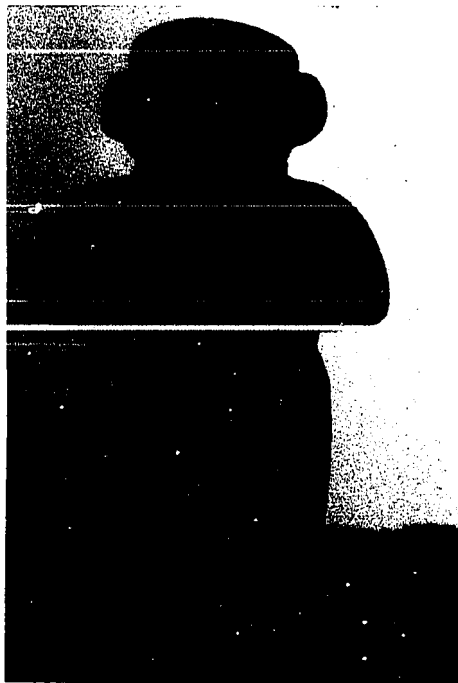


Figure 115. Standing Figure.
Costa Rica. Group 1b. 33 cm
high. Instituto Nacional de
Seguros, Museo del Jade 6400.



Figure 116. Standing Figure. Costa Rica. Group 1c. 35 cm high. National Museum of Natural History, Smithsonian Institution 60887.



Figure 117. Standing Figure. Costa Rica. Group 1c. 33 cm high. American Museum of Natural History 7094.



B.

Figure 118. Standing Figure. Costa Rica. Group 1c. 155 cm high. The Brooklyn Museum 15345. From Mason 1945, Pl. 35B.



Figure 119. Standing Figure.
Costa Rica. Group 1c. 145 cm
high. Museo Nacional de
Costa Rica 22997.

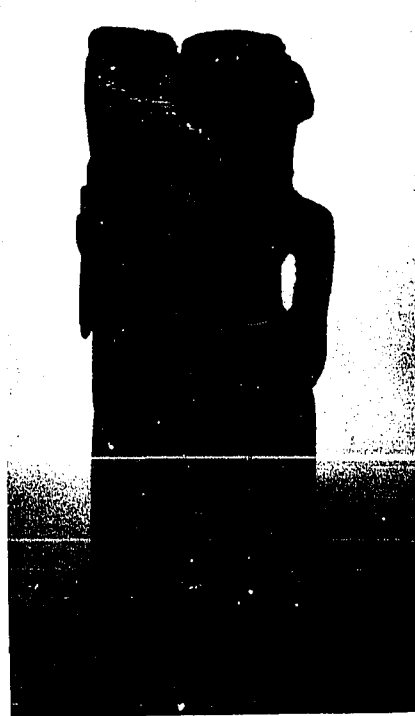


Figure 120. Standing Figure.
Costa Rica. Group 1c. 134 cm
high. Museo Nacional de Costa
Rica.

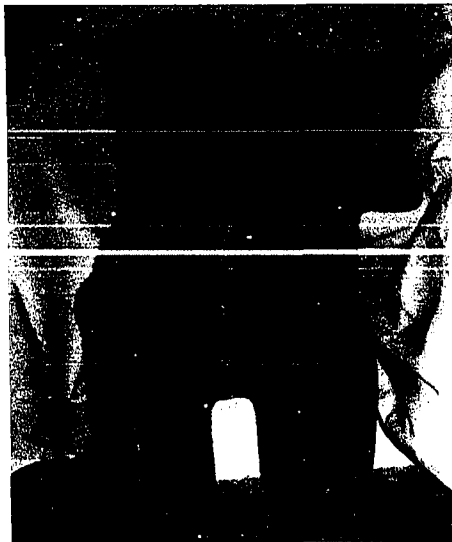


Figure 121. Standing Figure.
Costa Rica. Group 1c. 83 cm
high. National Museum of
Natural History, Smithsonian
Institution 60889.



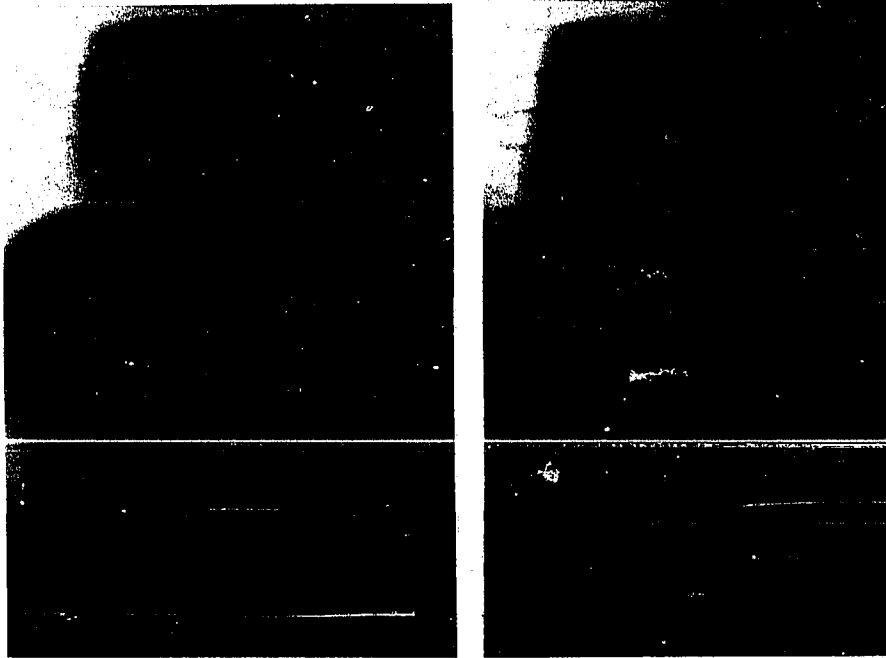
Figure 122. Standing Figure.
Costa Rica. Group 1c. 69 cm
high. Carnegie Museum of
Natural History 2793/1490.



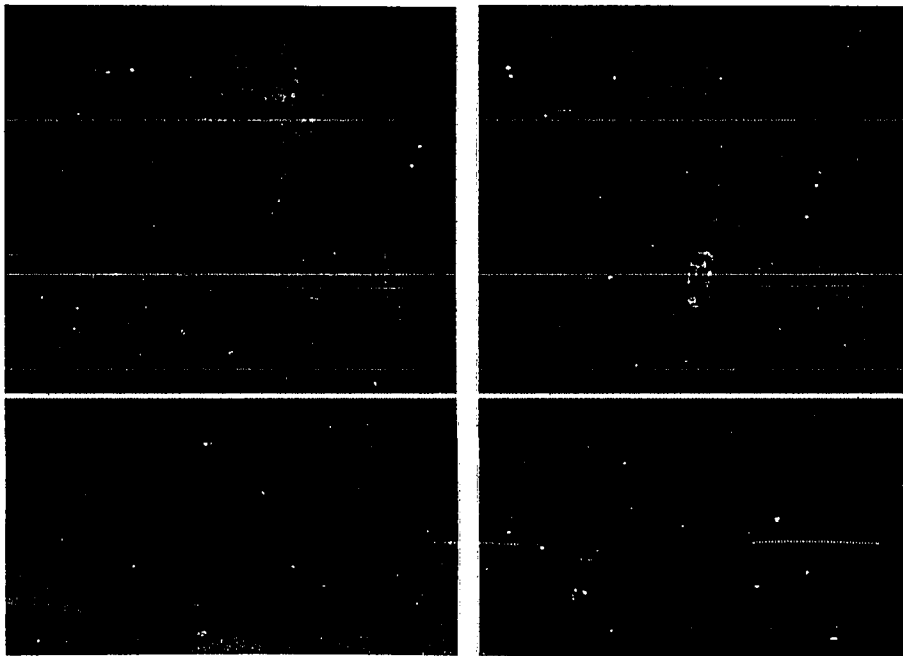
Figure 123. Standing Figure.
Costa Rica. Group 1c. 80 cm
high. Museo Nacional de Costa
Rica 116.



Figure 124. Standing Figure.
Costa Rica. Group 1c. 39 cm
high. Museum of the American
Indian, Heye Foundation
7/8193.



Figures 125a and 125b. Standing Figure. Costa Rica.
Group 2a. 25 cm high. American Museum of Natural History
1695.



Figures 126a and 126b. Standing Figure. Costa Rica.
Group 2a. 16 cm high. Banco Nacional de Costa Rica 863.

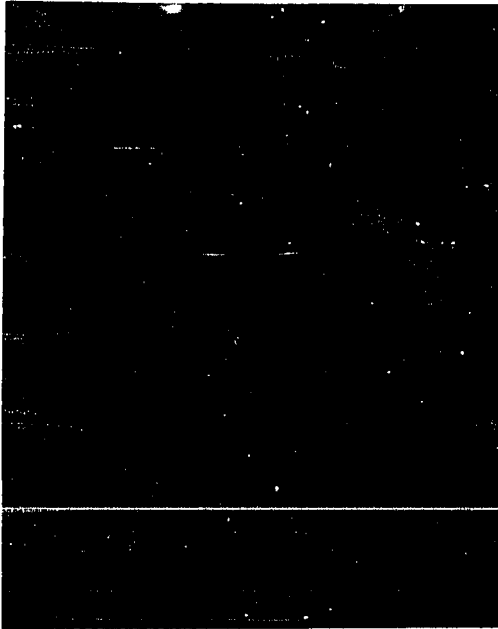
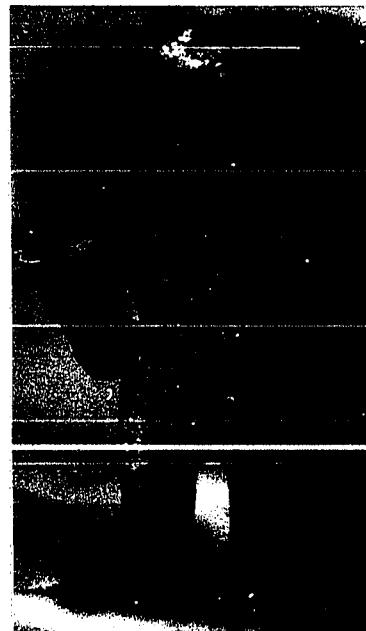
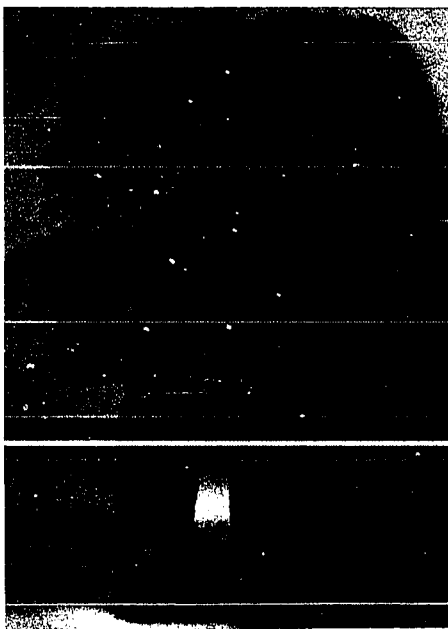


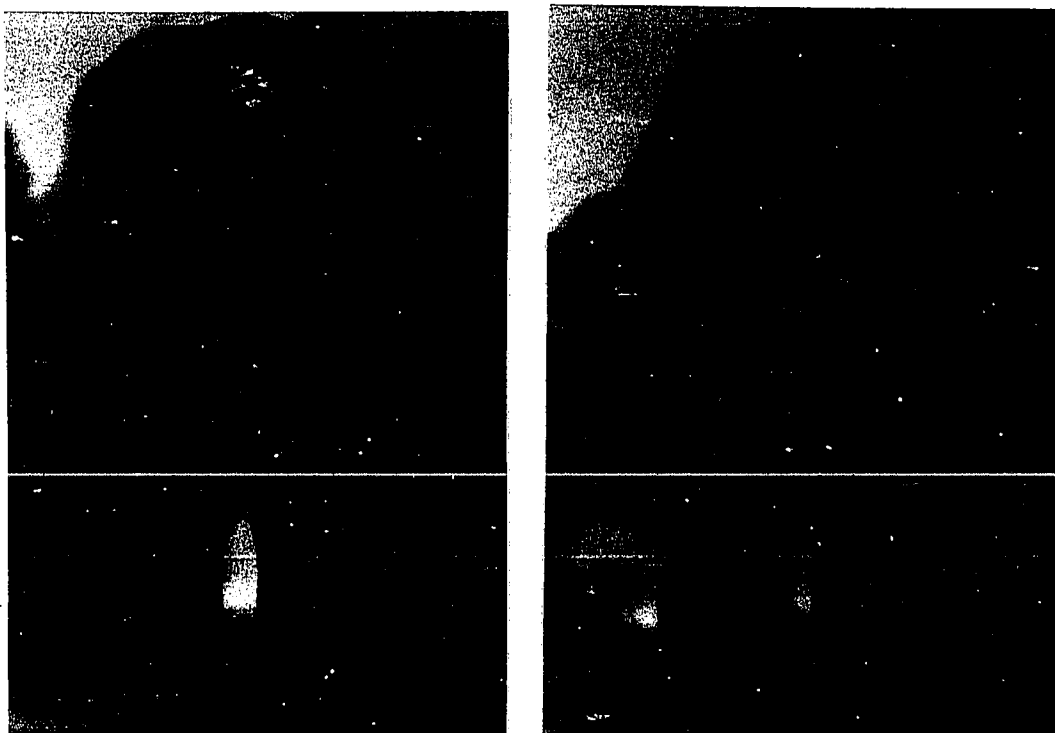
Figure 127. Standing Figure.
Costa Rica. Group 2a. 29 cm
high. Banco Nacional de Costa
Rica 982.



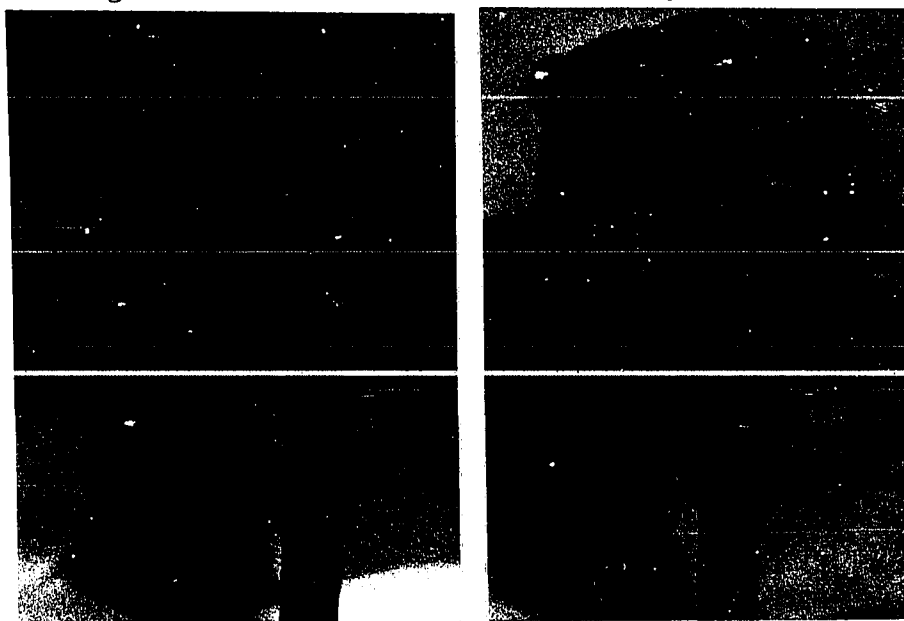
Figure 128. Standing Figure.
Costa Rica. Group 2a. 24 cm
high. Banco Nacional de Costa
Rica 1559.



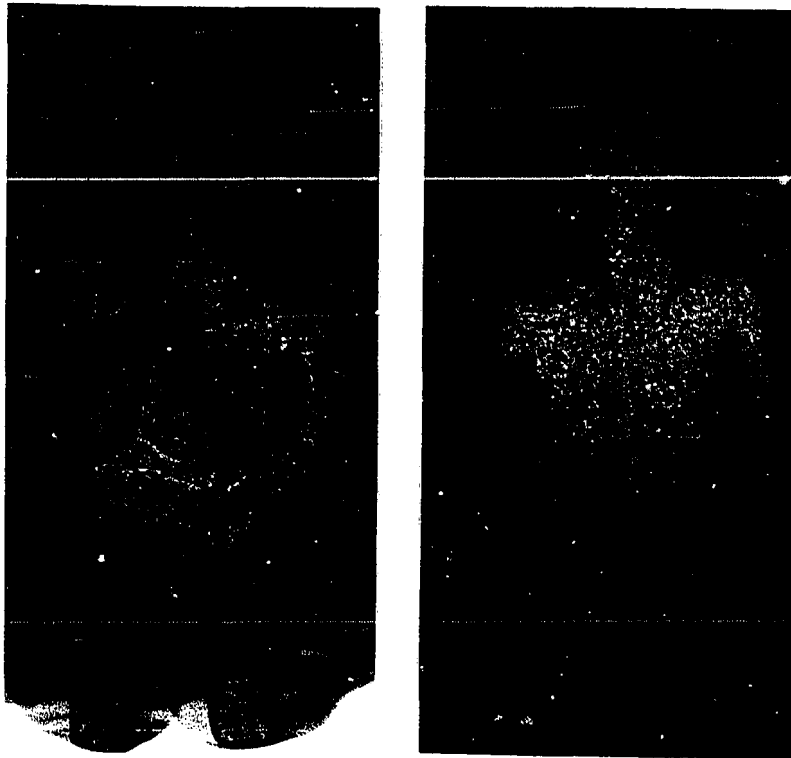
Figures 129a and 129b. Standing Figure. Costa Rica.
Group 2a. 27.5 cm high. American Museum of Natural
History 7102.



Figures 130a and 130b. Standing Figure. Costa Rica. Group 2a.
33 cm high. American Museum of Natural History 1686.



Figures 131a and 131b. Standing Figure. Costa Rica. Group 2a.
27.5 cm high. Museum of the American Indian, Heye Foundation
7/3437.



Figures 132a and 132b. Standing Figure. Costa Rica.
Group 2a. 43 cm high. Banco Nacional de Costa Rica 975.

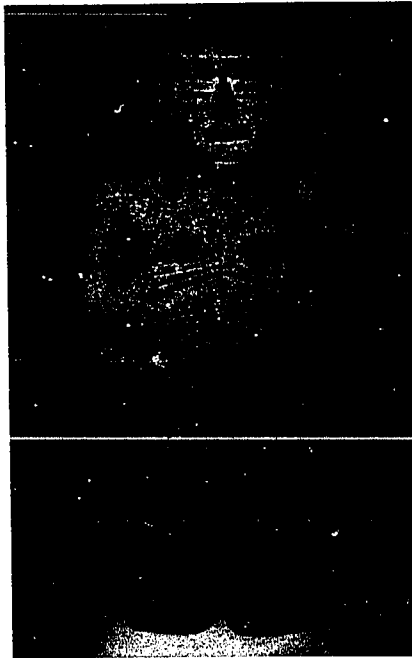


Figure 133. Standing Figure.
Costa Rica. Group 2b. 56.5 cm
high. Museo Nacional de Costa
Rica 20.490.

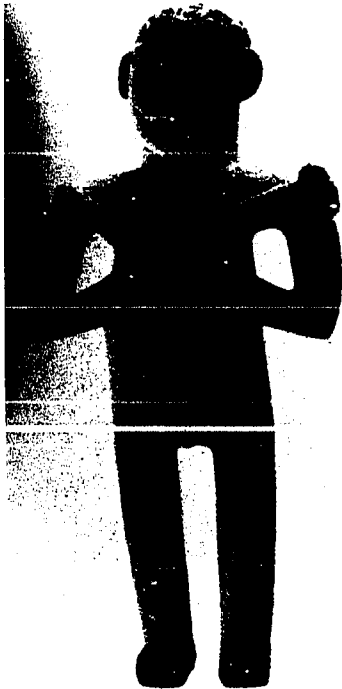
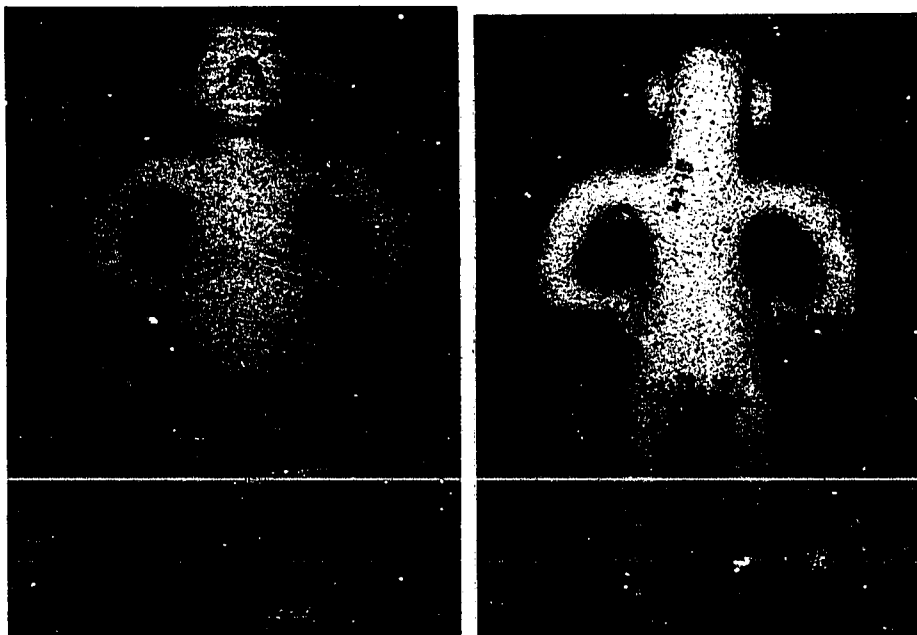


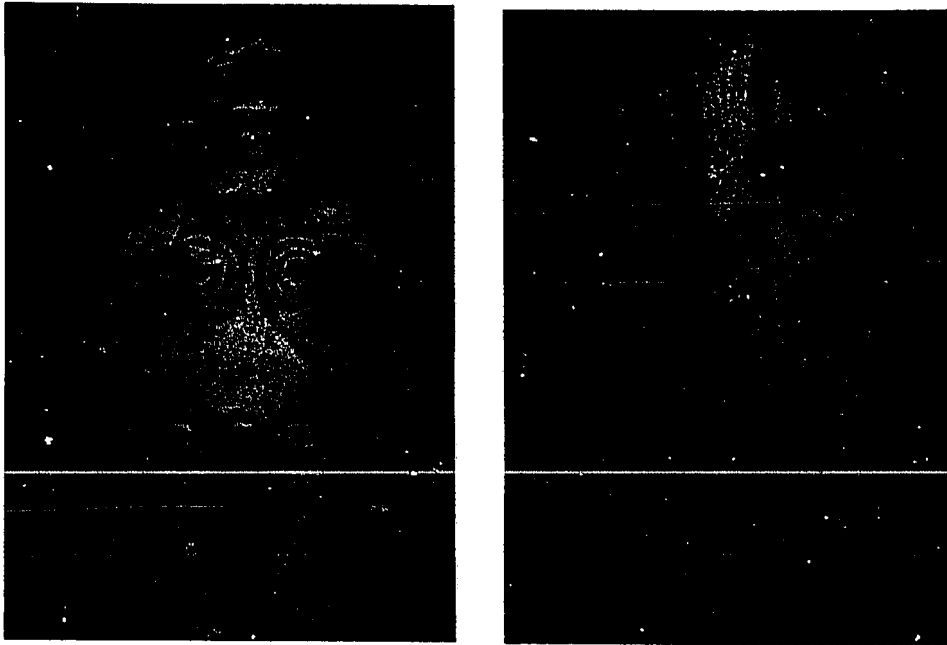
Figure 134. Standing Figure.
Costa Rica. Group 2b. 53 cm
high. Museo Nacional de Costa
Rica 14832. From Between
Continents/Between Seas
exhibition catalog, 1981, Fig.
206.



Figures 135a and 135b. Standing Figure. Costa Rica. Group 3a. 49 cm high. Museo Nacional de Costa Rica 4775.



Figures 136a and 136b. Standing Figure. Costa Rica. Group 3a. 53 ccm high. Carnegie Museum of Natural History 2439/2956.



Figures 137a and 137b. Standing Figure. Costa Rica. Group 3a. 59.5 cm high. Museo Nacional de Costa Rica 121.



Figure 138. Standing Figure. Costa Rica. Group 3a. 49 cm high. Banco Nacional de Costa Rica 979. From Between Continents/Between Seas exhibition catalog, 1981, No. 220 and 221.

Figure 139. Standing Figure. Costa Rica. Group 3a. 47 cm high. Banco Nacional de Costa Rica 974.

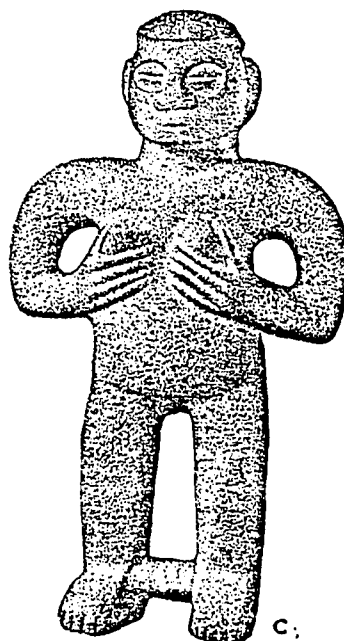
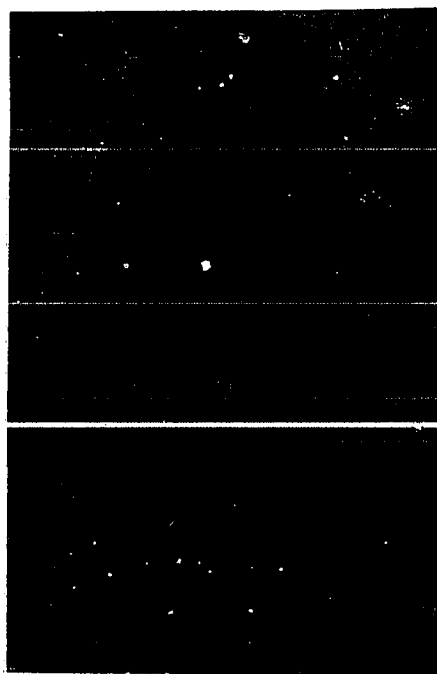
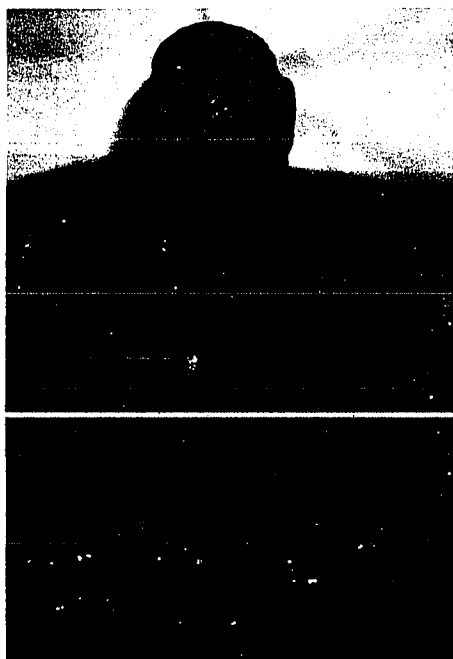
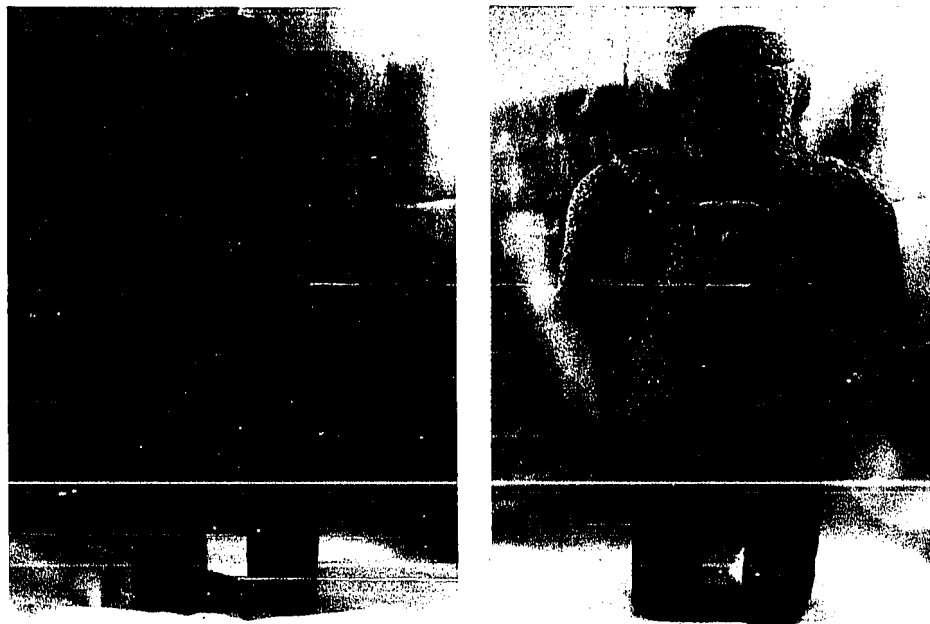


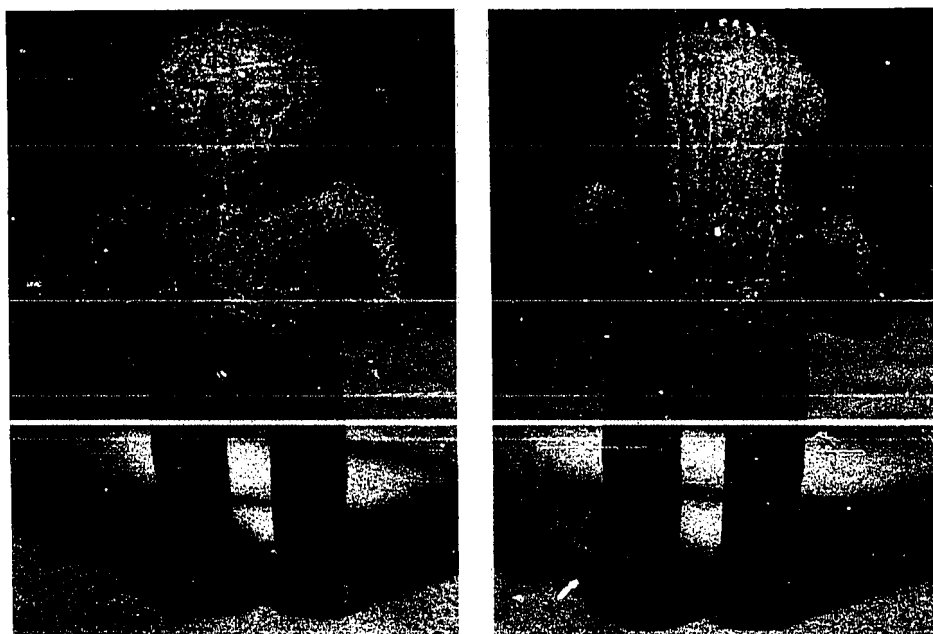
Figure 140. Standing Figure. Costa Rica. Group 3a. 63 cm high. The Brooklyn Museum 7095. Mason 1945, Pl. 36C.



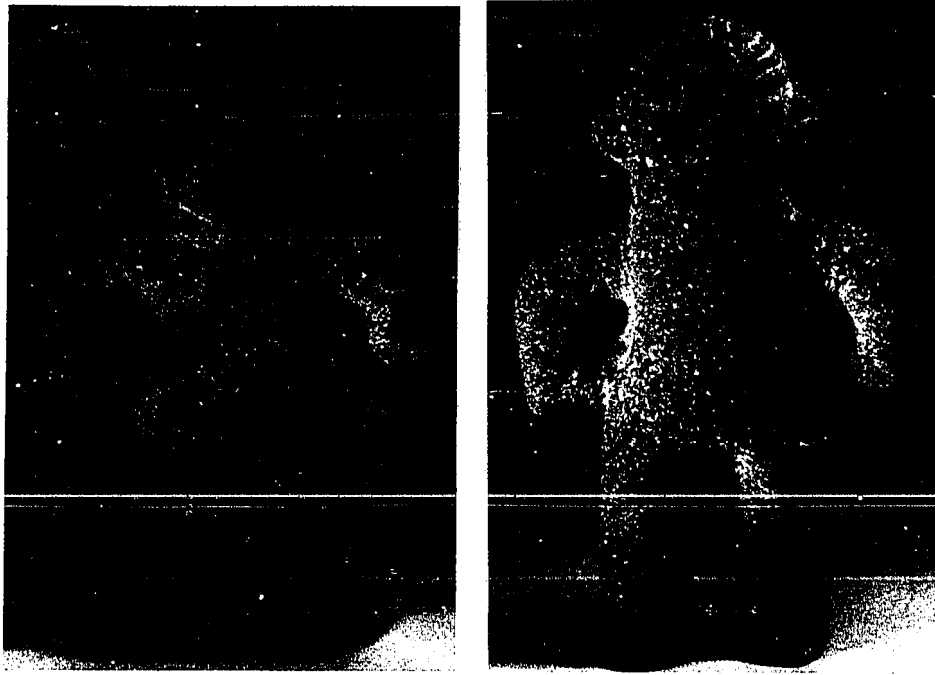
Figures 141a and 141b. Standing Figure. Costa Rica. Group 3a. 59 cm high. Carnegie Museum of Natural History 2439/2954.



Figures 142a and 142b. Standing Figure. Costa Rica. Group 3a. 49 cm high. Museum of the American Indian, Heye Foundation 7/3430.



Figures 143a and 143b. Standing Figure. Costa Rica. Group 3a. 12.5 cm high. Banco Nacional de Costa Rica 868.



Figures 144a and 144b. Standing Figure. Costa Rica. Group 3a. 17 cm high. Museum of the American Indian, Heye Foundation 24/3067.

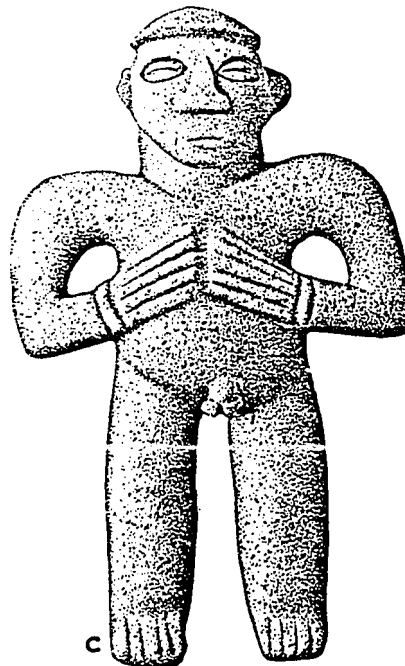
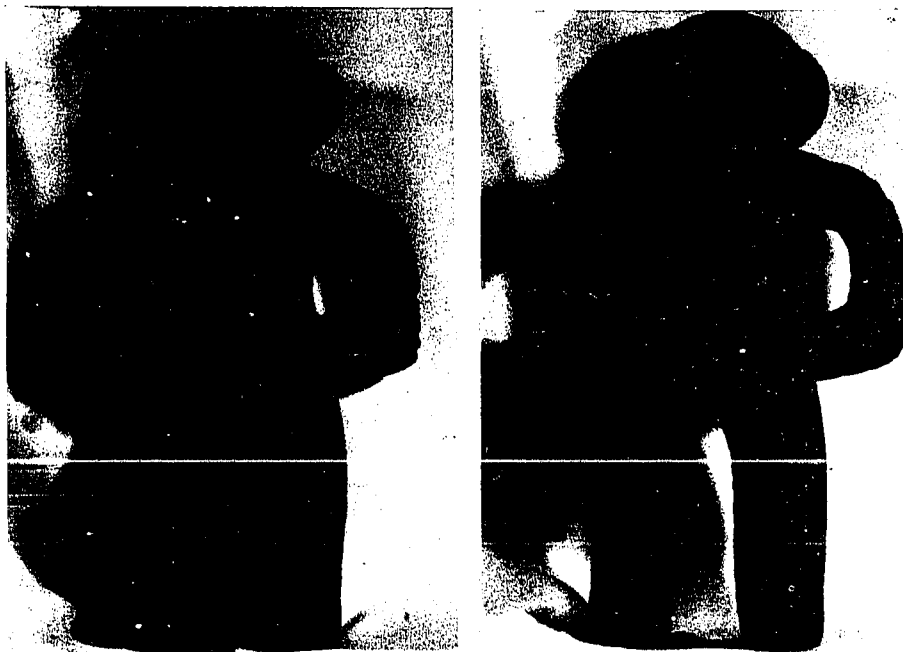
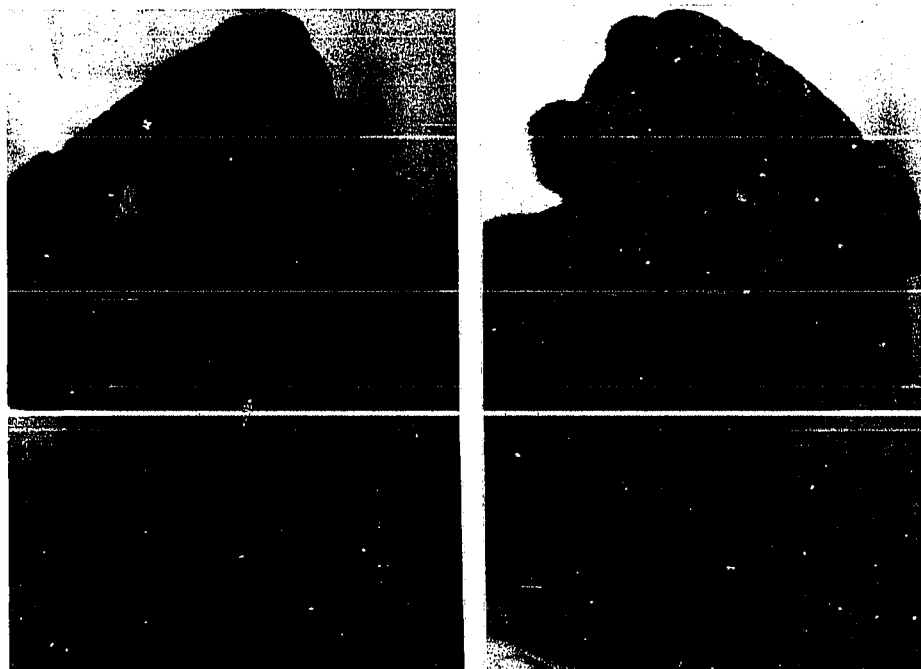


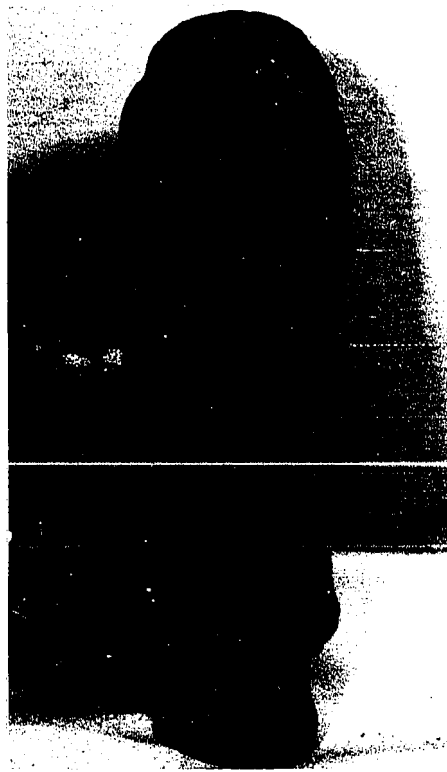
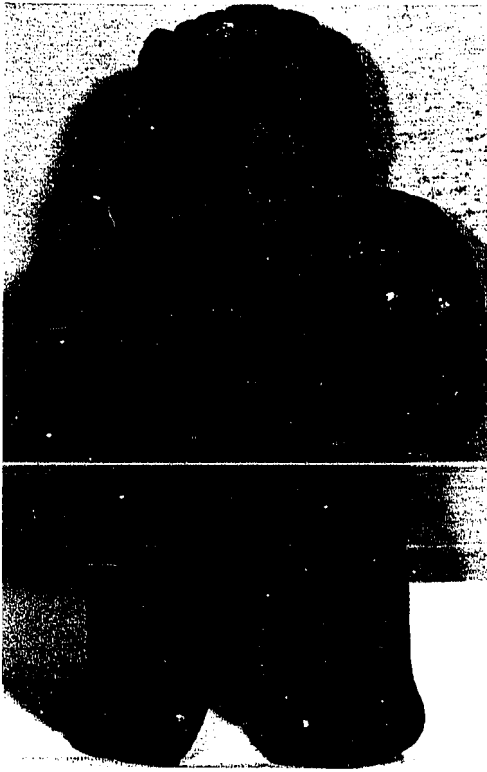
Figure 145. Standing Figure. Costa Rica. Group 3a. 44 cm high. The Brooklyn Museum 7074. From Mason 1945, Pl. 41C.



Figures 146a and 146b. Standing Figure. Costa Rica. Group 3a. 31.5 cm high. Museum of the American Indian, Heye Foundation 7/3498.



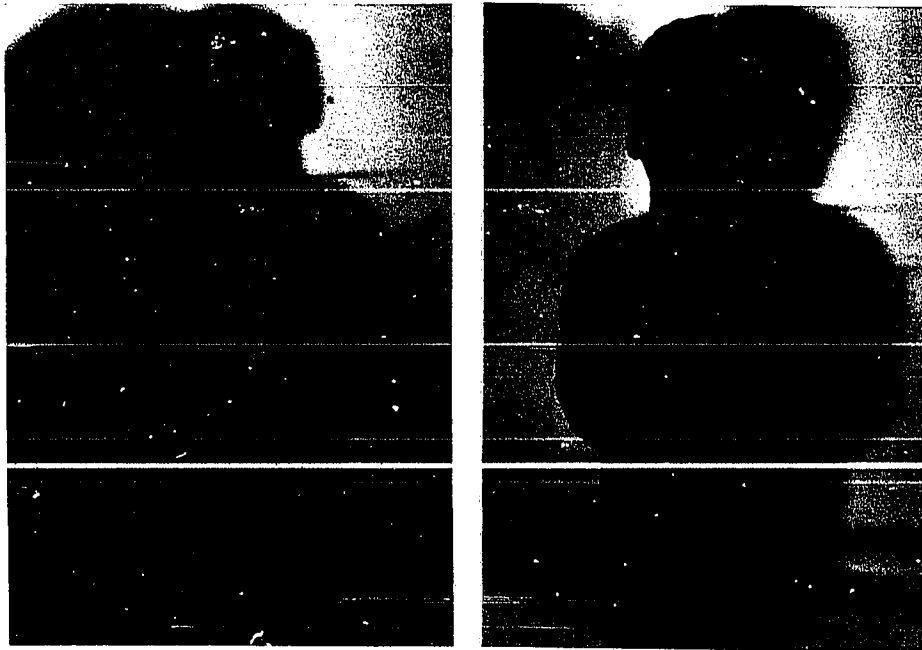
Figures 147a and 147b. Standing Figure. Costa Rica. Group 3a. 37 cm high. Museum of the American Indian, Heye Foundation 7/3436.



Figures 148a, 148b, and 148c.
Standing Figure. Costa Rica.
Group 3b. 25.5 cm high.
Carnegie Museum of Natural
History 2793/2099.



Figures 149a and 149b. Standing Figure. Costa Rica. Group 3b. 28 cm high. Carnegie Museum of Natural History 2439/2962.



Figures 150a and 150b. Standing Figure. Costa Rica. Group 3b. 36.5 cm high. American Museum of Natural History 1688.

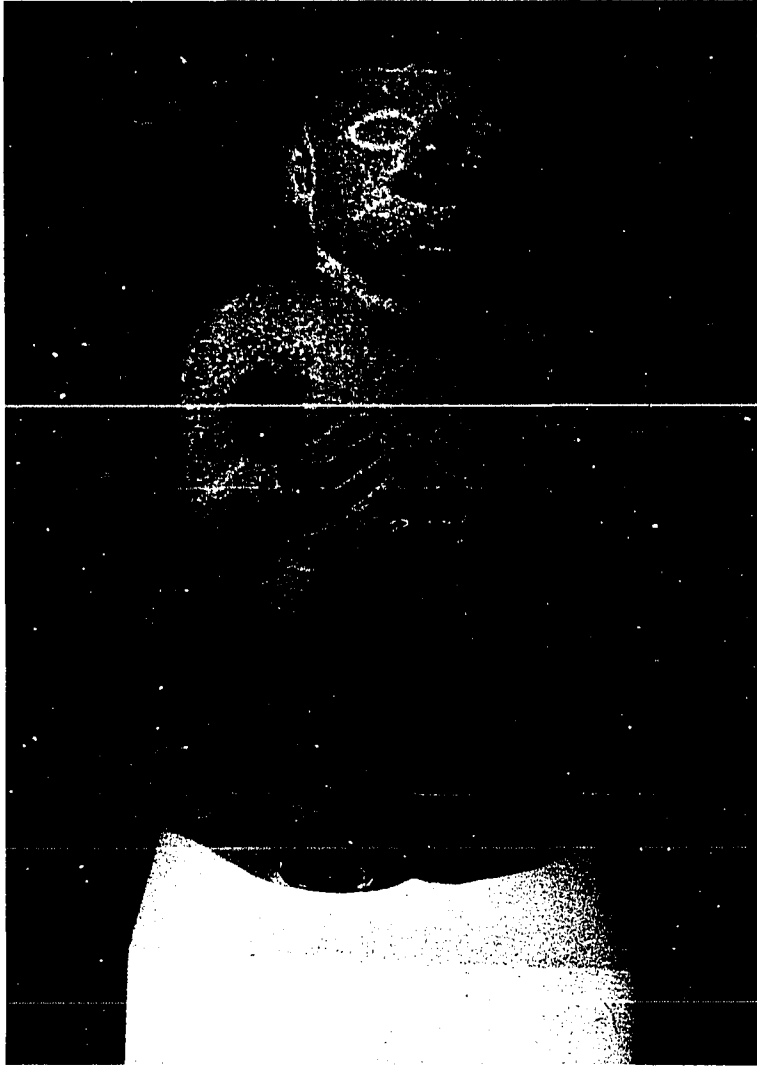


Figure 151. Standing Figure. Costa Rica.
Group 3b. 44.5 cm high. Museo Nacional de
Costa Rica 2726.

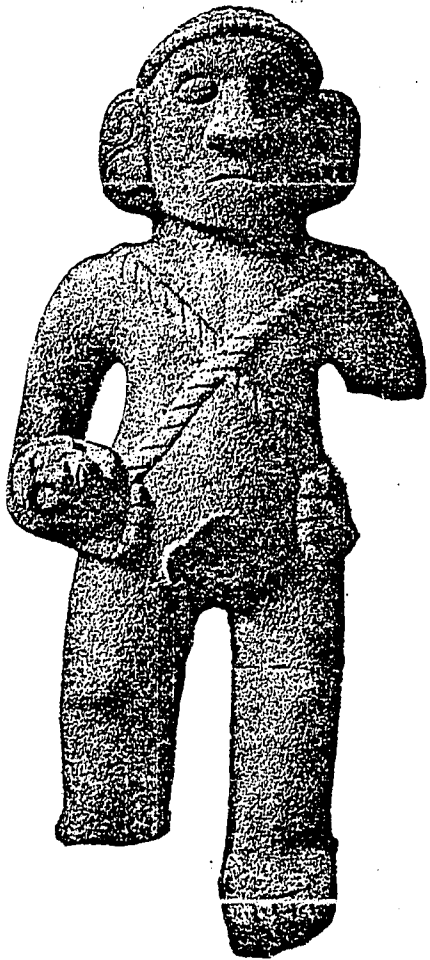


Figure 152. Standing Figure.
Costa Rica. Group 3b. 180 cm
high. Royal Ethnographical
Museum, Stockholm 1900.3-1.37.
From Hartman 1901, Pl. 3,
Fig. 1.

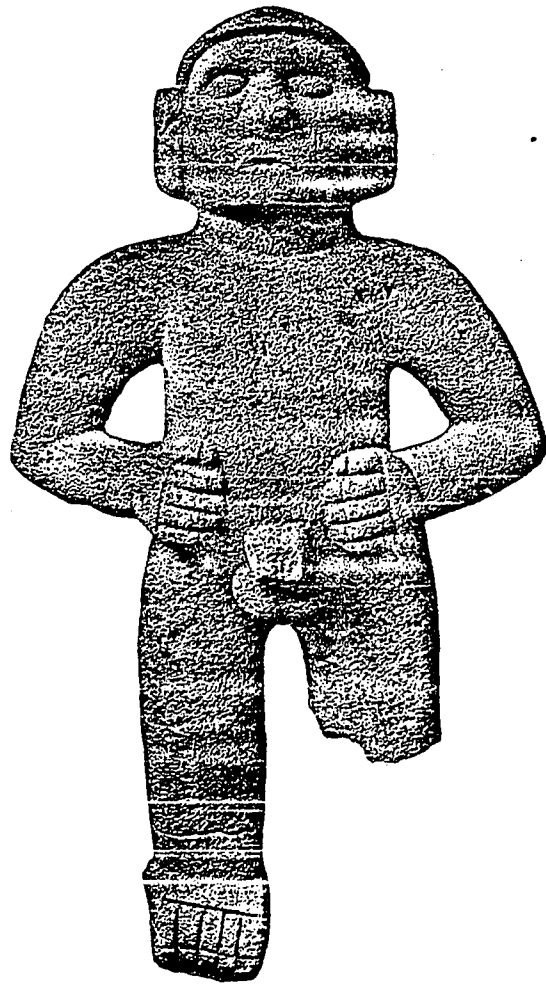


Figure 153. Standing Figure.
Costa Rica. Group 3b. 185 cm
high. Royal Ethnographical
Museum, Stockholm 1900.3-1.38.
From Hartman 1901, Pl. 3, Fig. 3.



Figure 154. Standing Figure.
Costa Rica. Group 3b. 37 cm
high. American Museum of
Natural History 1691.



Figure 155. Standing Figure.
Costa Rica. Group 3b. 24.5 cm
high. American Museum of
Natural History 6465.

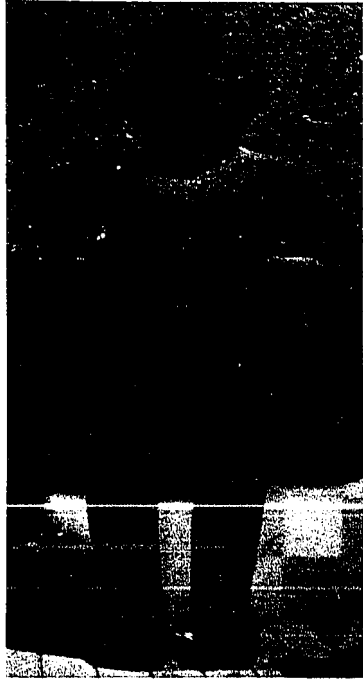


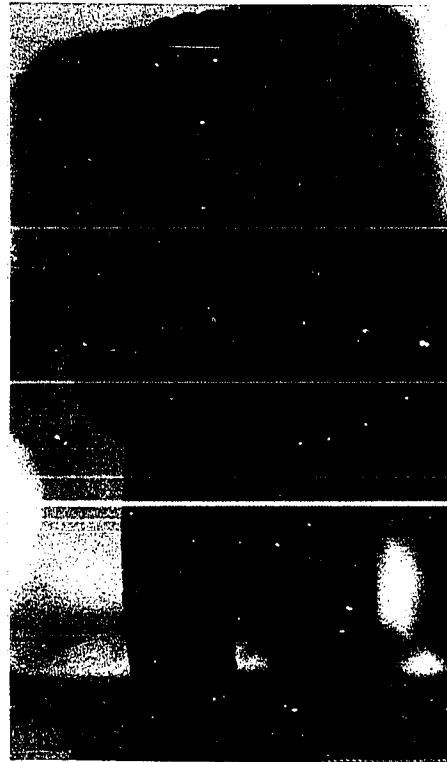
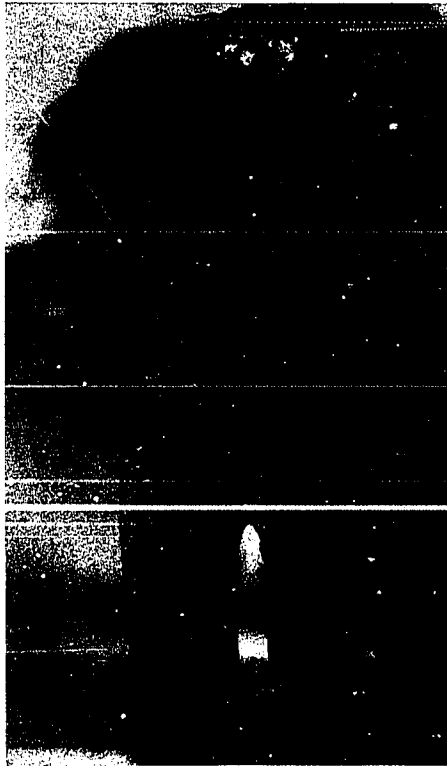
Figure 156. Standing Figure. Costa Rica. Group 3b. 70 cm high. American Museum of Natural History.



Figures 157a and 157b. Standing Figure. Costa Rica. Group 3b. 16 cm high. Carnegie Museum of Natural History 2439/2966.



Figure 158. Standing
Figure. Costa Rica. Group
3b. 37 cm high. Carnegie
Museum of Natural History
2439/2953.



Figures 159a and 159b. Standing Figure. Costa Rica. Group
3b. 35 cm high. American Museum of Natural History 1681.

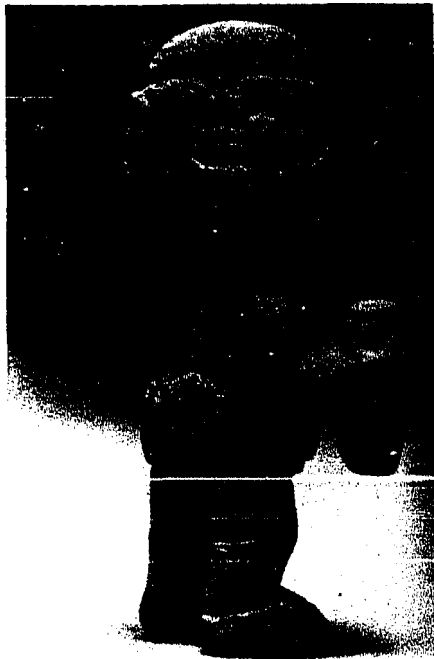
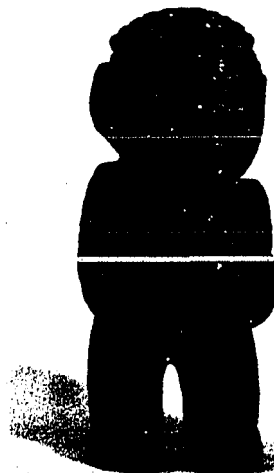
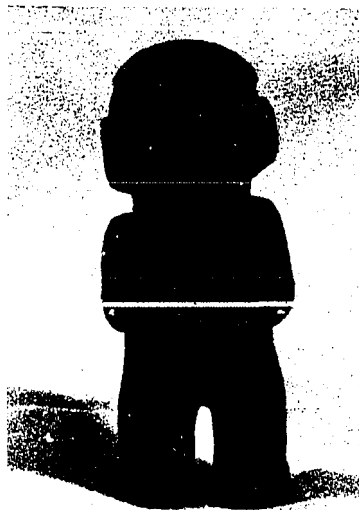


Figure 160. Standing Figure.
Costa Rica. Group 3c. 12.5 cm
high. Private Collection.



Figure 161. Standing Figure.
Costa Rica. Group 3c. 11 cm
high. Banco Nacional de Costa
Rica 964.

From Between Continents/Between Seas exhibition catalog, 1981,
No. 223, 222.



Figures 162a and 162b. Standing Figure. Costa Rica.
Group 3c. 10.5 cm high. Museum of the American Indian,
Heye Foundation 19/531.

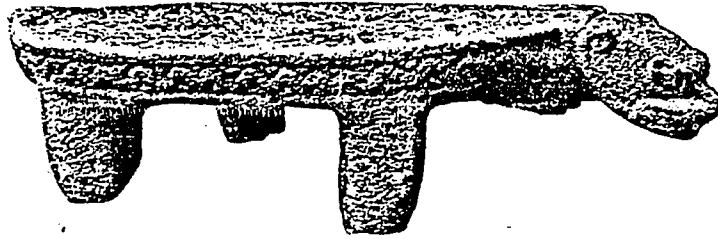


Figure 163. Effigy Grinding Stone. Costa Rica. 43.5 cm long x 8 cm high. The Royal Ethnographical Museum of Stockholm. Orosi V, Grave 59. From Hartman 1901, Pl. 62, No. 4.

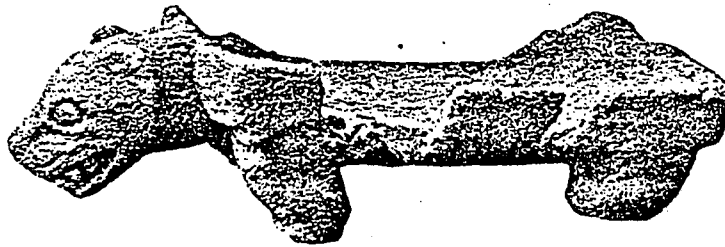


Figure 164. Effigy Grinding Stone. Costa Rica. 32 cm long x 6.5 cm high. The Royal Ethnographical Museum of Stockholm. Santiago. From Hartman 1901, Pl. 16, No. 12.

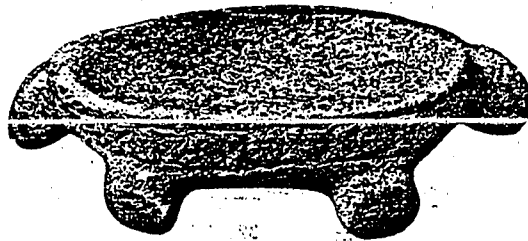


Figure 165. Effigy Grinding Stone. Costa Rica. 19.5 cm long x 5.5 cm high. The Royal Ethnographical Museum of Stockholm. Chircot, Grave 56. From Hartman 1901, Pl. 22, No. 3.

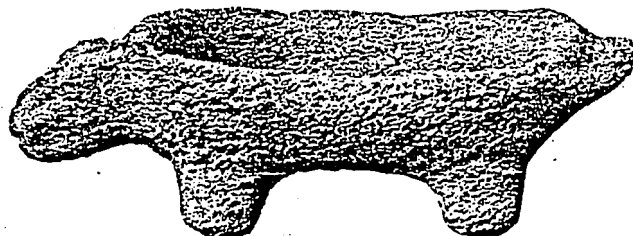


Figure 166. Effigy Grinding Stone. Costa Rica. 23 cm long x 7 cm high. The Royal Ethnographical Museum of Sstockholm. Chircot I, Grave 85. From Hartman 1901, Pl. 24, No, 7.

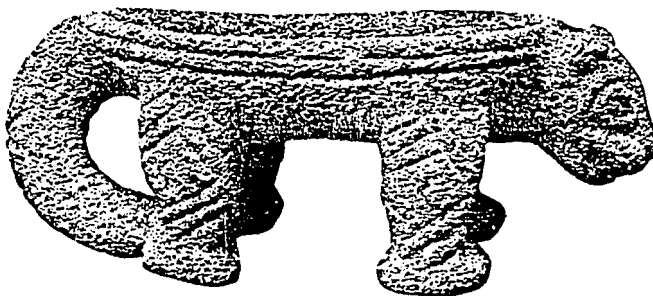


Figure 167. Effigy Grinding Stone. Costa Rica. 24.5 cm long. The Royal Ethnographical Museum of Stockholm. Orosi V, Grave 36. From Hartman 1901, Pl. 56, No. 3.

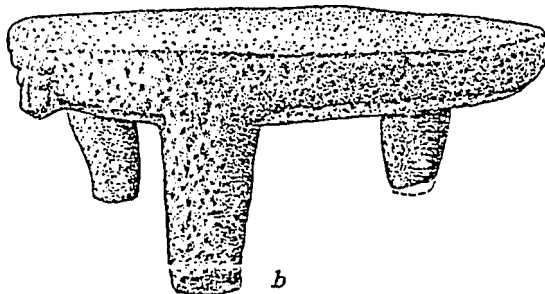


Figure 168. Effigy Grinding Stone. Panama. 40 cm long x 18 cm high. Peabody Museum of Archaeology and Ethnology, Harvard University. Sitio Conte, Grave 5. From Lothrop 1937, Fig. 62b.

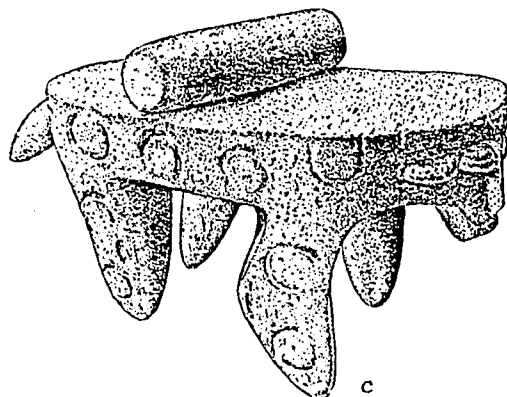


Figure 169. Effigy Grinding Stone. Panama. 10.5 cm long x 6 cm high. Peabody Museum of Archaeology and Ethnology, Harvard University. Sitio Conte, Grave 1. From Lothrop 1937, Fig. 62c.

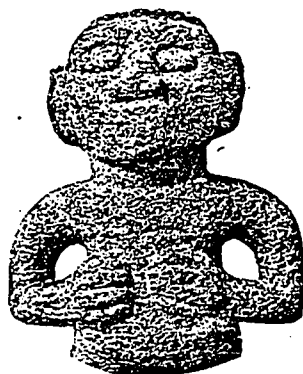


Figure 170. Standing Figure. Costa Rica. 13.5 cm high. The Royal Ethnographical Museum of Stockholm. Chircot, Grave 107. From Hartman 1901, Pl. 25, No. 3.



Figure 171. Individual Head. Costa Rica. 10 cm high. The Royal Ethnographical Museum of Stockholm. Chircot, Grave 89. From Hartman 1901, Pl. 24, No. 4.

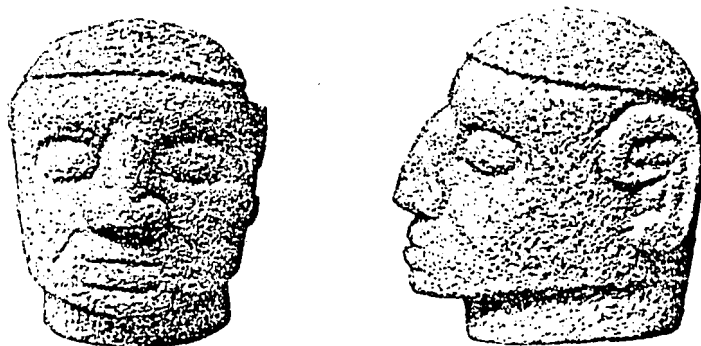


Figure 172. Individual Head. Costa Rica. 10 cm high. The Royal Ethnographical Museum of Stockholm. Orosi V, Grave 47. From Hartman 1901, Pl. 55, No. 2, 3.

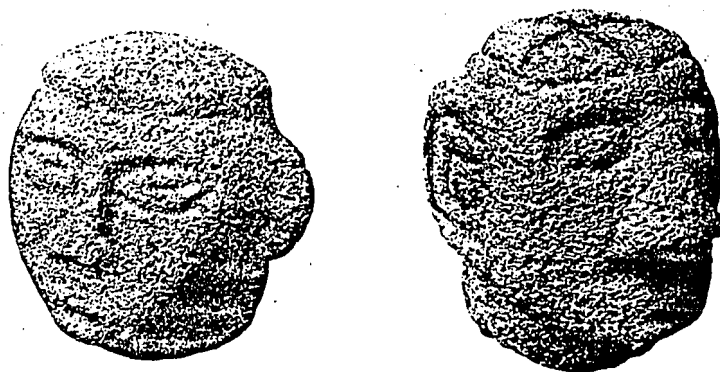


Figure 173. Individual Head. Costa Rica. The Royal Ethnographical Museum of Stockholm. Orosi Planation. From Hartman 1901, Pl. 69, No. 1,2.



Figure 174. Standing Figure. Costa Rica. 180 cm high. The Ethnographical Museum of Stockholm. Las Mercedes. From Hartman 1901, Pl. 3, No. 1.

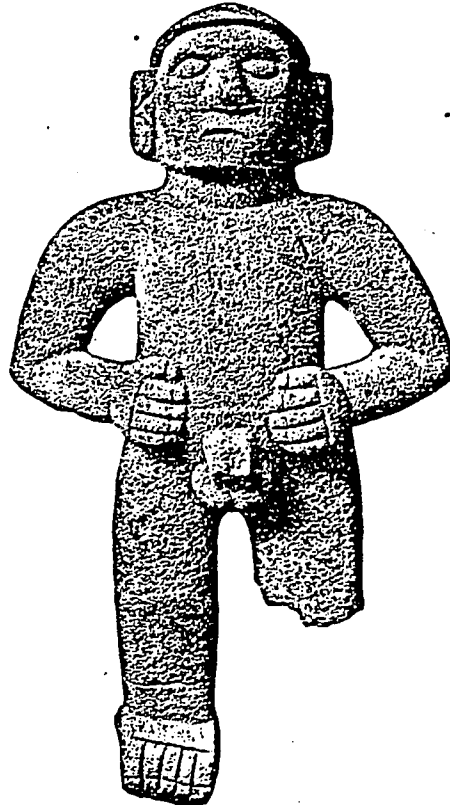


Figure 175. Standing Figure. Costa Rica. 185 cm high. The Royal Ethnographical Museum of Stockholm. Las Mercedes. From Hartman 1901, Pl. 3, No. 3.

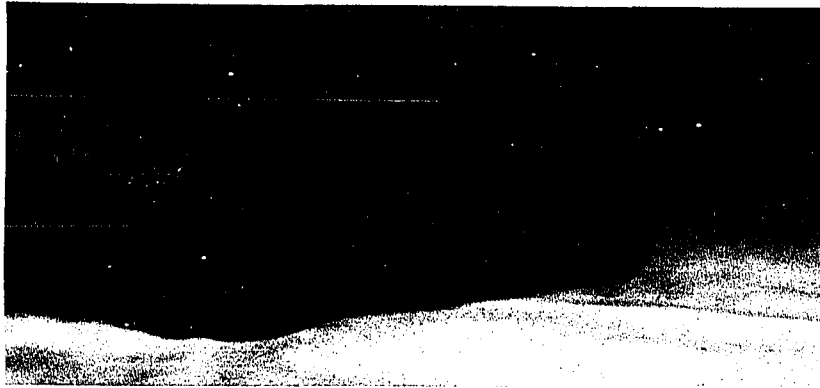


Figure 176. Simple Tripod Grinding Stone. Costa Rica. 33 cm long x 9 cm high. Museum of the American Indian, Heye Foundation 7/3462.



Figure 177. Simple Tripod Grinding Stone. Panama. 35.5 cm long x 10.5 cm high. Peabody Museum of Natural History, Yale University 1313/49.

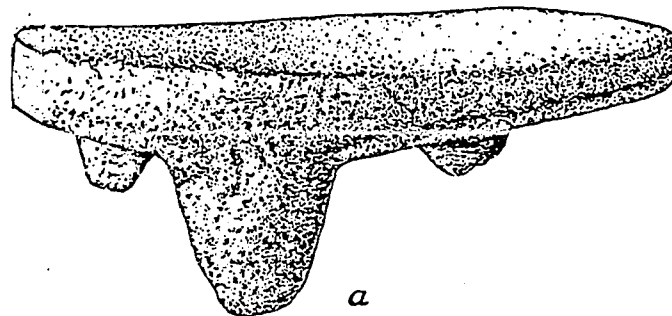


Figure 178. Simple Tripod Grinding Stone. Panama. 36 cm long x 14 cm high. Peabody Museum of Archaeology and Ethnology, Harvard University. From Lothrop 1937, Fig. 62a.



Figure 179. Simple Tripod Grinding Stone. Panama. 52 cm long x 14 cm high. Museo del Hombre Panamaneó. From Ladd 1964, Pl. 22.

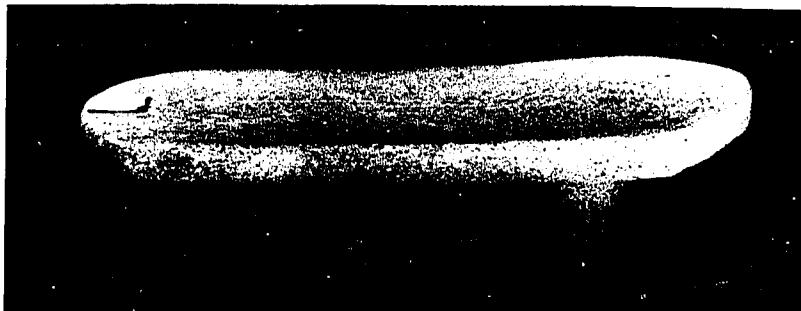


Figure 180. Simple Tripod Grinding Stone. Panama. 33.5 cm long x 9 cm high. Museo del Hombre Panamaneó AL-9-00016.

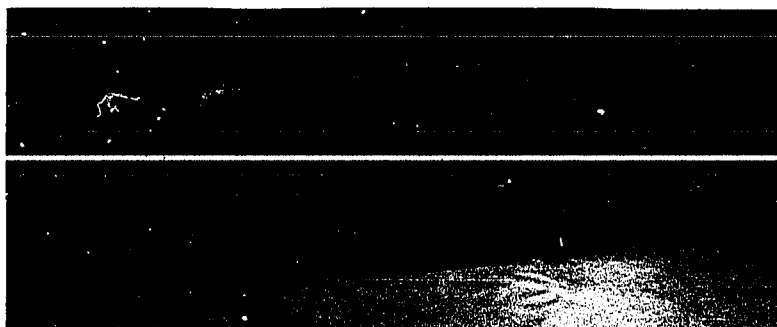


Figure 181. Simple Tripod Grinding Stone. Panama. 40.5 cm long x 8 cm high. Peabody Museum of Natural History, Yale University 1193/53.



Figure 182. Tripod Grinding Stone with Low Rim. Costa Rica. 66 cm long. Museo Nacional de Costa Rica. From Snarskis 1979, Fig. 4.

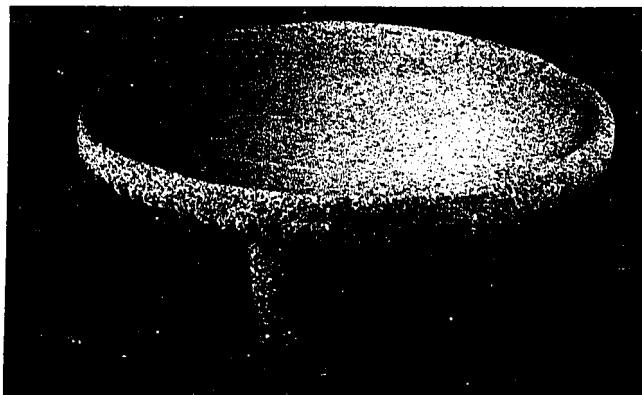


Figure 183. Tripod Grinding Stone with Low Rim. Costa Rica. 40.5 cm diameter x 19 cm high. Museo Nacional de Costa Rica. Photo by Maritza Guttierrez.



Figure 184. Tripod Grinding Stone with Low Rim. Costa Rica. 35 cm long x 13.5 cm high. University of Costa Rica.

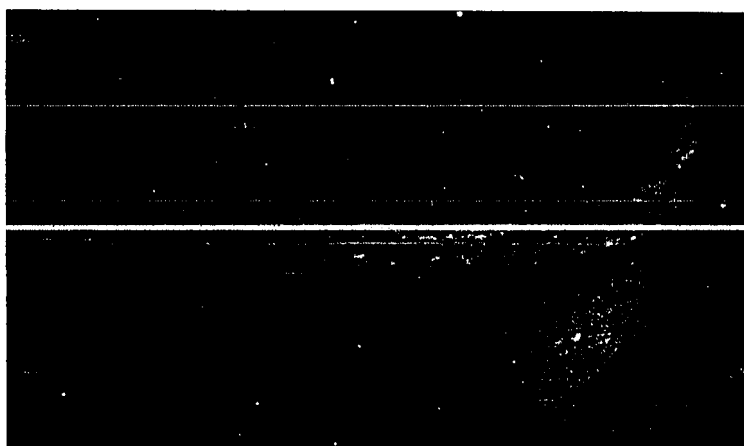


Figure 185. Tripod Grinding Stone with Low Rim. Costa Rica. 27 cm long x 14 cm high. University of Costa Rica.

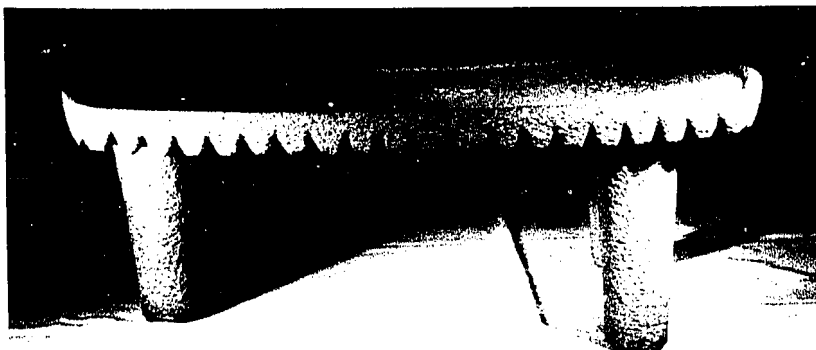


Figure 186. Tripod Grinding Stone with Low Rim. Costa Rica. 60 cm long x 20 cm high. Banco Nacional de Costa Rica 932.

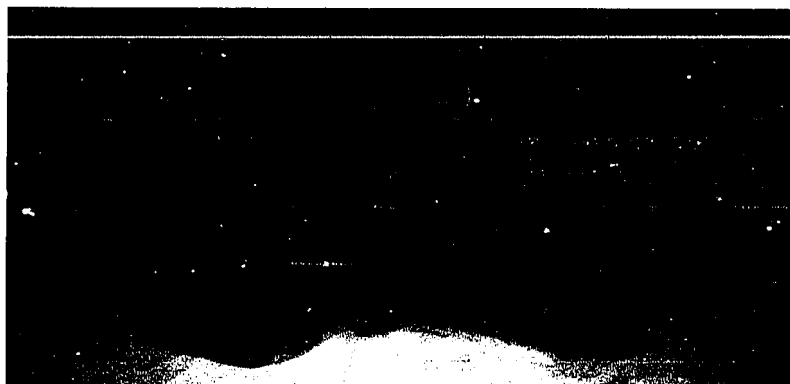


Figure 187. Tripod Grinding Stone with Notches and Trophy Head. 45 cm long x 18.5 cm high. Costa Rica. Carnegie Museum of Natural History 2439/3198.

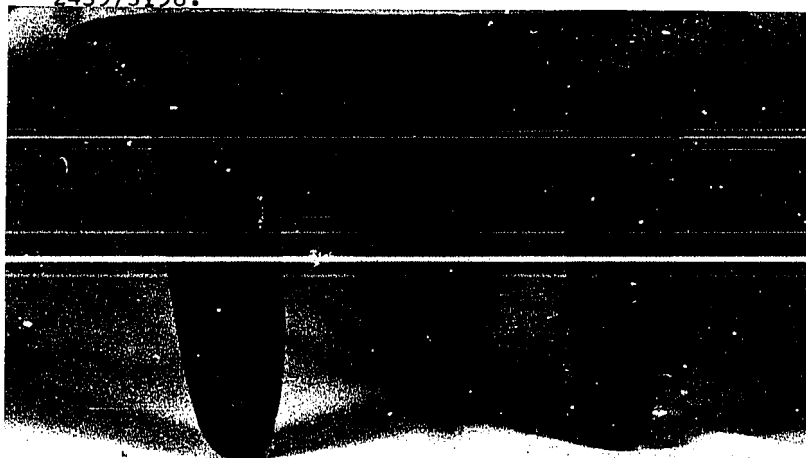


Figure 188. Tripod Grinding Stone with Notches and Trophy Head. 51 cm diameter x 29.5 cm high. Costa Rica. Museo Nacional de Costa Rica. Photo by Maritza Guttierrez.

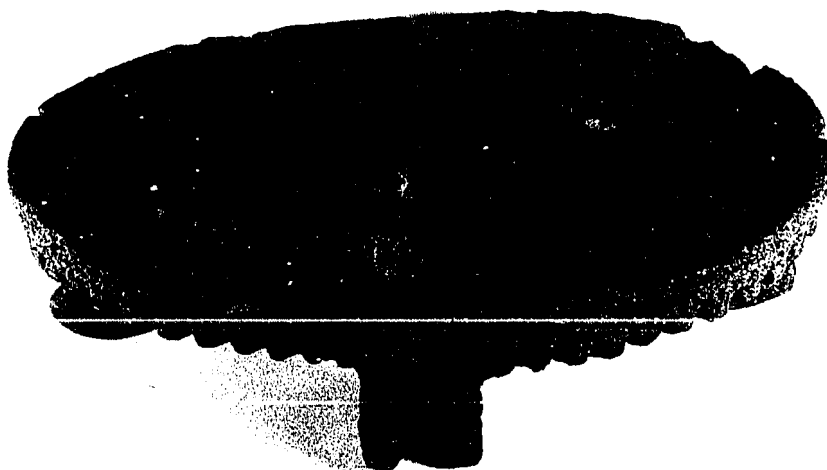


Figure 189. Tripod Grinding Stone with Notches and Trophy Head. 44.5 cm long x 12.5 cm high. Costa Rica. Museo Nacional de Costa Rica. Photo by Maritza Gutierrez.

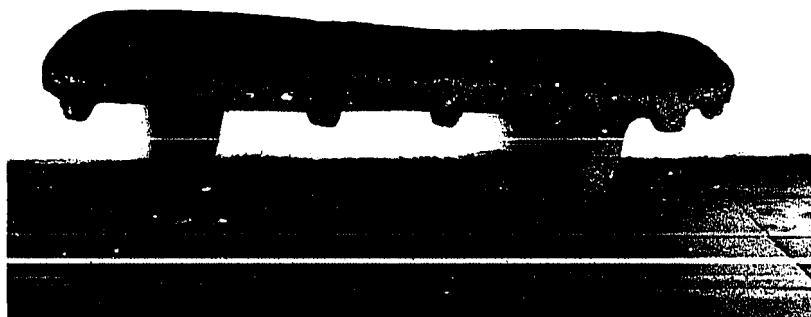


Figure 190. Tripod Grinding Stone with Notches and Trophy Head. 96 cm long x 27 cm high. Costa Rica. Museo Nacional de Costa Rica.



Figure 191. Tripod Grinding Stone with Notches and Trophy Head. 67.5 cm high x 27 cm long. Costa Rica. Banco Nacional de Costa Rica 1466.

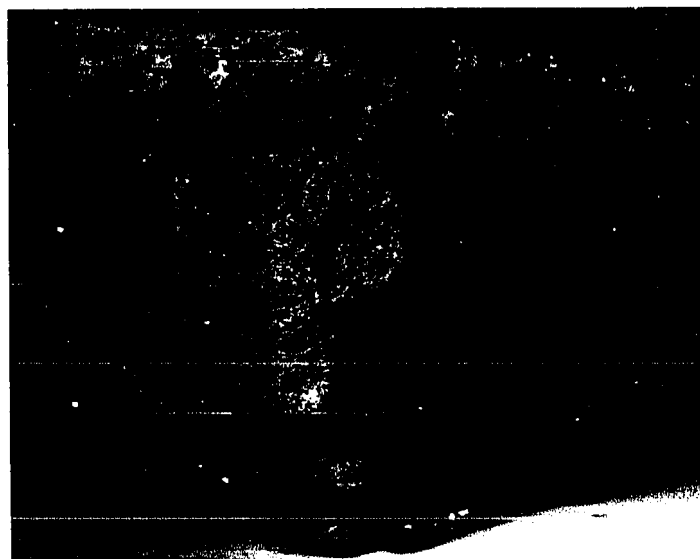


Figure 192. Tripod Grinding Stone with Notches and Trophy Head. 55 cm long x 25.5 cm high. Costa Rica. National Museum of Natural History, Smithsonian Institution 60873.



Figure 193. Drumbase Grinding Stone. Panama. 42 cm long x 15 cm high. Peabody Museum of Natural History, Yale University 1313/39.

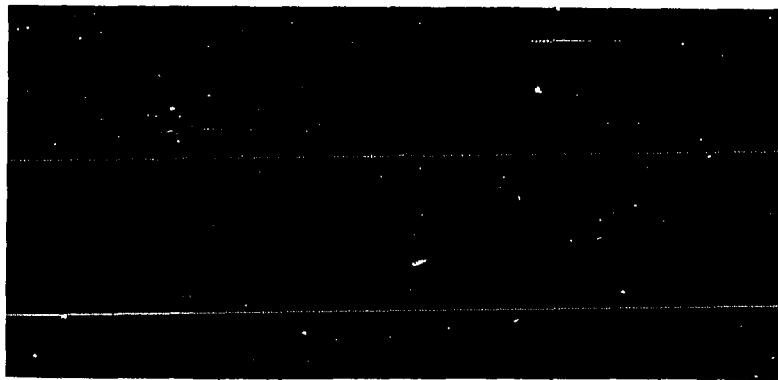


Figure 194. Slab Leg Grinding Stone. Panama. 44.5 cm long x 12.5 cm high. Peabody Museum of Natural History, Yale University 1132/44.



Figure 195. Slab Leg Grinding Stone. Panama. 39.5 cm long x 14.5 cm high. Peabody Museum of Natural History, Yale University 1313/47.

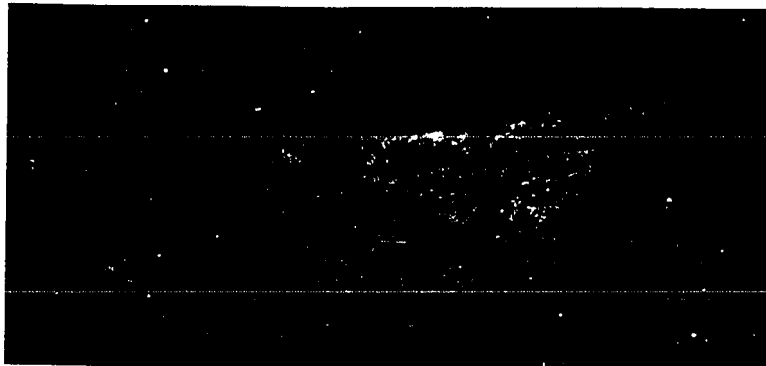
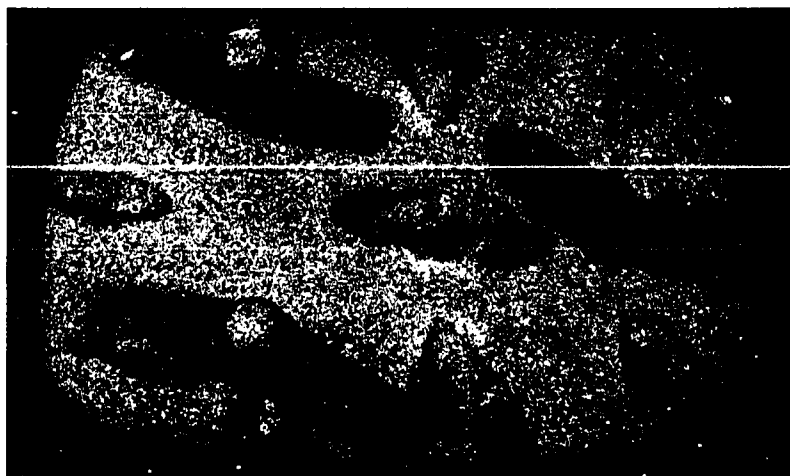


Figure 196. Drumbase Grinding Stone. Panama. 23 cm long x 10 cm high. Peabody Museum of Natural History, Yale University 3034/618.



Figures 197a and 197b. Grinding Stone with Lower Appendages. Costa Rica. 40.5 cm long x 14.5 cm high. Museo Nacional de Costa Rica 21916.

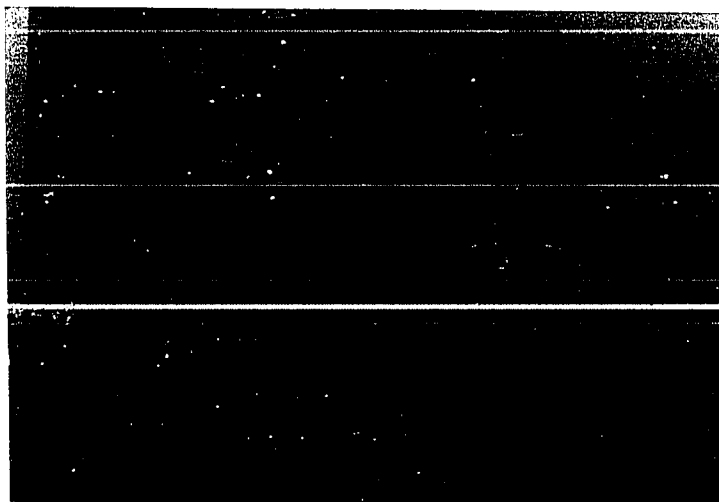
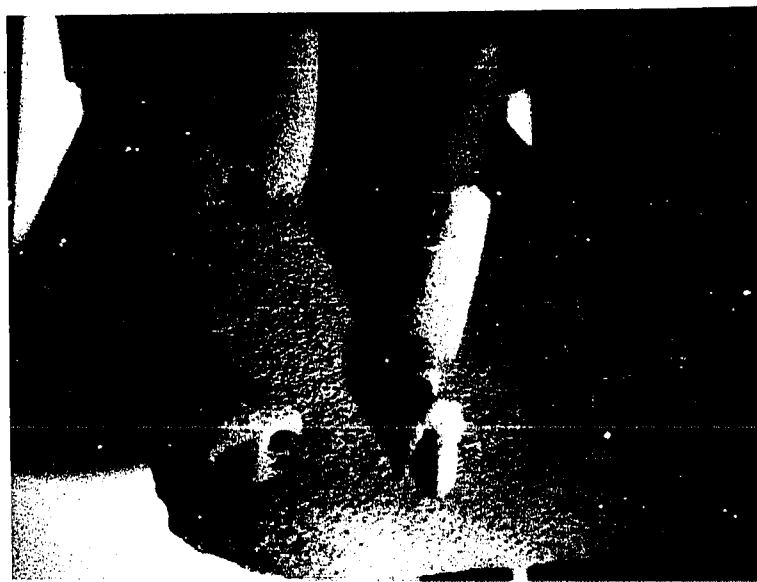
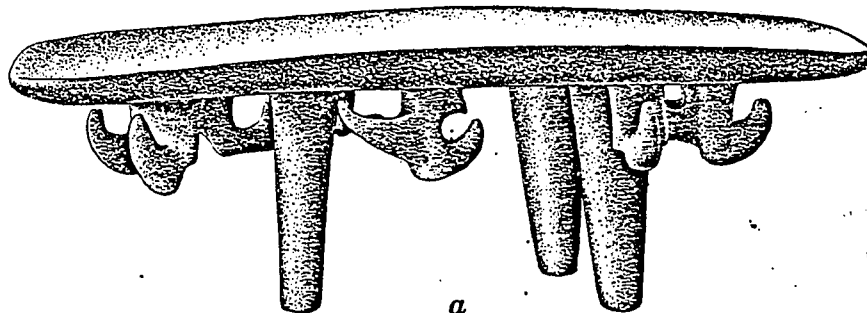


Figure 198. Grinding Stone with Lower Appendages. Panama. 46.5 cm long x 22.5 cm high. Museo del Hombre Panamano. From Ladd 1964, Pl. 23, Fig. 170.



Figures 199a and 199b. Grinding Stone with Lower Appendages. Costa Rica. 64 cm long x 21 cm high. Museo del Hombre Panamaneó. From Lothrop 1950, Fig. 30a.

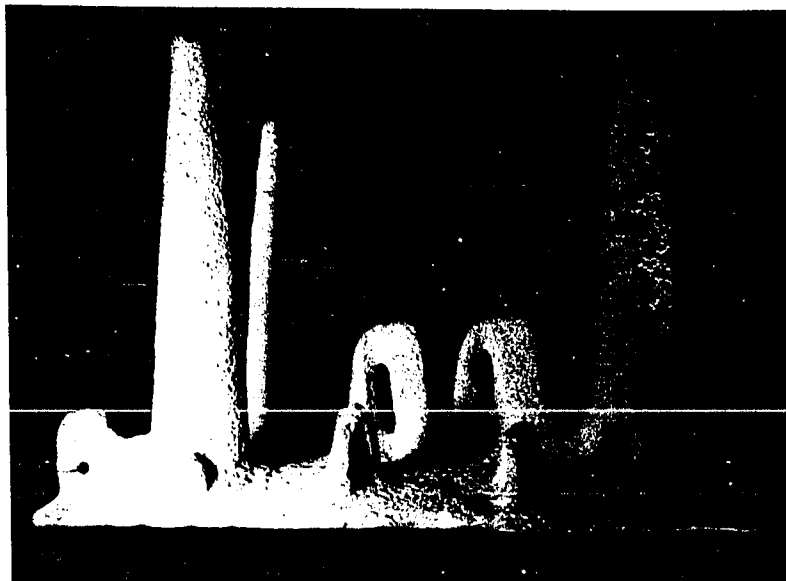


Figure 200. Grinding Stone with Lower Appendages. Panama. 53.5 cm long x 37 cm high. Museo del Hombre Panamaneó 1AL-9-00070.

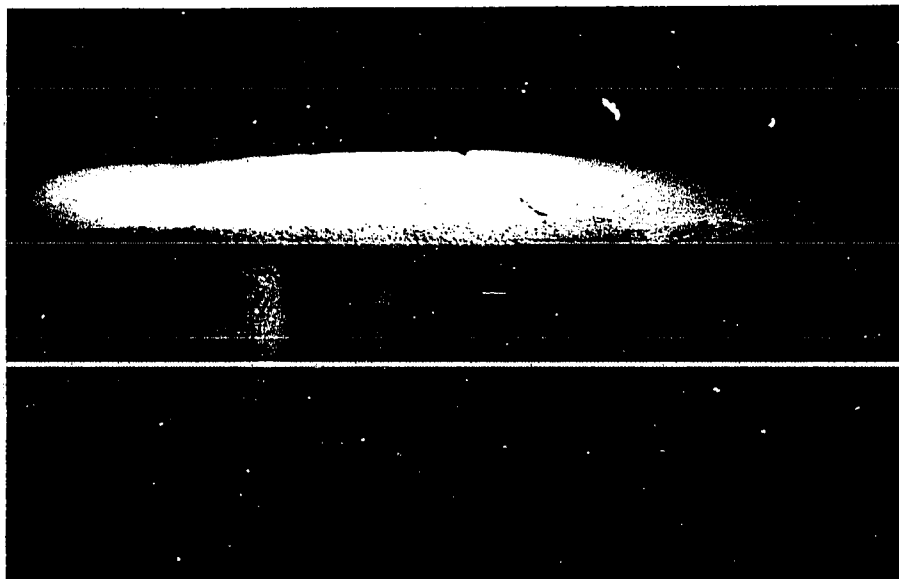
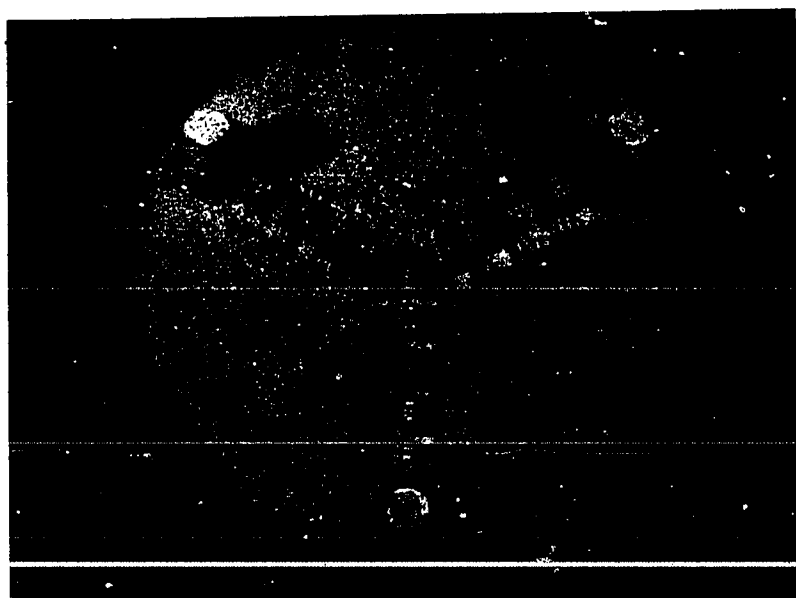
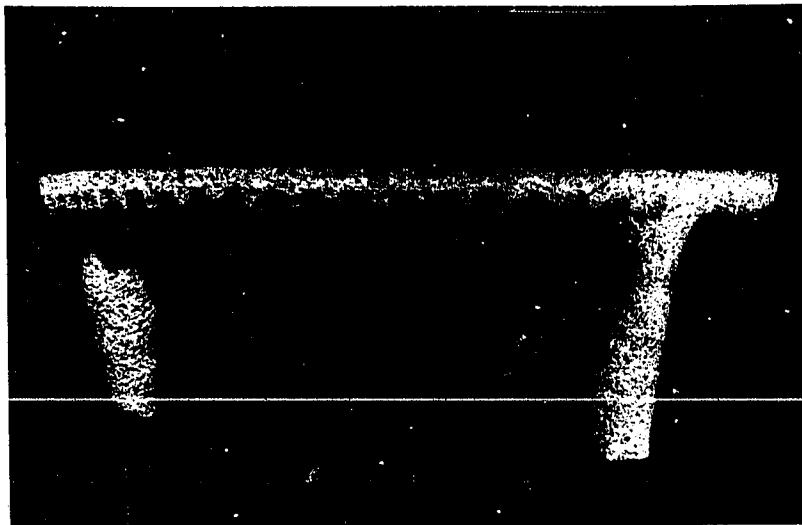
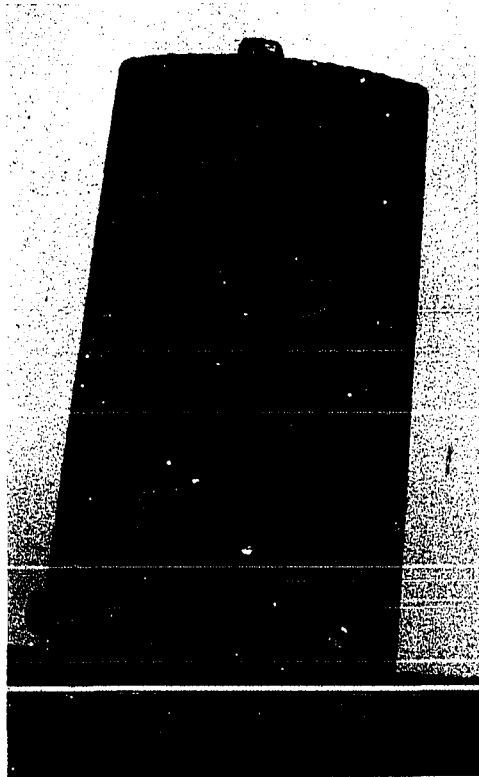
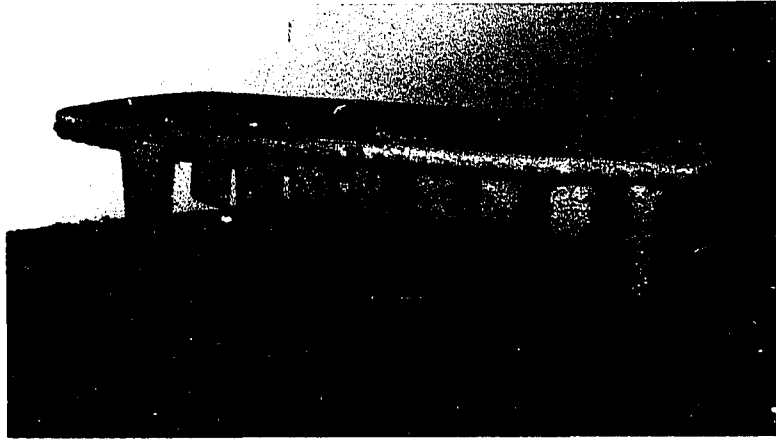


Figure 201. Grinding Stone with Lower Appendages. Panama. 54.5 cm long x 16 cm high. Museo del Hombre Panamaneó 1AL-9-00080.



Figures 202a and 202b. Grinding Stone with Marimba Appendages. Costa Rica. 61 cm diameter x 22 cm high. Museo Nacional de Costa Rica 20895.



Figures 203a and 203b. Grinding Stone with Marimba Appendages. Costa Rica. 99.5 cm long x 26.5 cm high. Instituto Nacional de Seguros, Museo del Jade 4120.

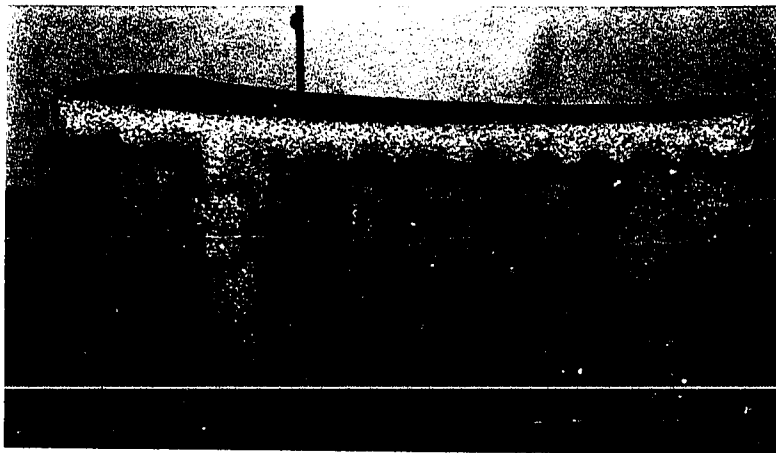


Figure 204. Grinding Stone with Marimba Appendages.
Costa Rica. 57 cm long x 22.5 cm high. Instituto
Nacional de Seguros, Museo del Jade 3494.

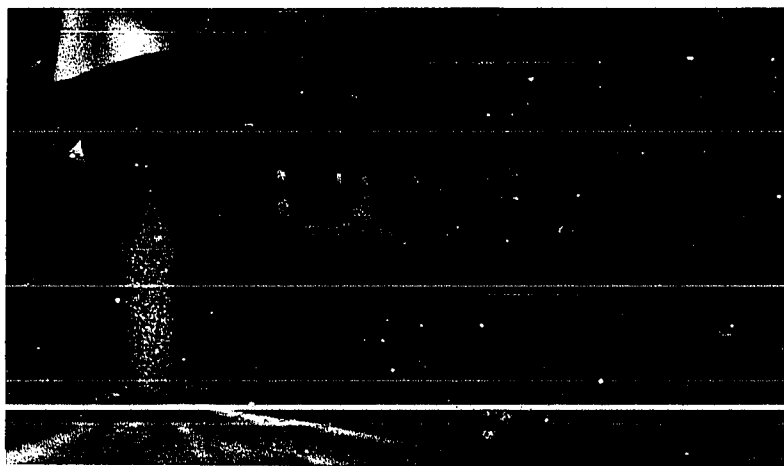


Figure 205. Grinding Stone with Marimba Appendages.
Panama. 67 cm long x 28 cm high. Museum of the
American Indian, Heye Foundation 28/6735.

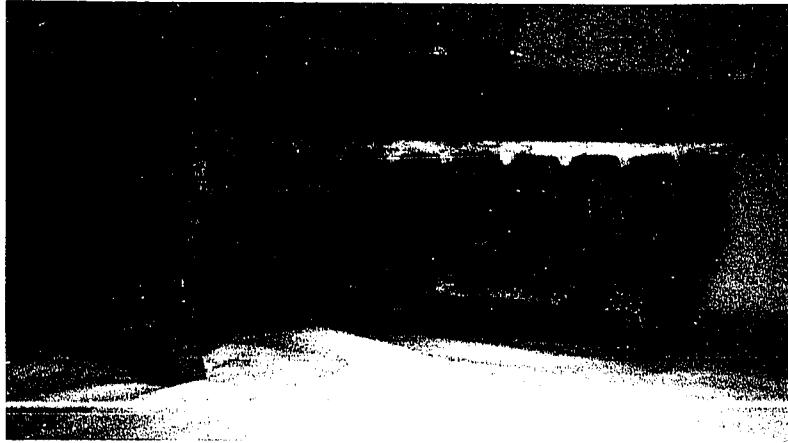


Figure 206. Flying Panel Altar. Panama. 76 cm long
x 28.5 cm high. Museum of the American Indian, Heye
Foundation 22/9431.

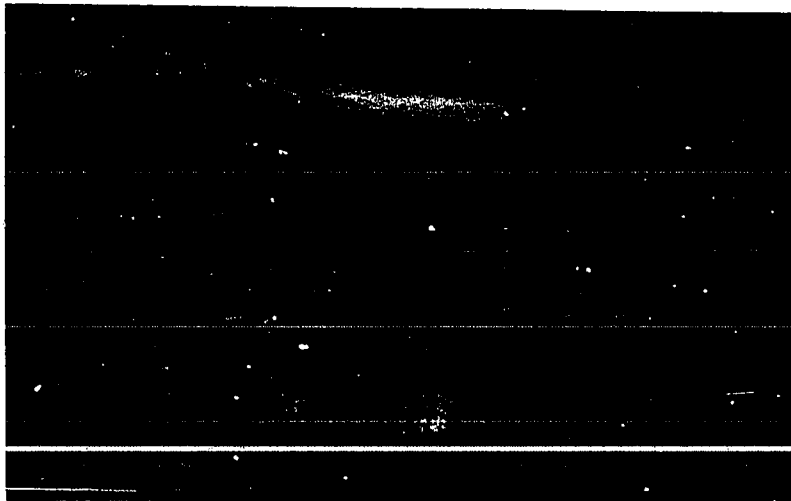


Figure 207. Flying Panel Altar. Panama. 65 cm long
x 30 cm high. Museo del Hombre Panamaneó
1AL-9-00093.

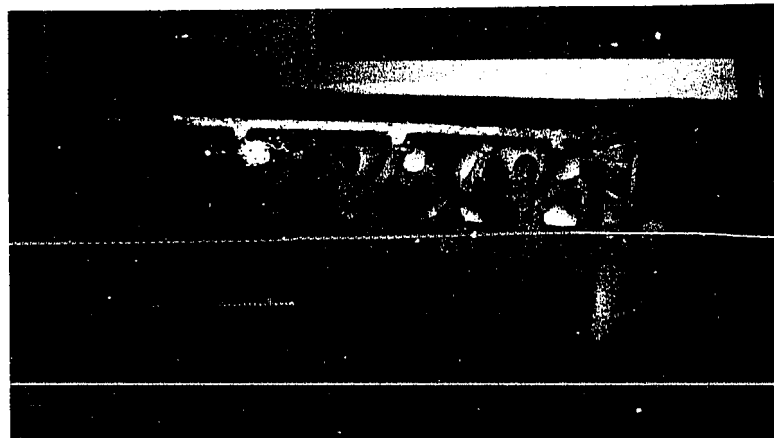


Figure 208. Flying Panel Altar. Panama. 106 cm long x 33 cm high. Museo del Hombre Panamaneó 25-AL-V.

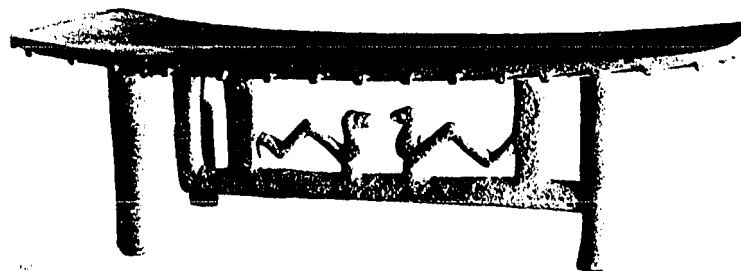


Figure 209. Flying Panel Altar. Panama. Collection Unknown. From Von Winning 1968, No. 539.

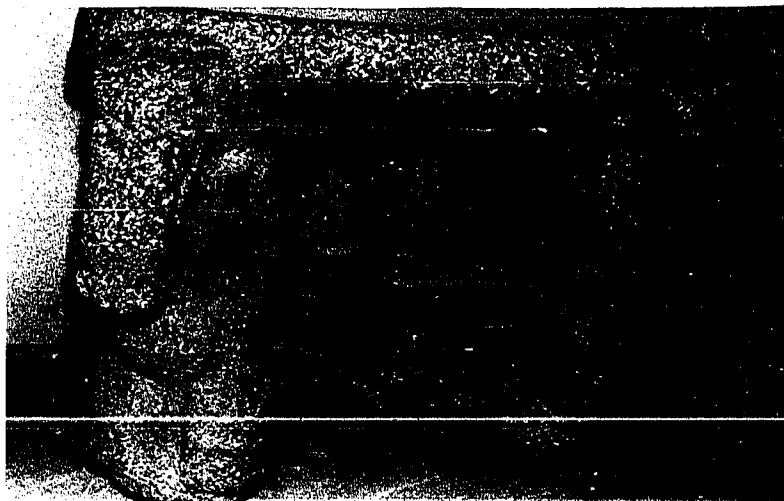


Figure 210. Flying Panel Altar. Costa Rica. 53.5 cm long x 33 cm high. Instituto Nacional de Seguros, Museo del Jade 4388.

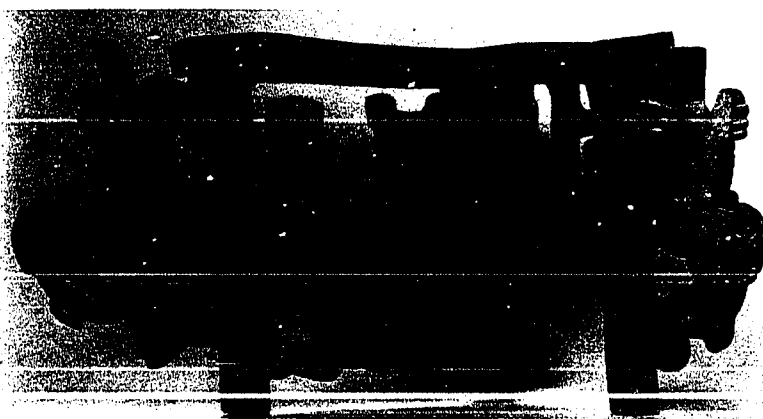


Figure 211. Flying Panel Altar. Costa Rica. 79 cm long x 46 cm high. Instituto Nacional de Seguros, Museo del Jade 73981. From Between Continents/Between Seas exhibition catalog, 1981, No. 146.

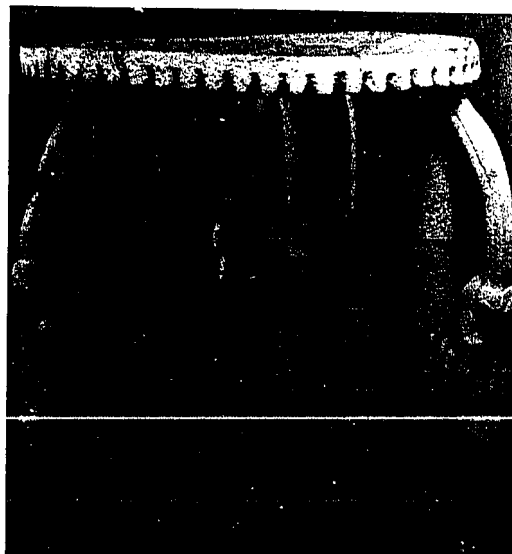


Figure 212. Flying Panel Altar.
Costa Rica. 79 cm long x 75.5 cm
high. Museo Nacional de Costa Rica
25679. From Between
Continents/Between Seas
exhibition catalog, 1981, No. 144.

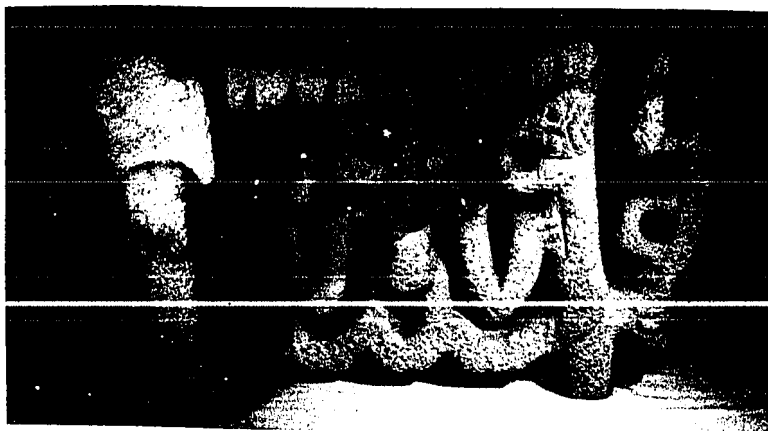


Figure 213. Flying Panel Altar. Costa Rica. 56 cm
long x 32 cm high. Banco Nacional de Costa Rica
1568.



Figure 214. Flying Panel Altar. Costa Rica. 86 cm long x 71 cm high. Museo Nacional de Costa Rica 15150. From Between Continents/Between Seas . exhibition catalog, 1981, No. 147.

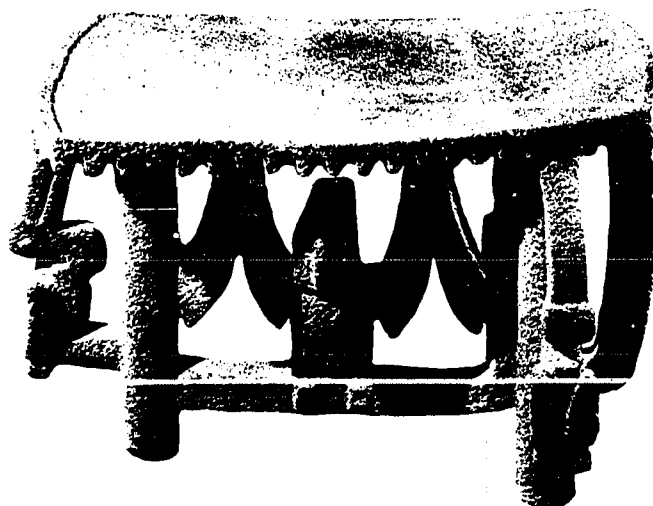


Figure 215. Flying Panel Altar. Costa Rica. Collection Unknown. From Von Winning 1968, No. 535.

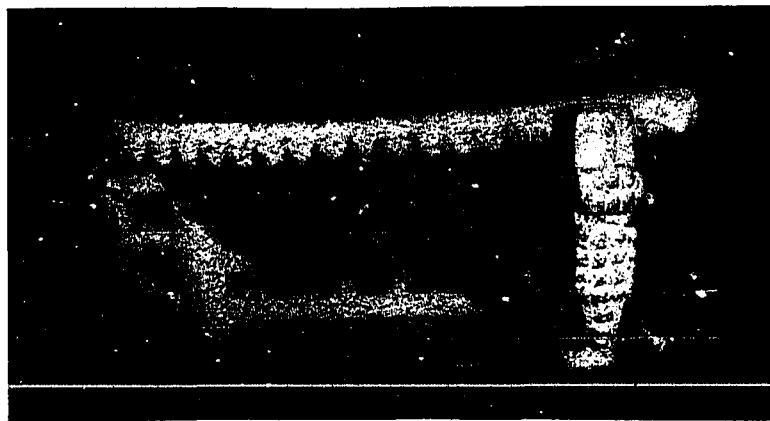


Figure 216. Flying Panel Altar. Costa Rica. 52 cm long
x 9 cm high. Museo Nacional de Costa Rica 23009.

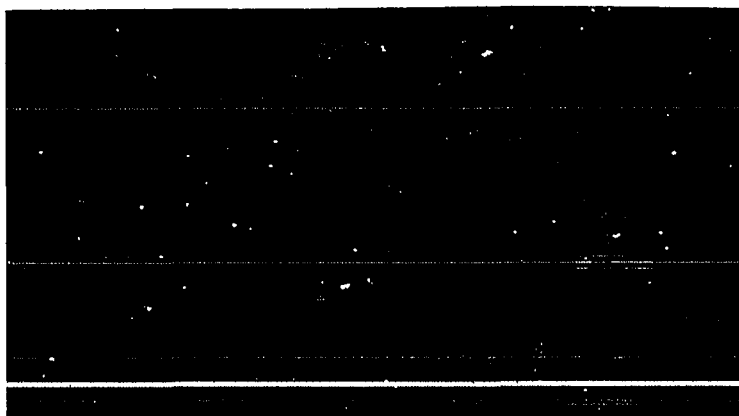


Figure 217 . Flying Panel Altar. Costa Rica. 94 cm long
x 52 cm high. Banco Nacional de Costa Rica 1569.



Figure 218. Flying Panel Altar. Costa Rica.
84 cm long x 61 cm high. New Orleans Museum
of Art. Photo Courtesy of the New Orleans
Museum of Art.

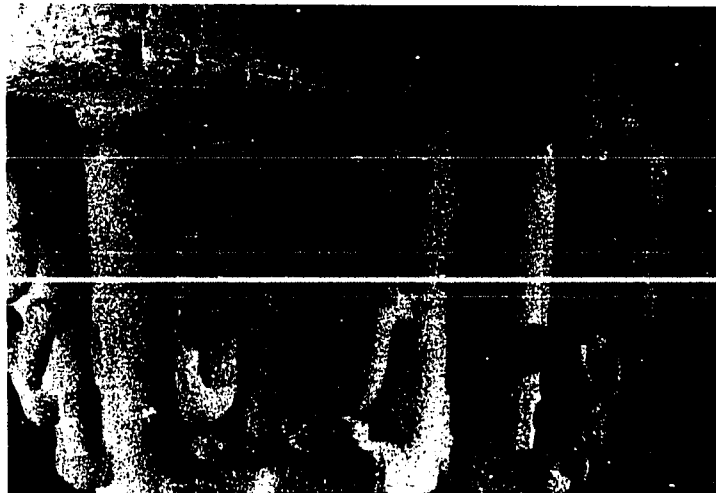


Figure 219. Flying Panel Altar. Costa Rica.
77 cm long x 51 cm high. Museo Nacional de
Costa Rica 20787.

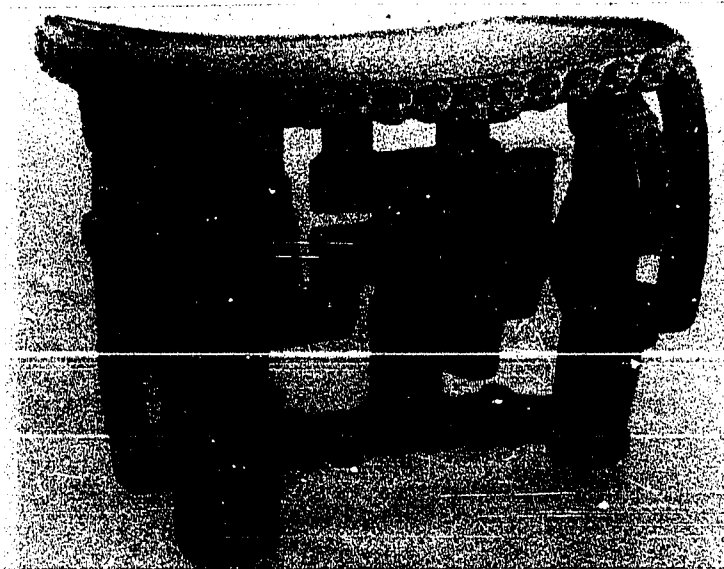


Figure 220. Flying Panel Altar. Costa Rica. 77 cm long x 56 cm high. Museo Nacional de Costa Rica 20788. From Between Continents/Between Seas exhibition catalog, 1981, No. 145.

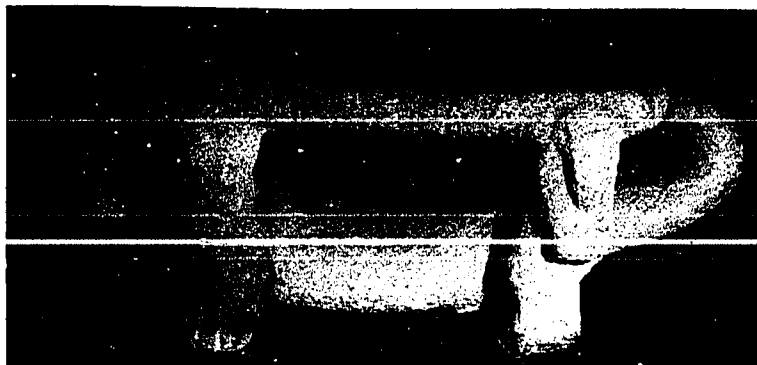
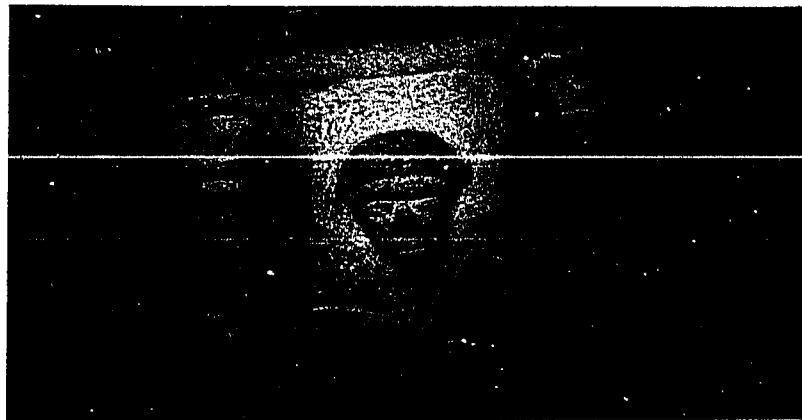
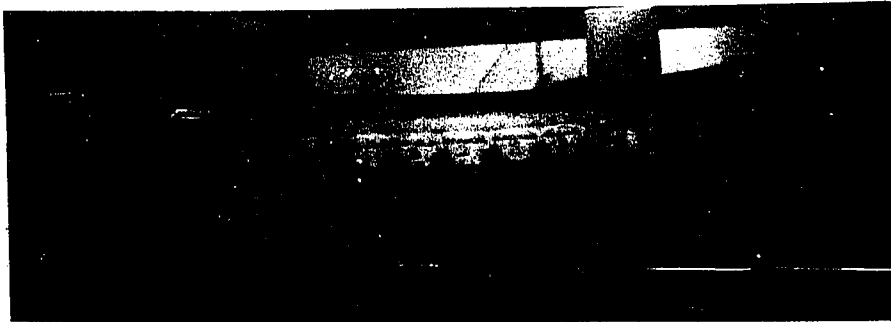


Figure 221. Flying Panel Altar. Costa Rica. 74 cm long x 31 cm high. Museo Nacional de Costa Rica 24084.



Figures 222a and 222b. Barriles Tetrapod Grinding Stone. Panama. 217 cm long x 57.5 cm high. Museo del Hombre Panamaneó 1AL-4-00009.

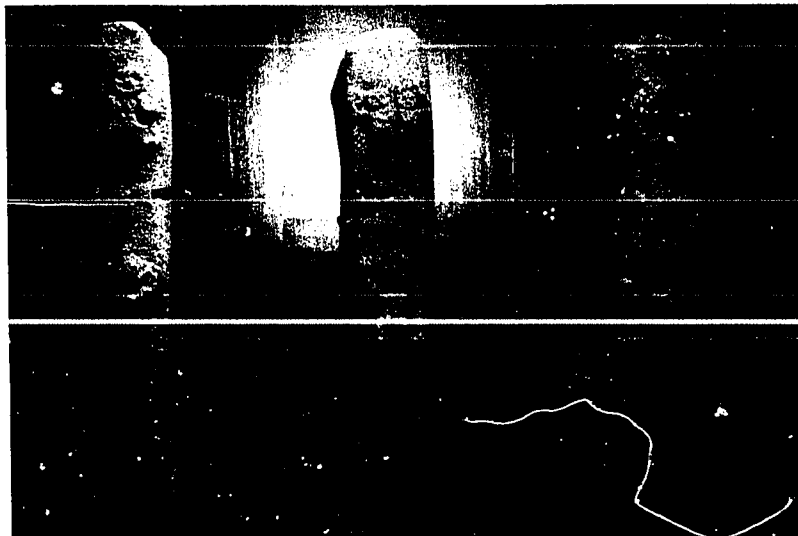


Figure 223. Barriles Tetrapod Grinding Stone. Panama. 90-94 cm high. Museo del Hombre Panamaneó 1AL-4-00017,18,19.



Figure 224. Barriles Tetrapod Grinding Stone. Panama. 100 cm high. Location Unknown. From Miro 1966, Pl. 91.

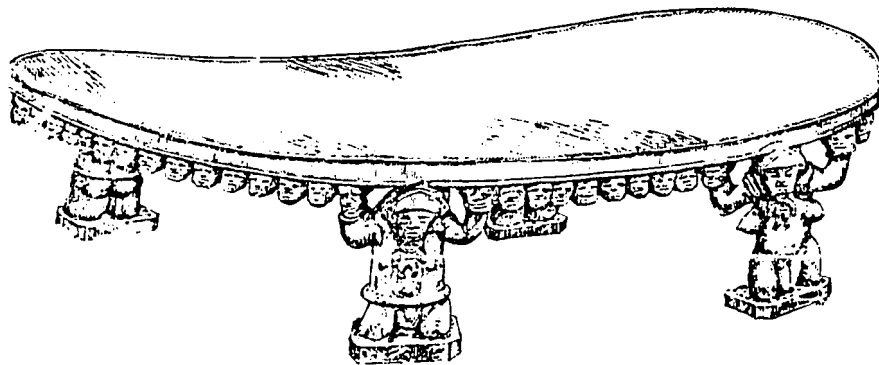


Figure 225. Barriles Tetrapod Grinding Stone. Panama. 100 cm high. Location Unknown. From Torres de Arauz 1972, Pl. 90.

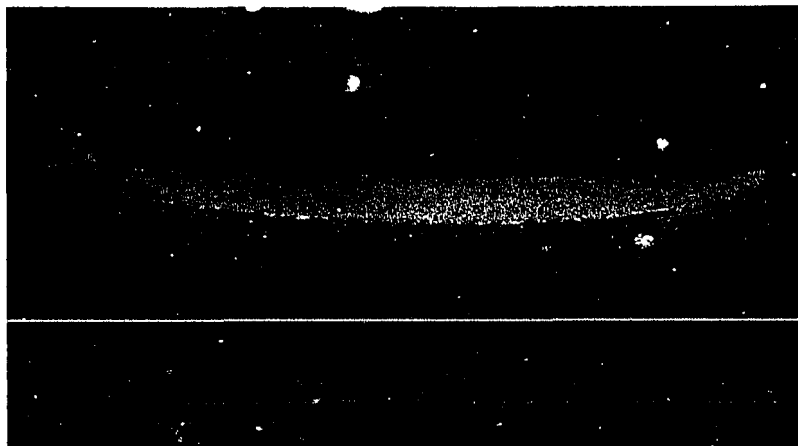


Figure 226. Barriles Tetrapod Grinding Stone. Panama. 99 cm long x 15 cm high. Museo Esuela Felix Olivares, Chiriqui.

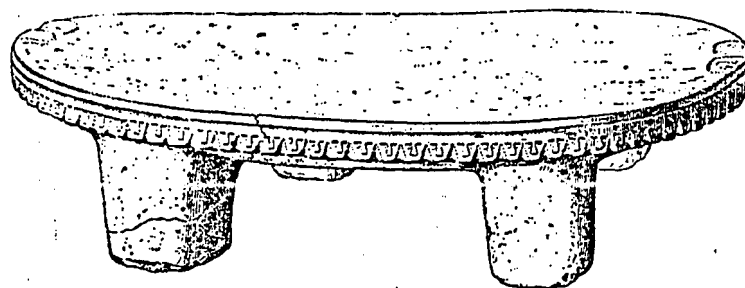


Figure 227. Barriles Tetrapod Grinding Stone. Panama. 94 cm long x 74 cm high. National Museum of Natural History, Smithsonian Institution 98584. From Holmes 1888, Fig. 9.

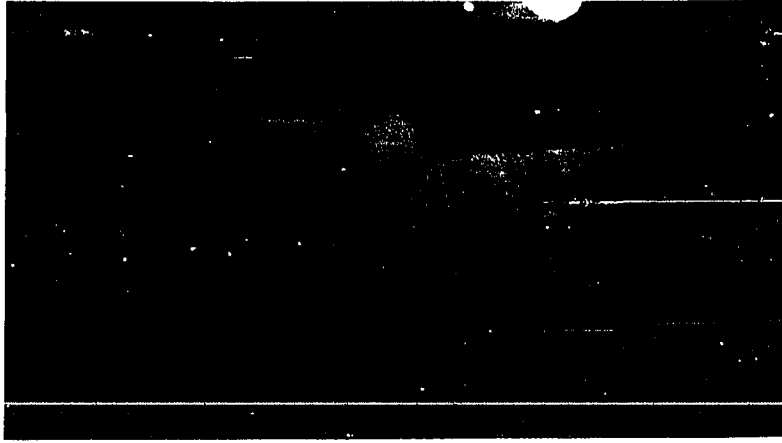


Figure 228. Barriles Tetrapod Grinding Stone. Panama.
62.5 cm long x 18 cm high. Museo del Hombre Panamaneio
AL-9-00054.



Figure 229. Barriles Tetrapod Grinding Stone. Panama.
40 cm long x 19 cm high. Museo del Hombre Panamaneio
AL-00046.

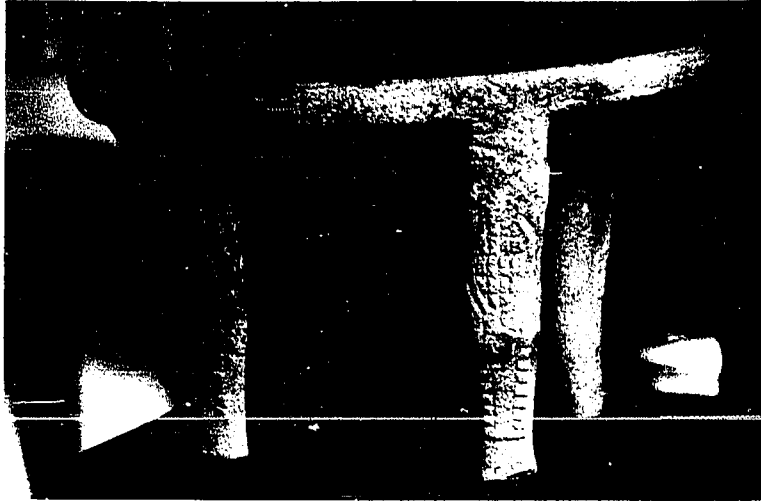


Figure 230. Barriles Tetrapod Grinding Stone.
Panama. 69 cm long x 43 cm high. Museo del Hombre
Panamano 1AL-9-00092.

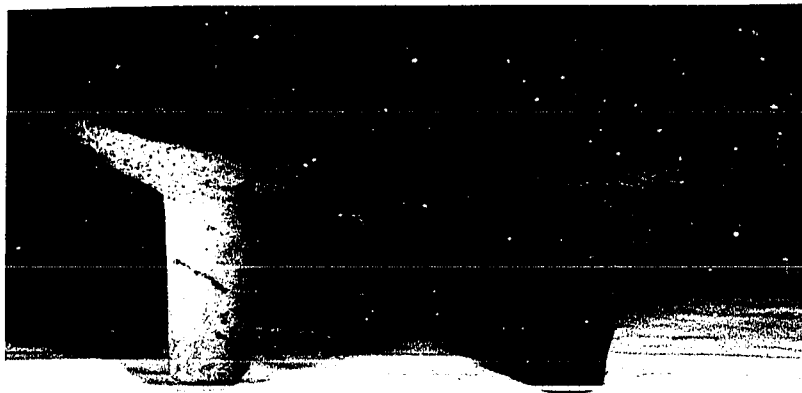


Figure 231. Tetrapod Grinding Stone-Stool. Costa
Rica. 43 cm long x 15 cm high. Banco Nacional de
Costa Rica 1273.

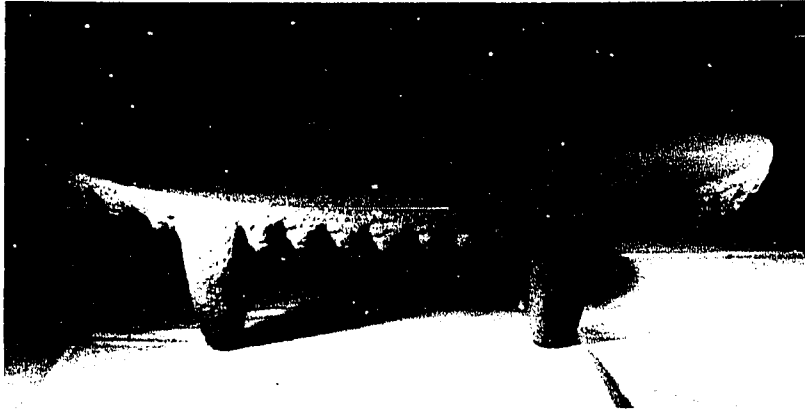


Figure 232. Tetrapod Grinding Stone-Stool. Costa Rica. 66 cm long x 16.5 cm high. Banco Nacional de Costa Rica 1528.

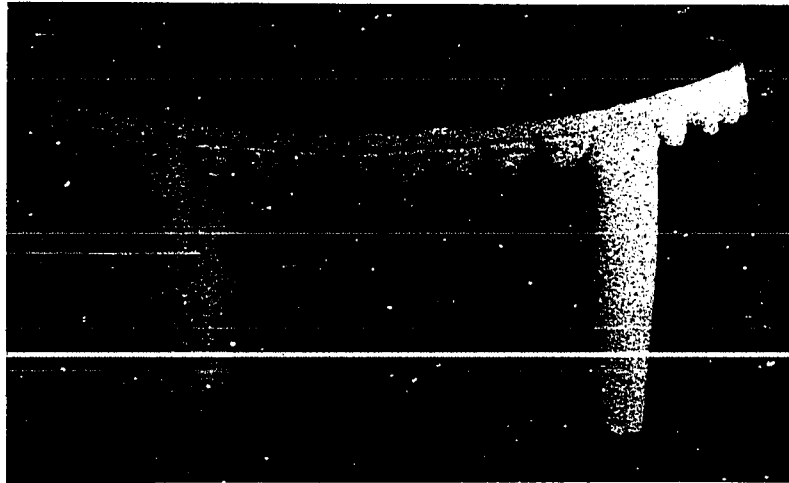


Figure 233. Tetrapod Grinding Stone-Stool. Costa Rica. 56.5 cm long x 28.5 cm high. Museo Nacional de Costa Rica 18616.

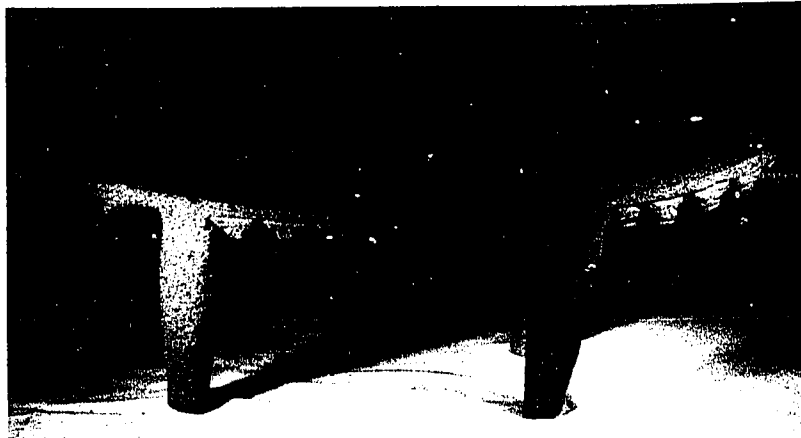


Figure 234. Tetrapod Grinding Stone-Stool. Costa Rica. 63 cm long x 25 cm high. Banco Nacional de Costa Rica 1526.



Figure 235. Tetrapod Grinding Stone-Stool. Costa Rica. 38 cm long x 16.5 cm high. American Museum of Natural History 12475.



Figure 236. Tetrapod Grinding Stone-Stool. Costa Rica. 56 cm long x 12.5 cm high. Museo Nacional de Costa Rica 21838.

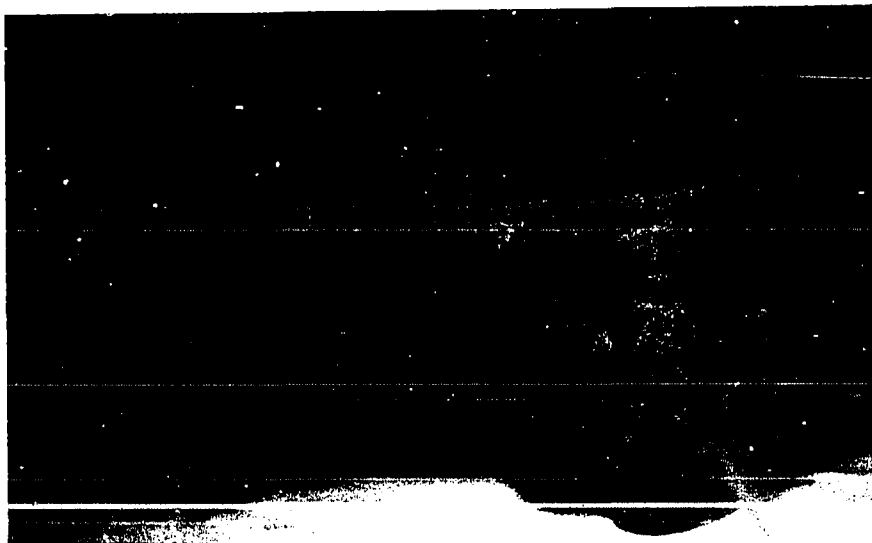


Figure 237. Tetrapod Grinding Stone-Stool. Costa Rica. 40 cm long x 19 cm high. Banco Nacional de Costa Rica 918.

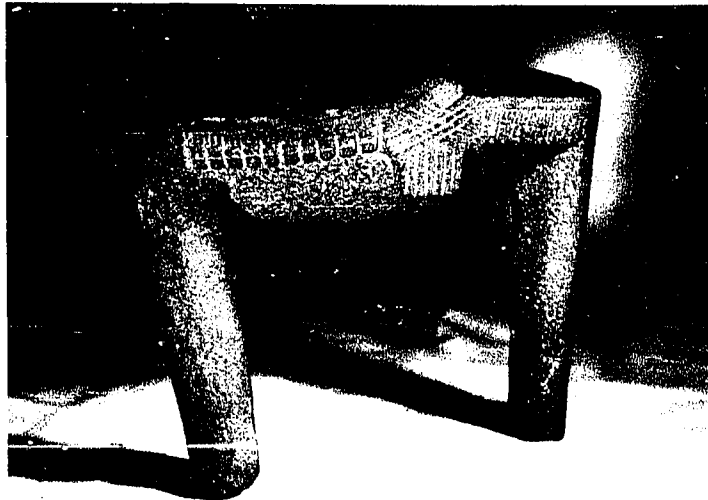


Figure 238. Tetrapod Grinding Stone-Stool.
Costa Rica. 39.5 cm long x 24 cm high. Museum of
the American Indian, Heye Foundation 7/9873.

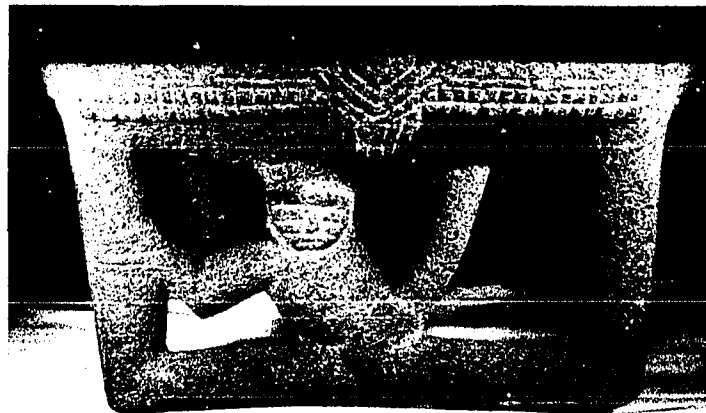


Figure 239. Tetrapod Grinding Stone-Stool.
Costa Rica. 43 cm long x 18.5 cm high. Banco
Nacional de Costa Rica 919.

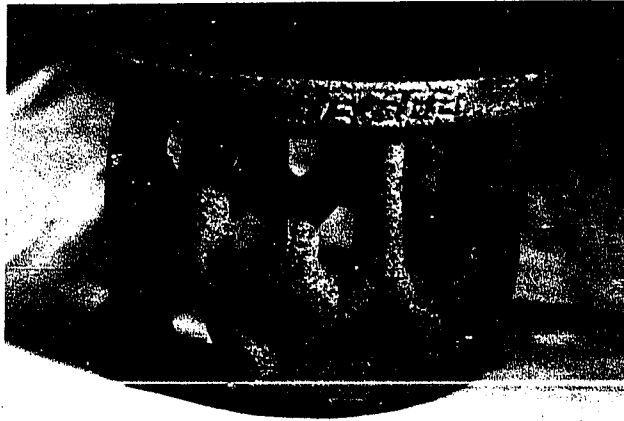


Figure 240. Circular Stand. Costa Rica.
22 cm diameter x 15 cm high. Museum of the
American Indian, Heye Foundation 16/9711.

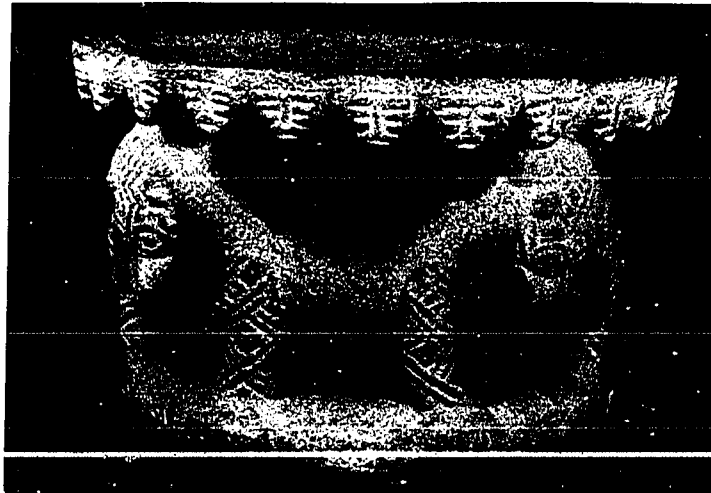


Figure 241. Circular Stand. Costa Rica. 35 cm
diameter x 32 cm high. Museo Nacional de Costa
Rica 110.

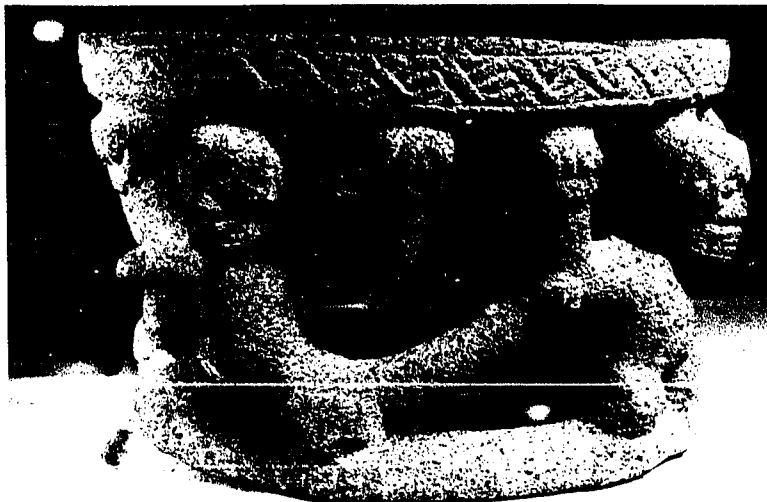


Figure 242. Circular Stand. Costa Rica. 26 cm diameter x 16.5 cm high. Banco Nacional de Costa Rica 933.



Figure 243. Circular Stand. Costa Rica. 28 cm diameter x 15 cm high. Banco Nacional de Costa Rica 930.

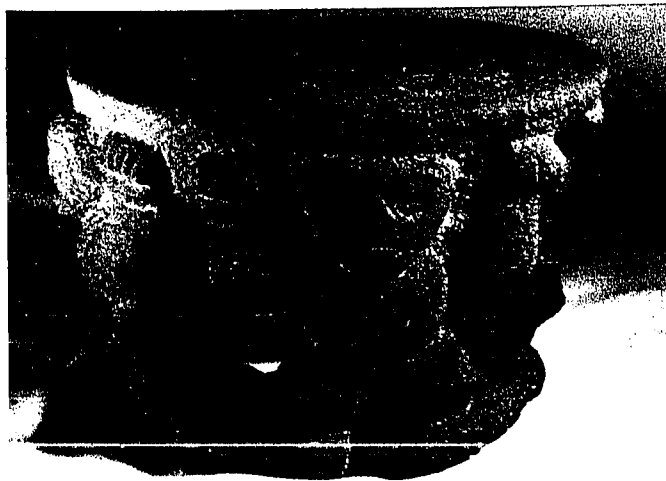


Figure 244. Circular Stand. Costa Rica. 20 cm diameter x 13 cm high. Museum of the American Indian, Heye Foundation 7/3465.



Figure 245. Circular Stand. Costa Rica. 22 cm diameter x 20 cm high. Museo Nacional de Costa Rica 14943.

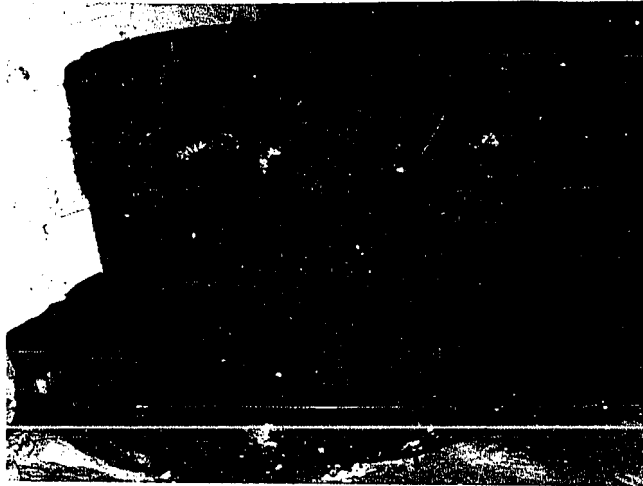


Figure 246. Circular Stand. Costa Rica.
53 cm diameter x 38 cm high. American
Museum of Natural History.

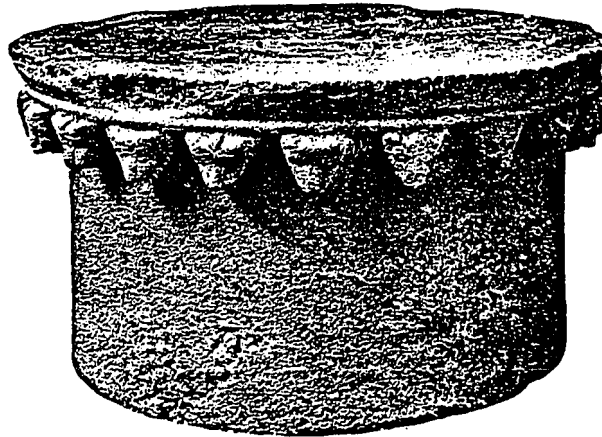


Figure 247. Circular Stand. Costa Rica.
62 cm diameter x 33 cm high. The Royal
Ethnographical Museum of Stockholm 105.
From Hartman 1901, Pl. 14, No. 1.

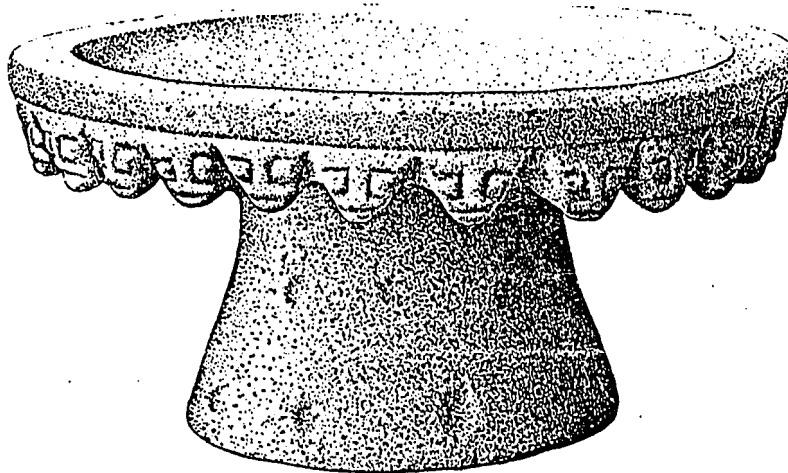


Figure 248. Circular Stand. Costa Rica. 57 cm diameter x 29 cm high. The Brooklyn Museum 6850. From Mason 1945, Pl. 27a.

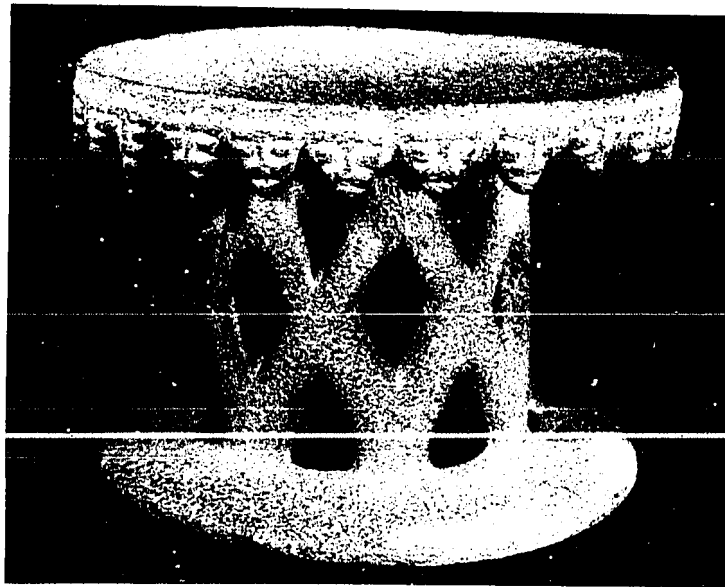


Figure 249. Circular Stand. Costa Rica. 31 cm diameter x 24 cm high. Museo Nacional de Costa Rica 4134.



Figure 250. Circular Stand. Costa Rica. 15 cm diameter x 10 cm high and 14 cm diameter x 10 cm high. Carnegie Museum of Natural History 2439/3066 and 2439/3065.



Figure 251. Circular Stand. Costa Rica. 15 cm diameter x 15 cm high and 19 cm diameter x 11.5 cm high. Carnegie Museum of Natrual History 2439/3059 and 2439/3061.

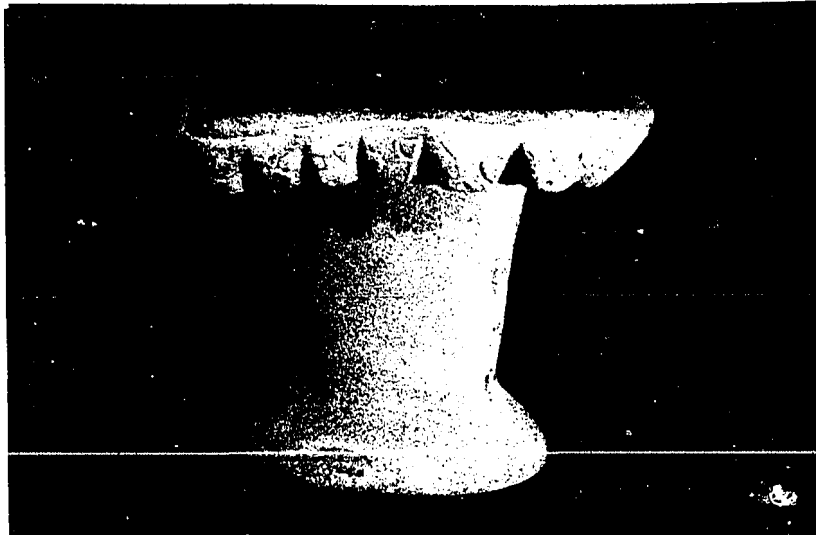


Figure 252. Circular Stand. Costa Rica. 20 cm wide
x 15.5 cm high. Museo Nacional de Costa Rica 14387.

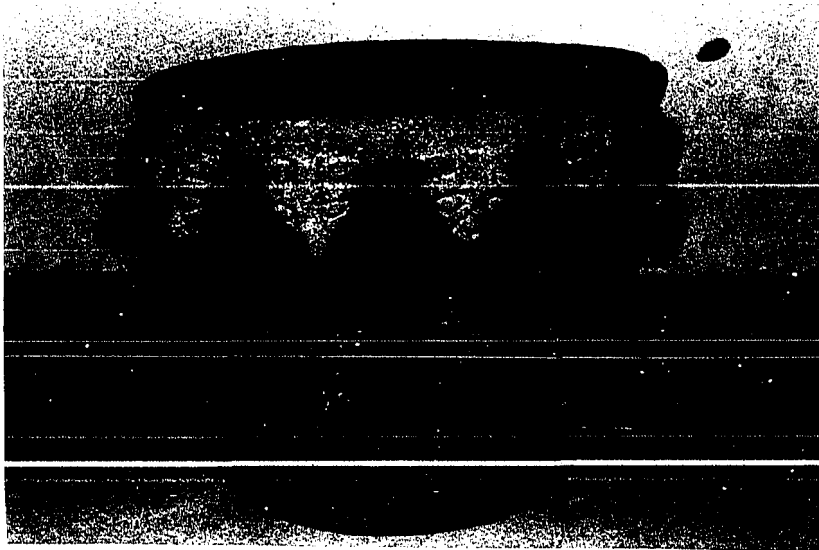


Figure 253. Circular Stand. Costa Rica. 28 cm
diameter x 22 cm high. Instituto Nacional de
Seguros, Museo del Jade 6420.



Figure 254. Circular Stand. Costa Rica. 24.5 cm diameter x 16 cm high. Carnegie Museum of Natural History 2439/3056.

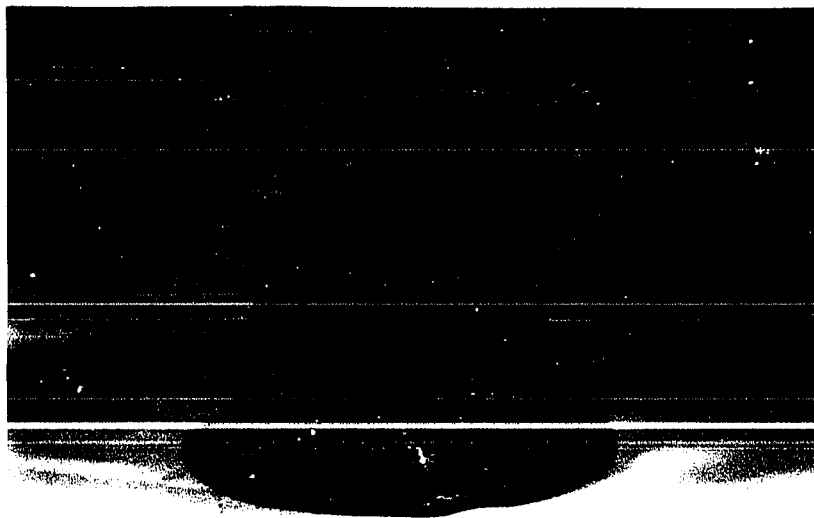


Figure 255. Circular Stand. Costa Rica. 46 cm diameter x 29.5 cm high. American Museum of Natural History 7069.



Figure 256. Circular Stand. Costa Rica. 57 cm diameter x 29 cm high. American Museum of Natural History.



Figure 257. Circular Stand. Costa Rica. 52 cm diameter x 28 cm high. Carnegie Museum of Natural History 2439/3054.

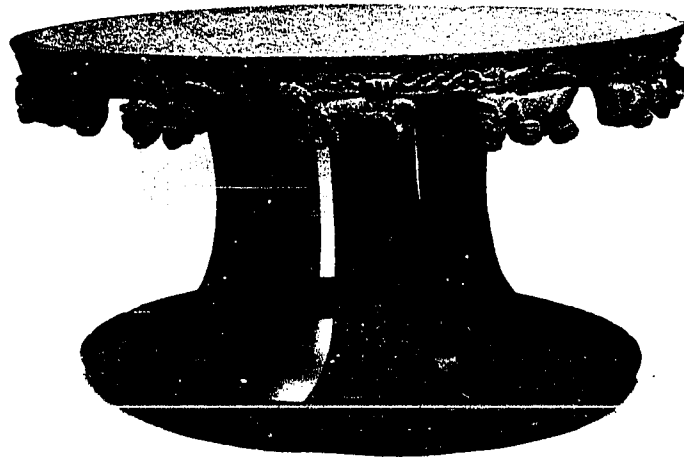


Figure 258. Circular Stand. Costa Rica. 75 cm diameter x 40 cm high. Museo Nacional de Costa Rica 108. From Between Continents/Between Seas exhibition catalog 1981, No. 199.

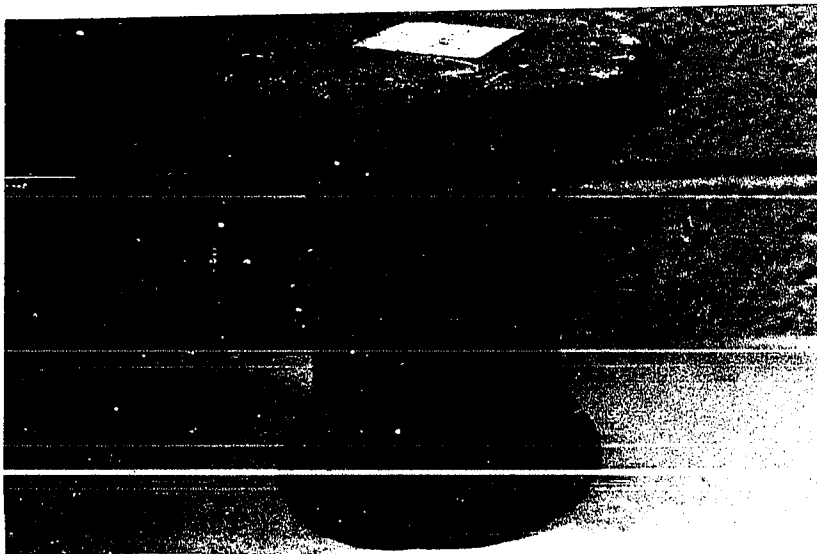


Figure 259. Circular Stand. Panama. 16.5 cm diameter x 18.5 cm high. National Museum of Natural History, Smithsonian Institution 132744.

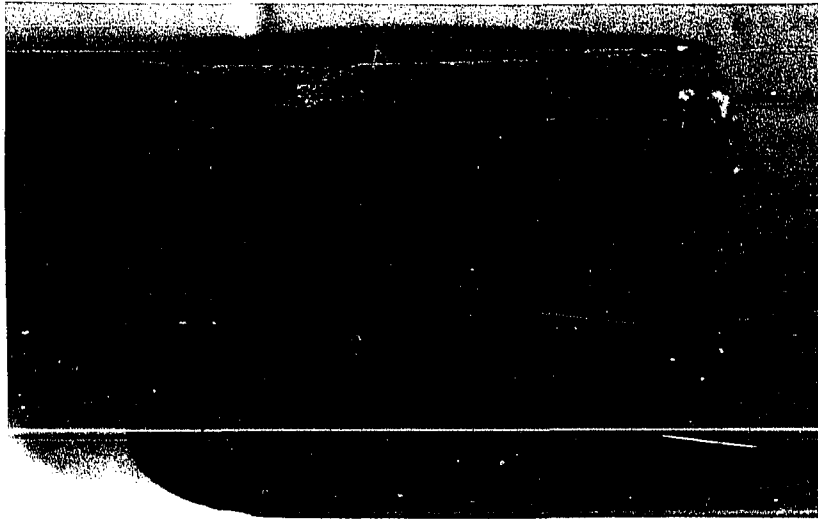


Figure 260. Circular Stand. Panama. 18 cm diameter
x 10 cm high. National Museum of Natural History,
Smithsonian Institution 115352.

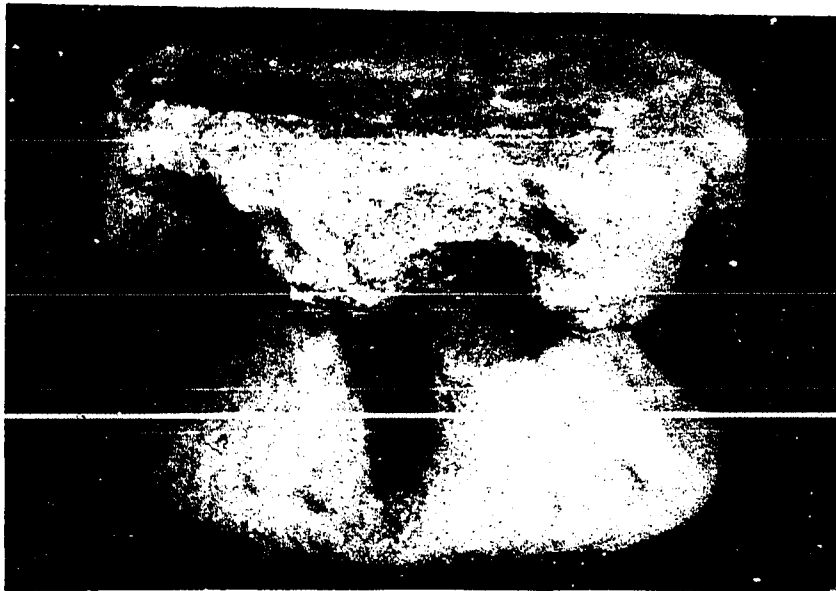


Figure 261. Circular Stand. Panama. 12 cm diameter
x 9 cm high. Private Collection.

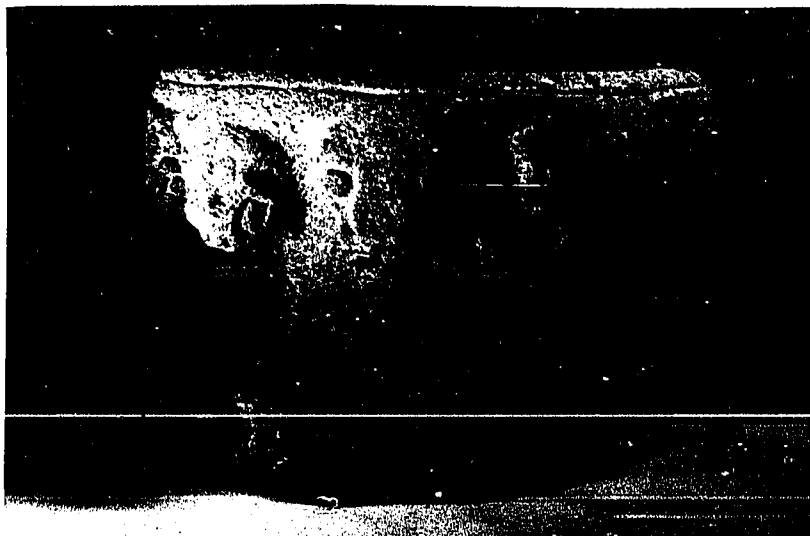


Figure 262. Circular Stand. Panama. 23 cm diameter x 16 cm high. Museum of the American Indian, Heye Foundation 7054.

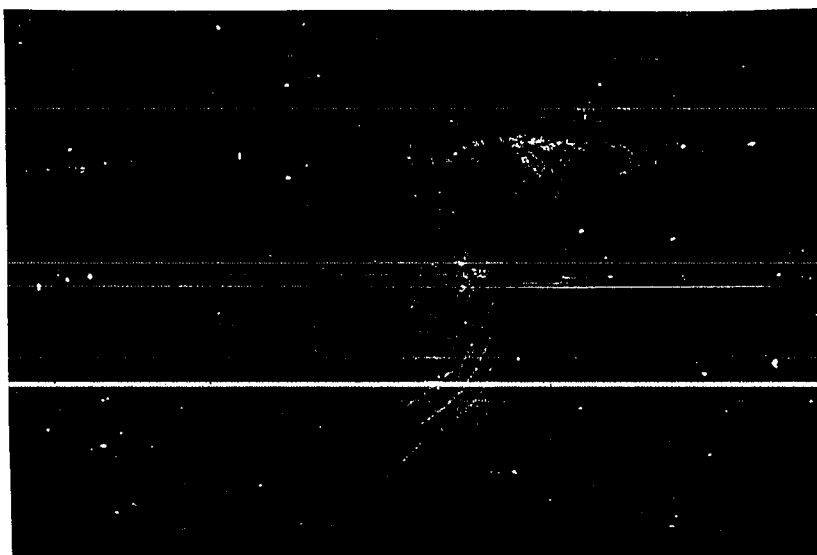


Figure 263. Circular Stand. Panama. 29 cm diameter x 22.5 cm high. Peabody Museum of Natural History, Yale University 1132-59. From MacCurdy 1911, Pl. IVC.



Figure 264. Circular Stand. Panama. 24 cm diameter
x 15 cm high. Museum of the American Indian, Heye
Foundation 8286.

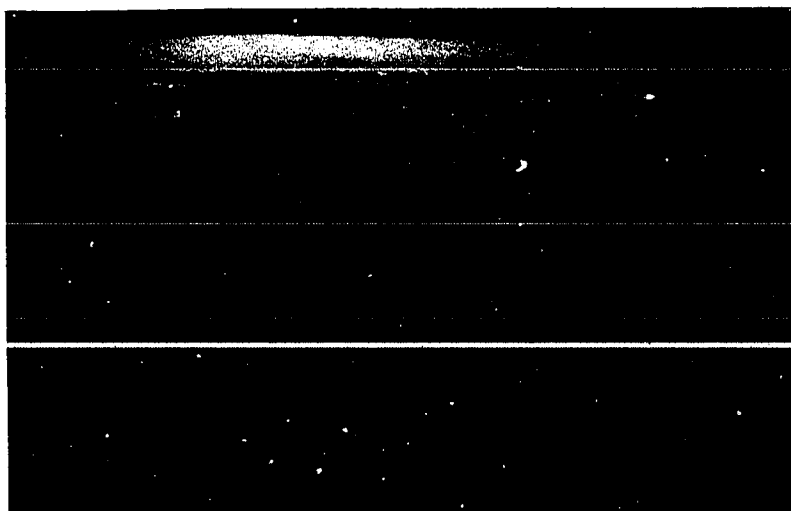


Figure 265. Circular Stand. Panama. 30 cm diameter
x 20 cm high. Museo del Hombre Panamaneño
1AL-X-00001.

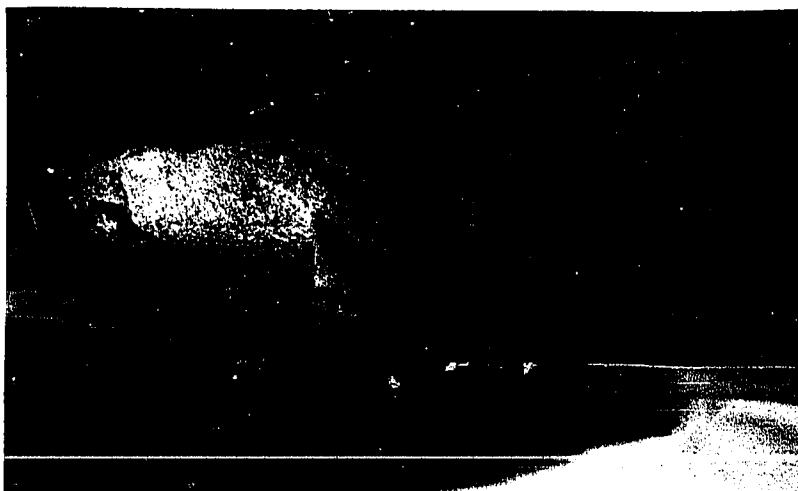


Figure 266. Circular Stand. Panama. 27.5 cm diameter. Museum of the American Indian, Heye Foundation 7053.



Figure 267. Circular Stand. Panama. 21 cm diameter x 10 cm high. Private Collection.

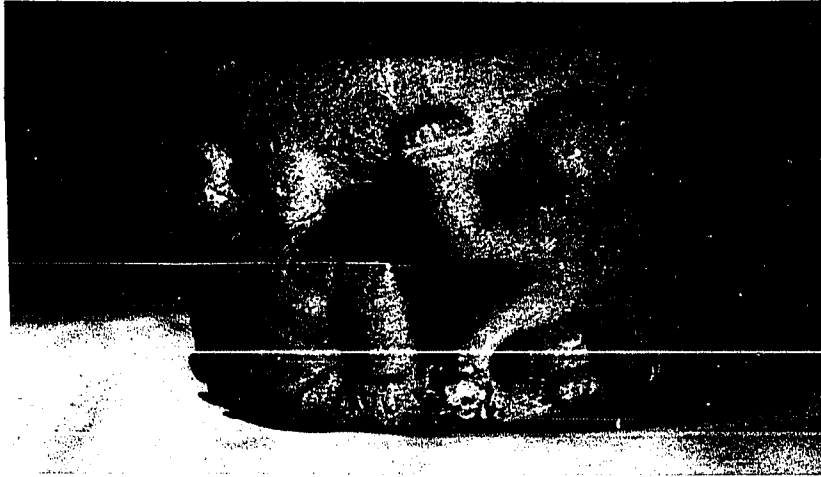


Figure 268. Circular Stand. Panama. 25 cm diameter x 15 cm high. Peabody Museum of Natural History, Yale University 342-62.

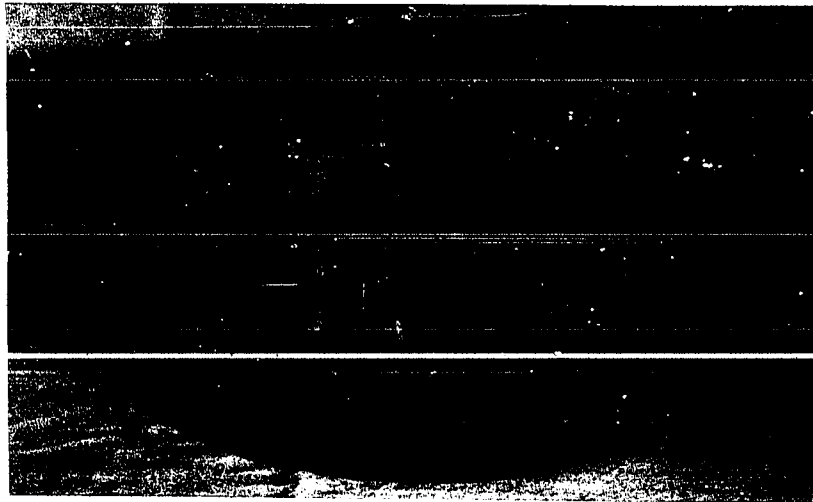


Figure 269. Circular Stand. Panama. 25.5 cm diameter x 16 cm high. National Museum of Natural History, Smithsonian Institution 132334.



Figure 270. Circular Stand. Costa Rica. 41 cm diameter x 27 cm high. Museo Nacional de Costa Rica 20446. From Between Continents/Between Seas exhibition catalog 1981, No. 201.

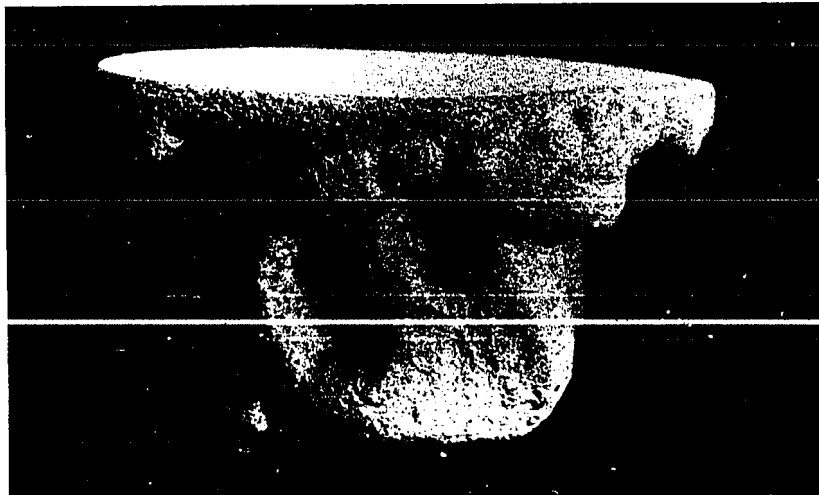


Figure 271. Circular Stand. Panama. 20.5 cm diameter x 11.5 cm high. Museo del Hombre Panamano AL-9-00007.

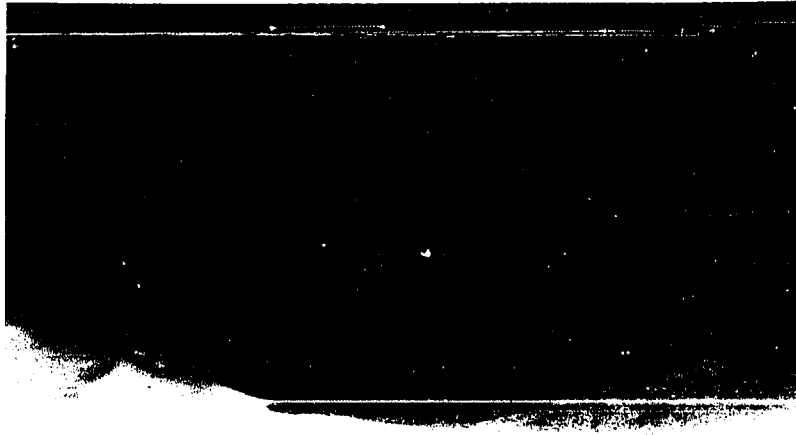


Figure 272. Ceramic Circular Stand. Panama. National Museum of Natural History, Smithsonian Institution 131478.



Figure 273. Ceramic Circular Stand. Panama. 20 cm diameter. Peabody Museum of Natural History, Yale University 342-72-286.



Figure 274. Ceramic Circular Stand. Panama. 24 cm diameter x 12.5 cm high. Peabody Museum of Natural History, Yale University 1098-284.



Figure 275. Ceramic Circular Stand. Panama. 21 cm diameter. Peabody Museum of Natural History, Yale University 1098-215.

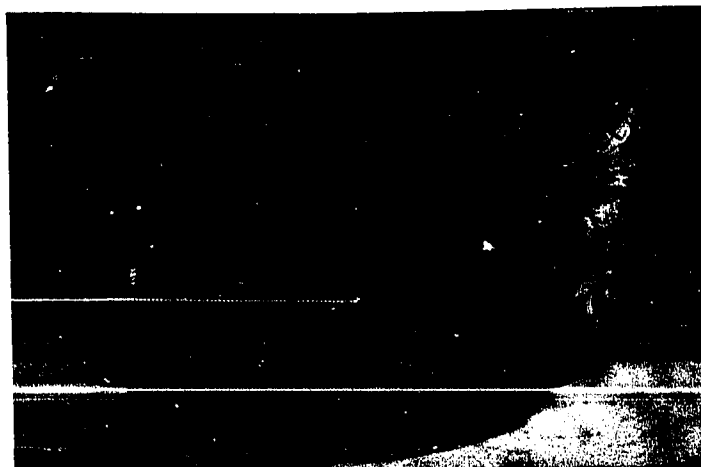


Figure 276. Ceramic Circular Stand. Panama. 21 cm diameter x 12 cm high. American Museum of Natural History 3/8425.

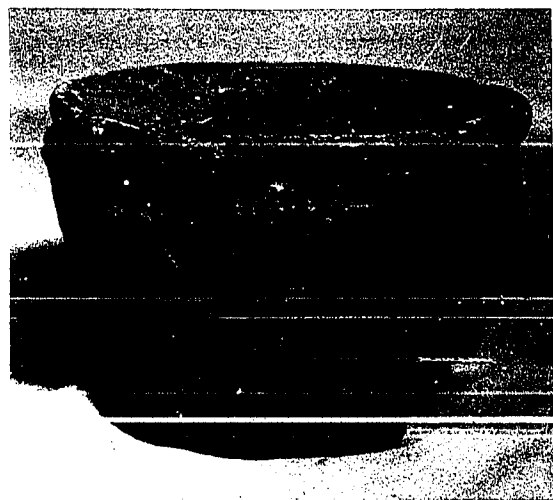


Figure 277. Circular Stand. Costa Rica. 15 cm diameter x 10.5 cm high. Carnegie Museum of Natural History 2792/566.



Figure 278. Pot Ring Stand. Costa Rica. 13 cm diameter x 8 cm high. Museum of the American Indian, Heye Foundation 7/3467.

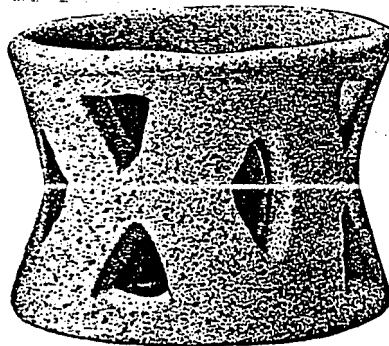


Figure 279. Pot Ring Stand. Costa Rica. 9.5 cm diameter. The Brooklyn Museum 6885. From Mason 1945, Pl. 29d.

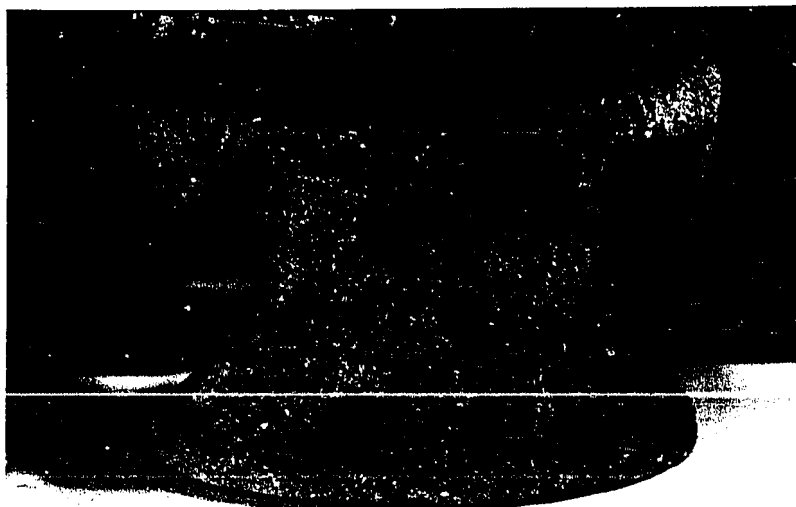


Figure 280. Pot Ring Stand. Costa Rica. 16.5 cm diameter x 10.5 cm high. American Museum of Natural History 1740.

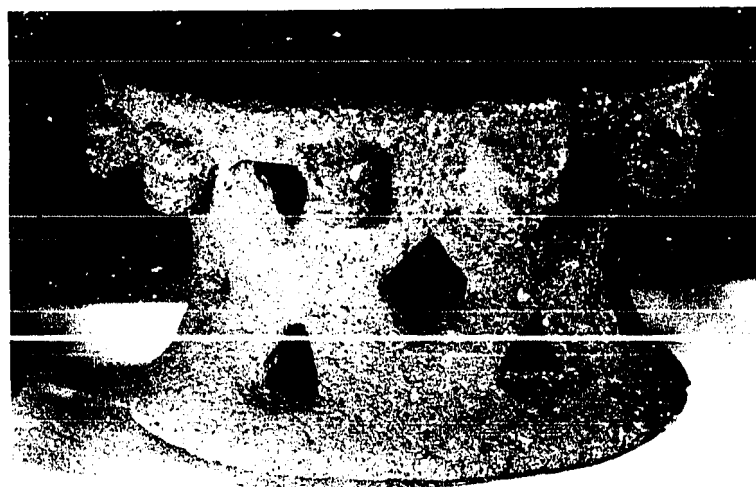


Figure 281. Pot Ring Stand. Costa Rica. 9.5 cm diameter x 5.5 cm high. American Museum of Natural History 1741.

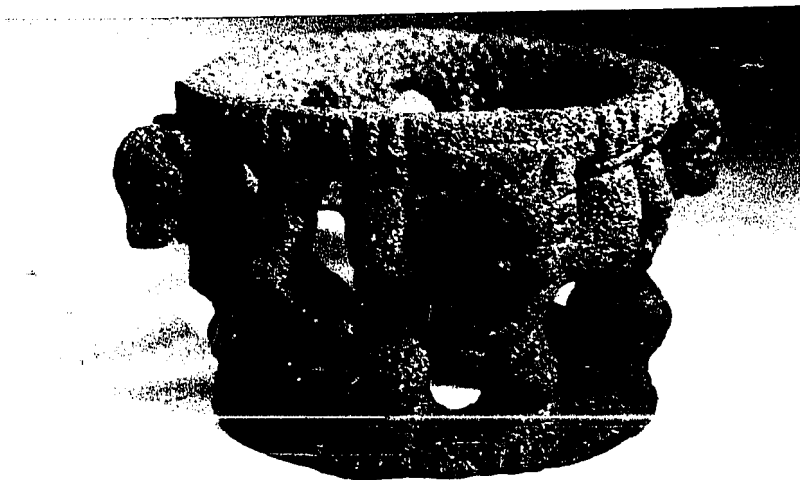


Figure 282. Pot Ring Stand. Costa Rica. 12.5 cm diameter x 9 cm high. Museum of the American Indian, Heye Foundation 7/3495.

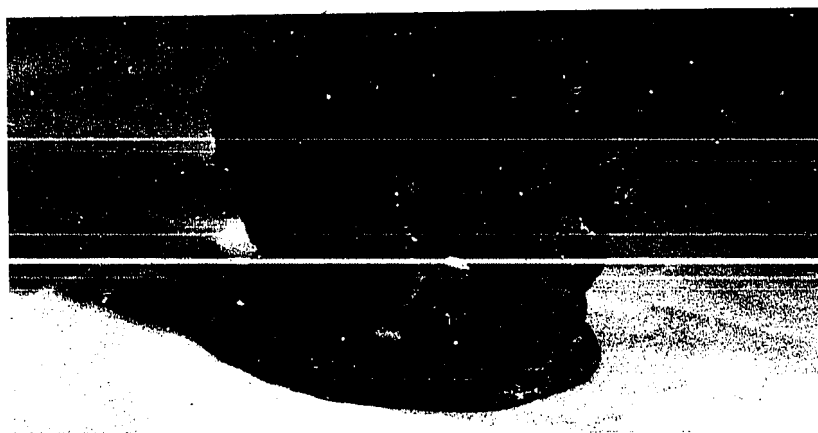


Figure 283. Pot Ring Stand. Costa Rica. 14.5 cm diameter x 9 cm high. Museum of the American Indian, Heye Foundation 19/520.



Figure 284. Figural Support Bowl. Costa Rica. 22 cm diameter x 5.5 cm high. Carnegie Museum of Natural History 2439/3049.

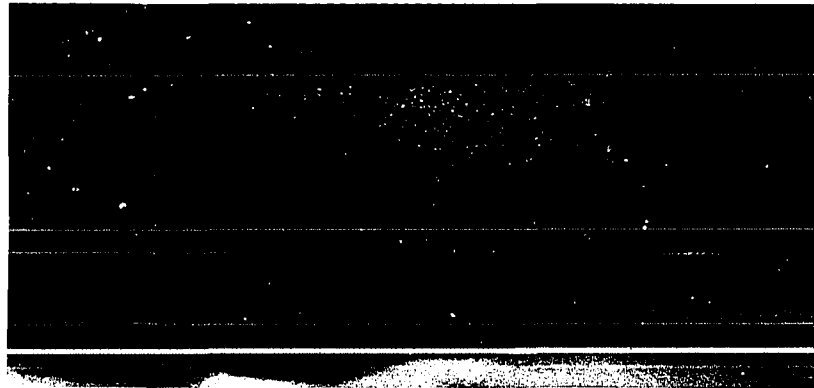


Figure 285. Figural Support Bowl. Costa Rica. 18 cm diameter x 10 cm high. Museum of the American Indian, Heye Foundation 7-3497.

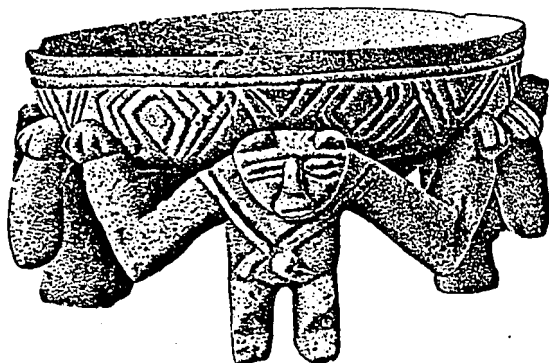


Figure 286. Figural Support Bowl. Costa Rica. 14.5 cm diameter x 9.5 cm high. The Brooklyn Museum 7043. From Mason 1945, Pl. 29b.



Figure 287. Figural Support Bowl. Costa Rica. 9.5 cm diameter x 7 cm high. Museum of the American Indian, Heye Foundation 7/4153.

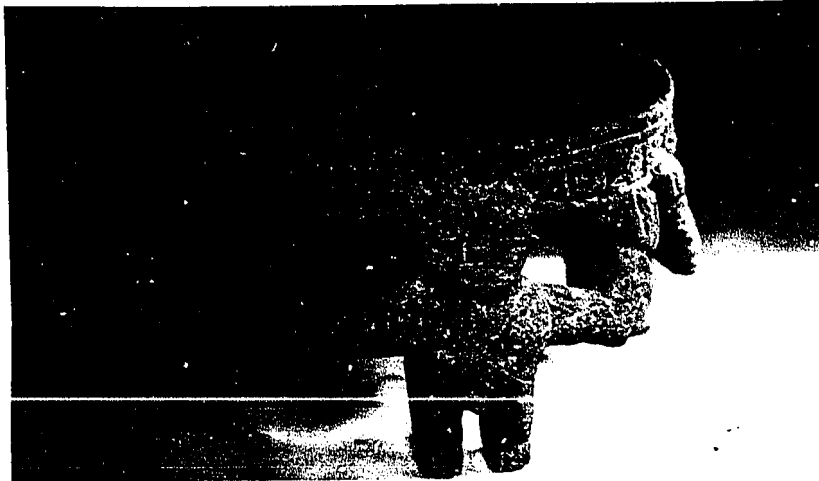


Figure 288. Figural Support Bowl. Costa Rica. 15.5 cm diameter x 9.5 cm high. American Museum of Natural History 7042.

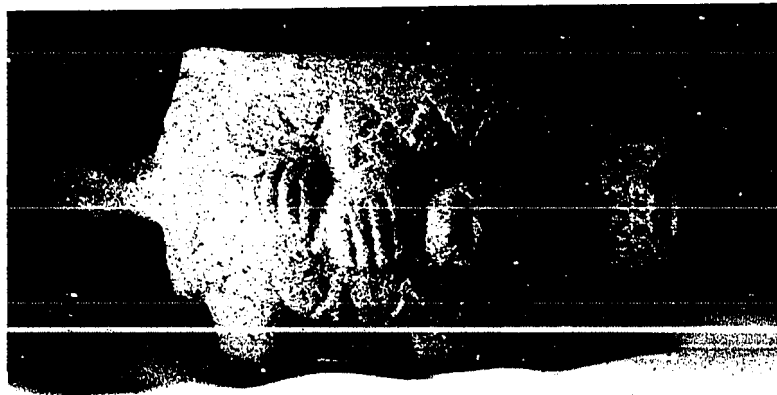


Figure 289. Figural Support Bowl. Costa Rica. 19.5 cm long x 8.5 cm high. Museum of the American Indian, Heye Foundation 23/7291.

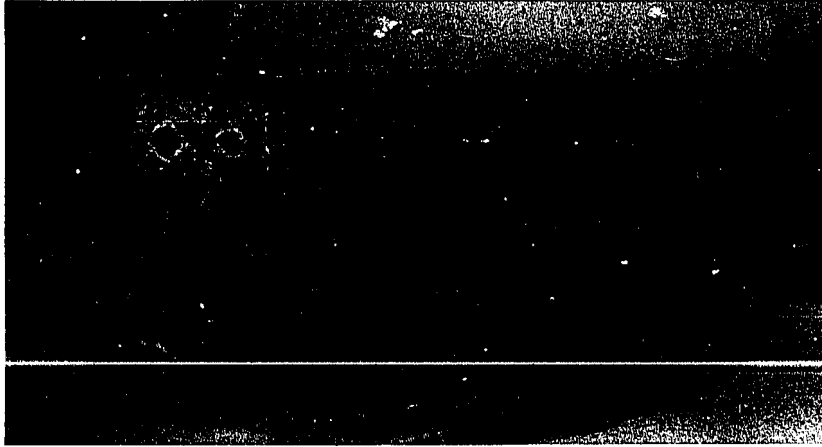


Figure 290. Figural Support Bowl. Costa Rica. 15 cm long x 8.5 cm high. American Museum of Natural History 6861.

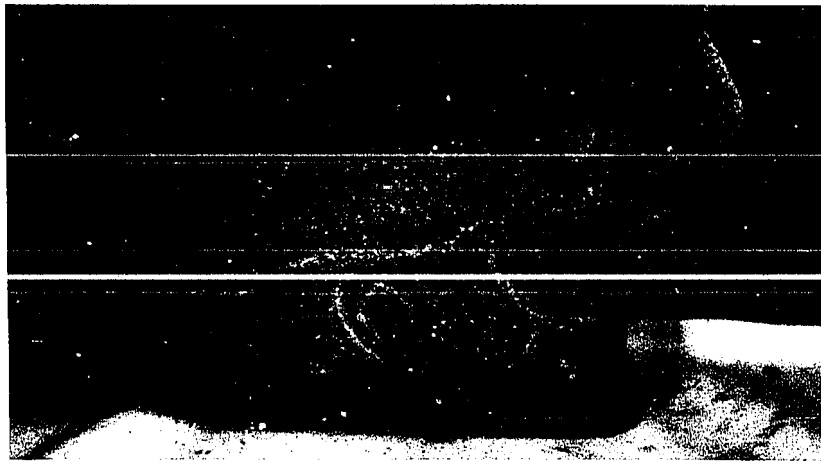


Figure 291. Figural Support Bowl. Costa Rica. 18.5 cm long x 10.5 cm high. American Museum of Natural History 7021.

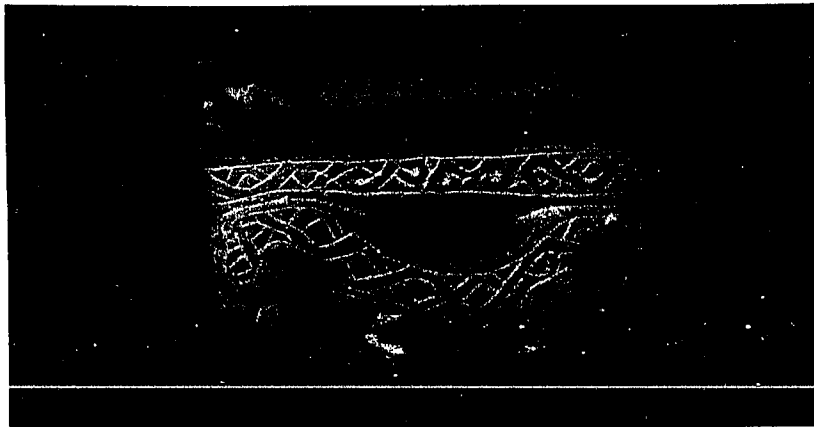


Figure 292. Figural Support Bowl. Costa Rica. 19.5 cm long x 11 cm high. Museo Nacional de Costa Rica 10402.



Figure 293. Figural Support Bowl. Costa Rica. 27 cm long x 9 cm high. Museo Nacional de Costa Rica 14934. From Between Continents/Between Seas exhibition catalog 1981, No. 228.



Figure 294. Grave Marker.
Costa Rica. 74 cm high x
29 cm wide. American Museum
of Natural History 7006.

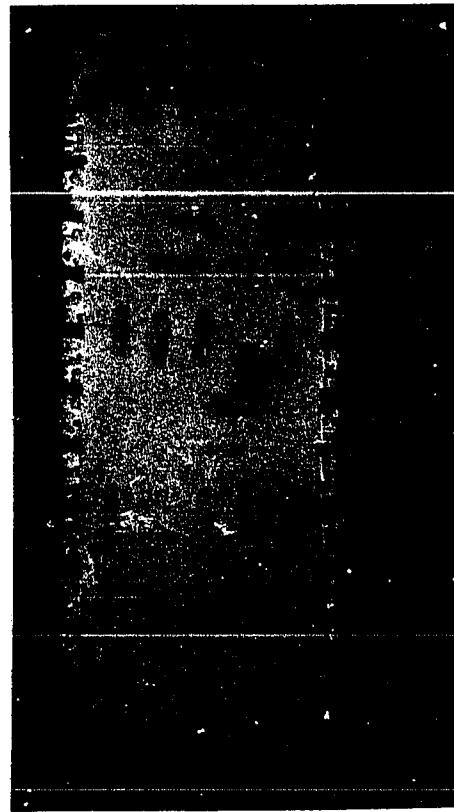


Figure 295. Grave Marker.
Costa Rica. 210 cm high x
81 cm wide. Museo Nacional
de Costa Rica 23017.

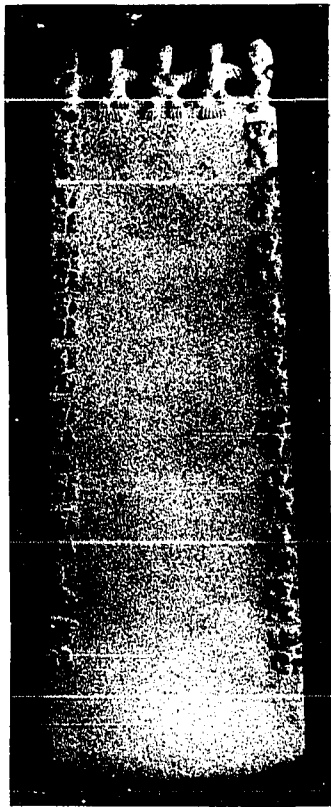


Figure 296. Grave Marker. Costa Rica. 184 cm high x 63 cm wide. Museo Nacional de Costa Rica 104. From Between Continents/Between Seas exhibition catalog 1981, No. 202.

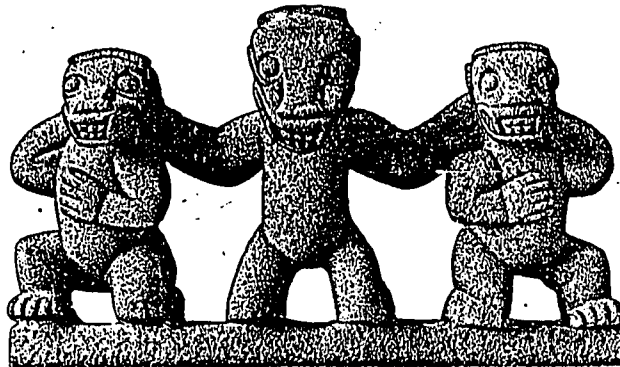


Figure 297. Grave Marker. Costa Rica. 200 cm high x 59 cm wide. The Brooklyn Museum 6999. From Mason 1945, Pls. 33b, 33c.

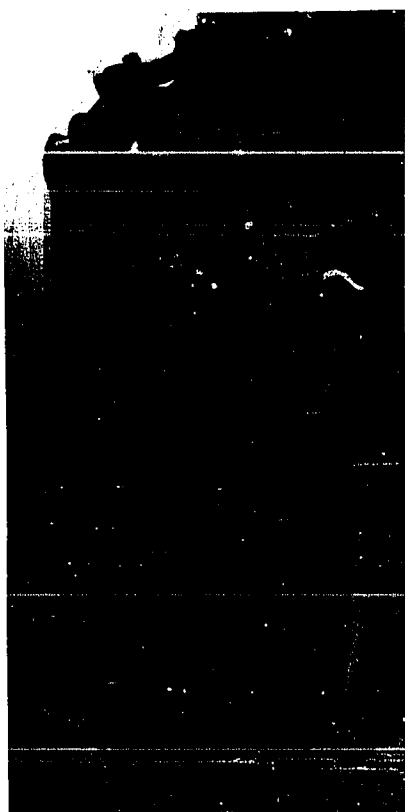


Figure 298. Grave Marker.
Costa Rica. 100 cm high x
38.5 cm wide. American
Museum of Natural History
7000.

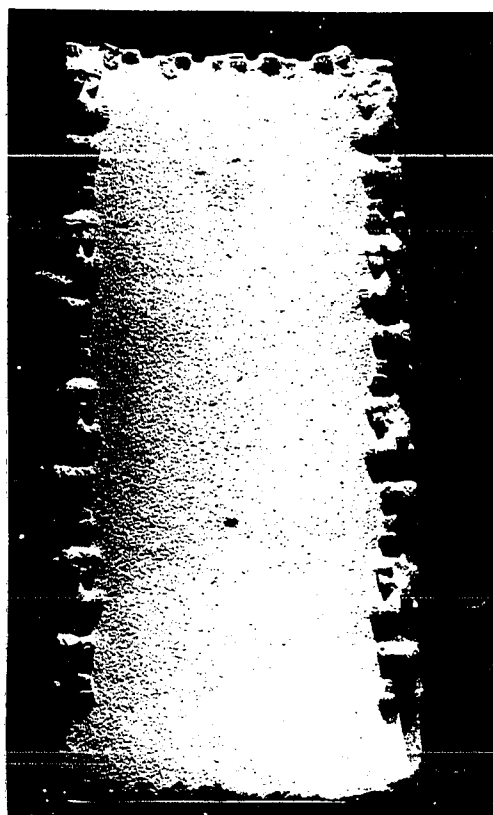


Figure 299. Grave Marker.
Costa Rica. 192 cm high x
91 cm wide. Museo Nacional
de Costa Rica 23002.

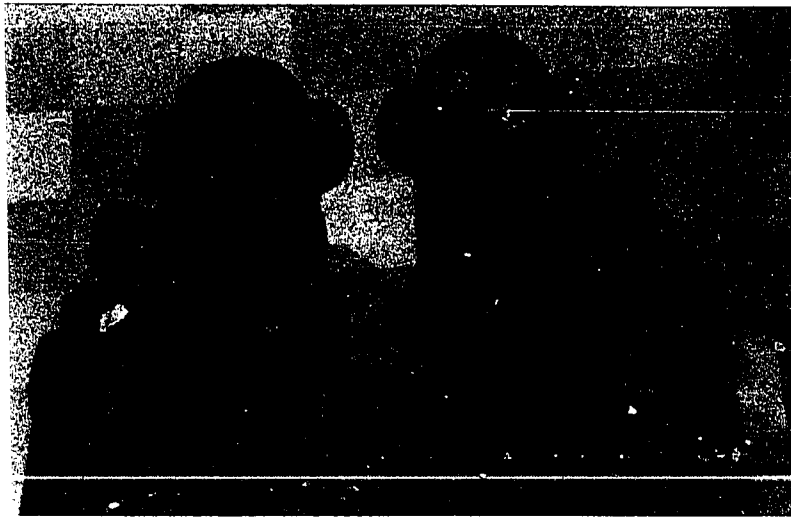
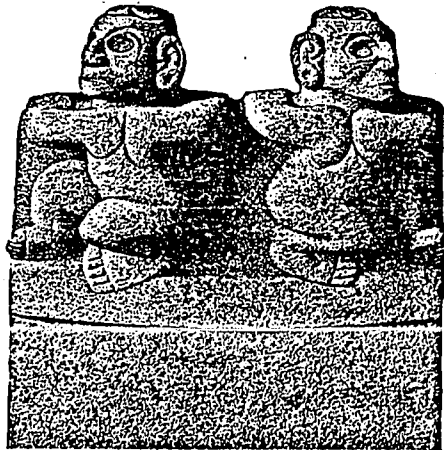


Figure 300. Grave Marker. Costa Rica. 170 cm high. American Museum of Natural History 6996.



Figures 301a and 301b. Grave Marker. Costa Rica. 56 cm high x 40.5 cm wide. The Brooklyn Museum 7009. From Mason 1945 Pl. 31e, f.

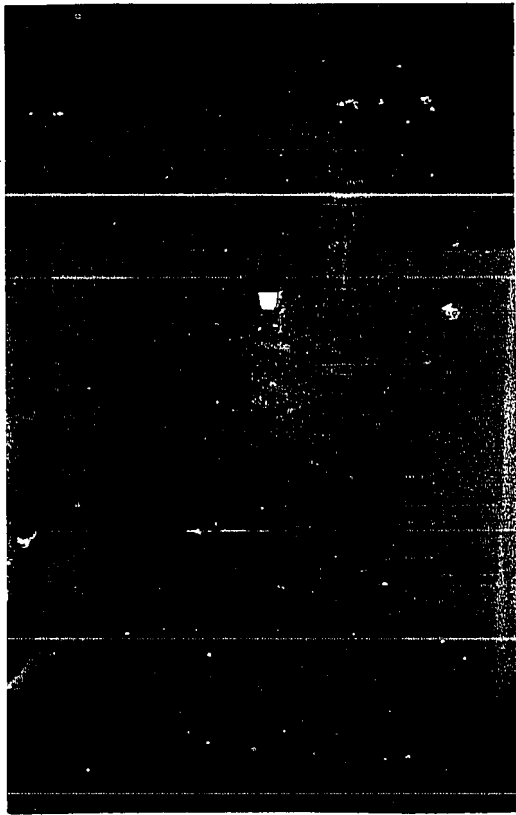


Figure 302. Grave Marker. Costa Rica. 71 cm high. American Museum of Natural History 7008.



Figure 303. Grave Marker. Costa Rica. 87 cm high x 31 cm wide. American Museum of Natural History 7004.

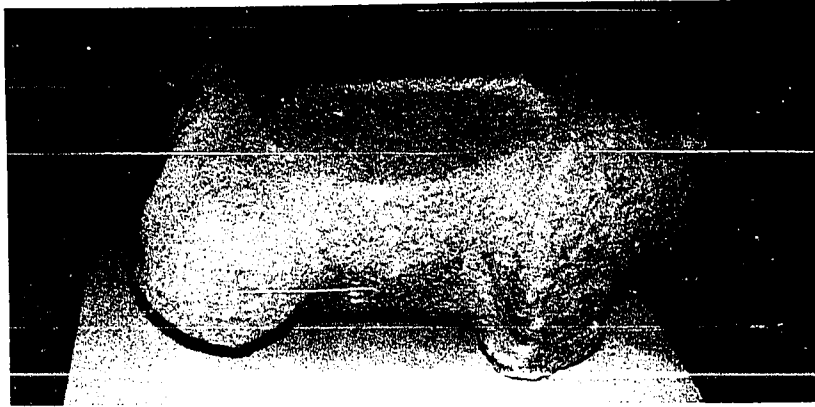


Figure 304. Chacmool Figure. Costa Rica. 75 cm long. Museo Nacional de Costa Rica.



Figure 305. Chacmool Figure. Costa Rica. 91.5 cm long. Museum of Natural History, Smithsonian Institution 179120.



Figure 306. Chacmool Figure. Costa Rica. 98 cm long.
Museo Nacional de Costa Rica.

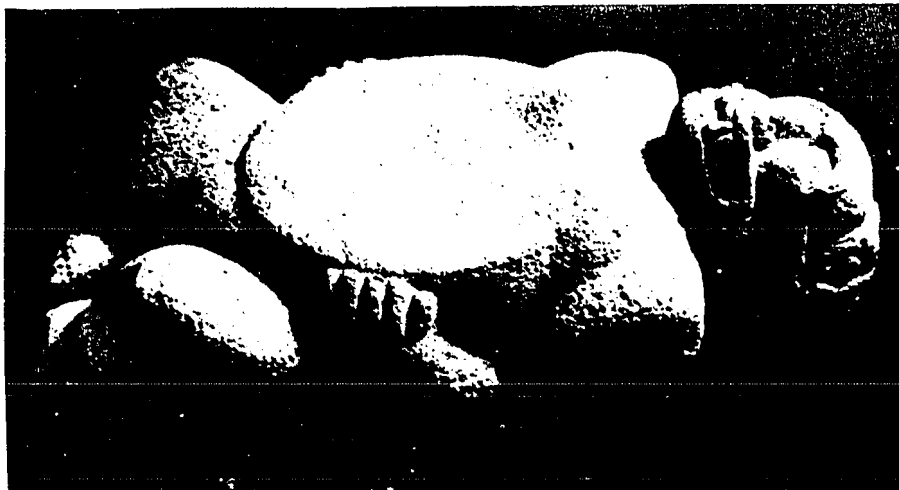


Figure 307. Chacmool Figure. Costa Rica. 155 cm long.
Private Collection. From Between Continents/Between
Seas exhibition catalog 1981, No. 203.

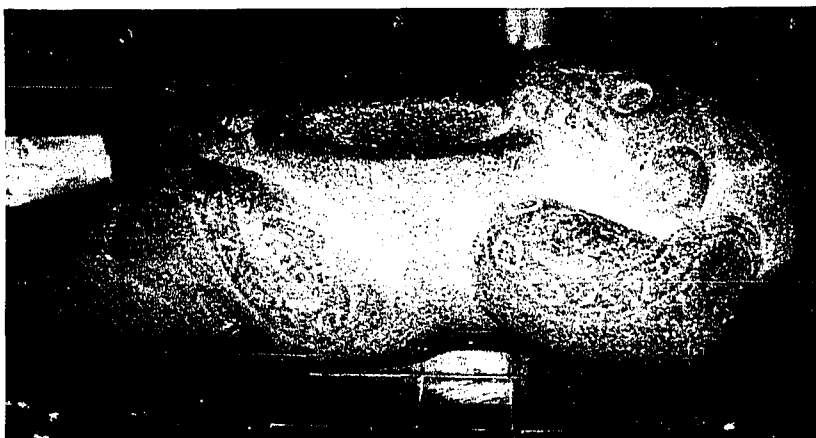


Figure 308. Chacmool Figure. Costa Rica. 114 cm long.
American Museum of Natural History 15346.



Figure 309. Vase. Costa Rica. 36 cm diameter x 32 cm
high. Carnegie Museum of Natural History 2439/3075.

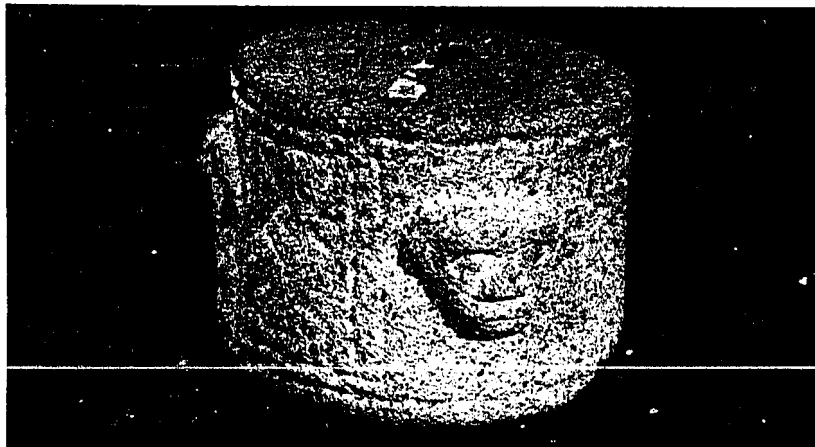


Figure 310. Vase. Costa Rica. 15 cm diameter x 11.5 cm high. Museo Nacional de Costa Rica 2932.

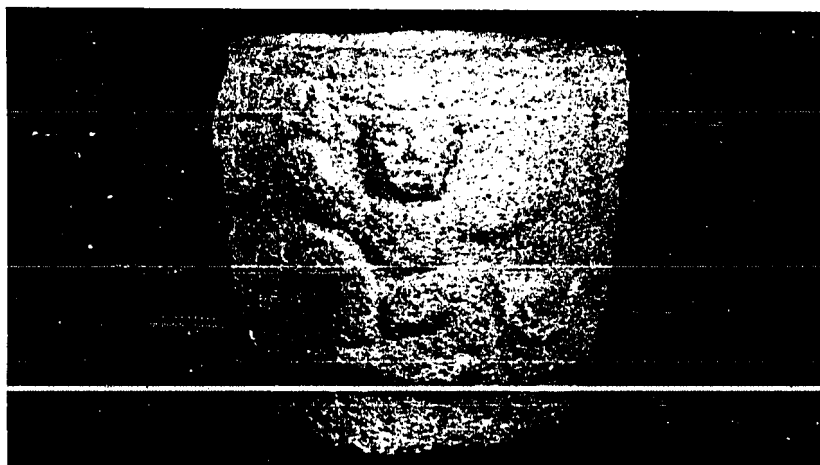


Figure 311. Vase. Costa Rica. 15.5 cm diameter x 16 cm high. Museo Nacional de Costa Rica 12628.

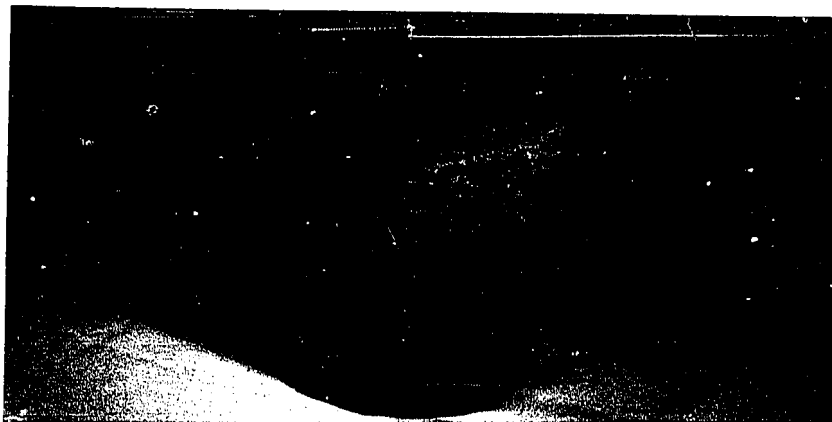
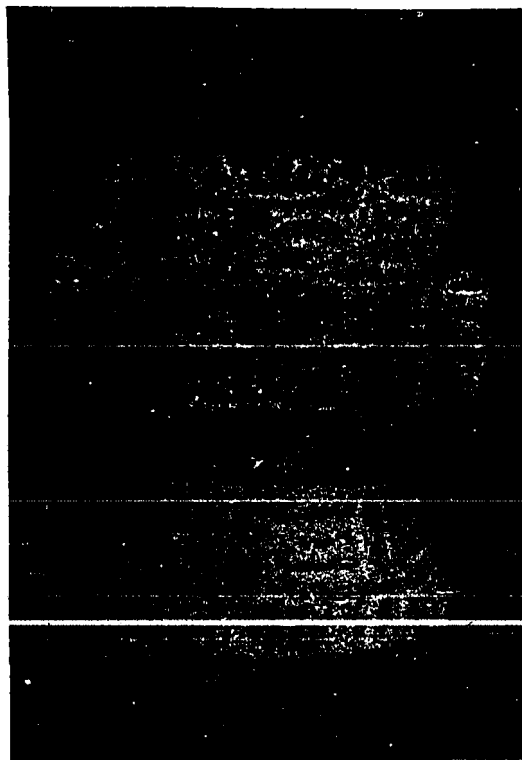
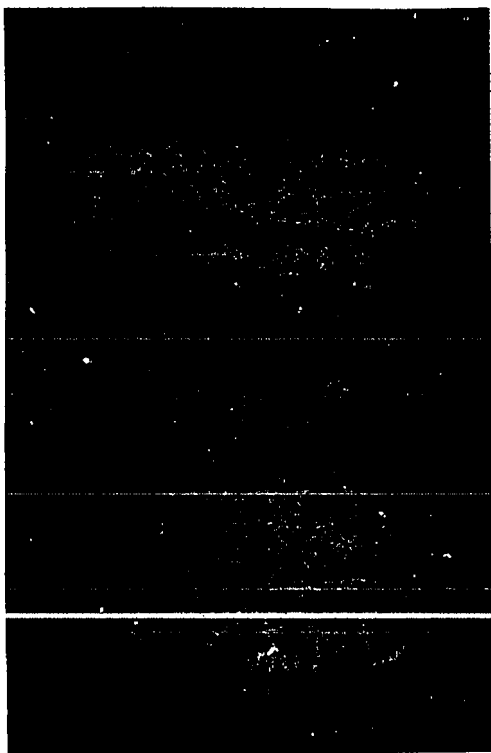
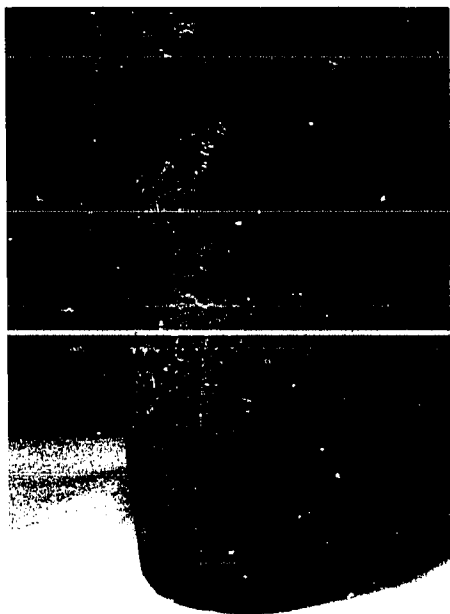
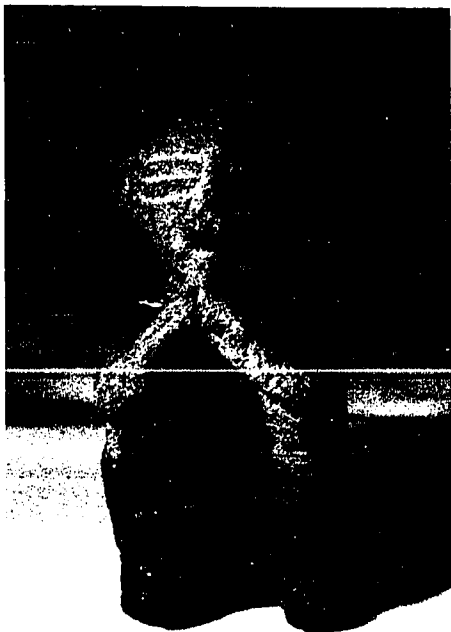


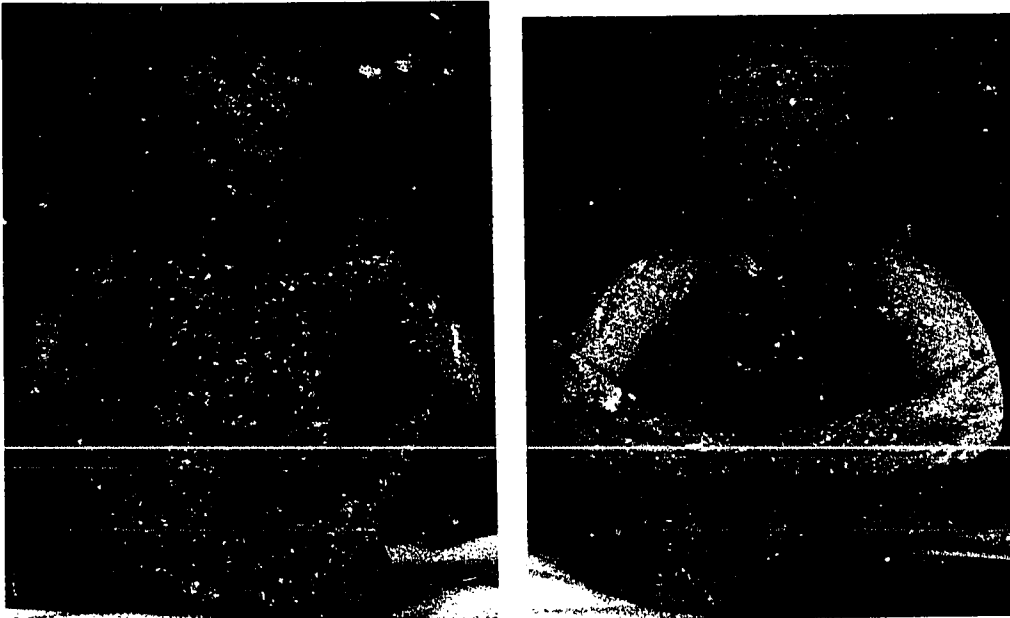
Figure 312. Vase. Costa Rica. 17 cm diameter x 15.5 cm high. Carnegie Museum of Natural History 2438/1399.



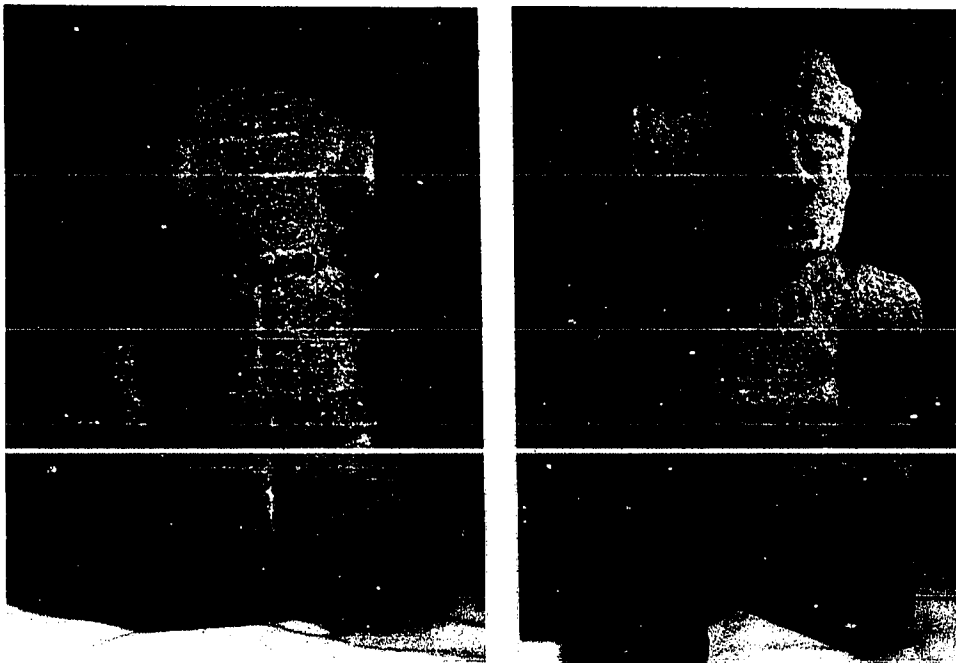
Figures 313a and 313b. Vase. Costa Rica. 19 cm diameter x 24.5 cm high. Museo Nacional de Costa Rica 18646.



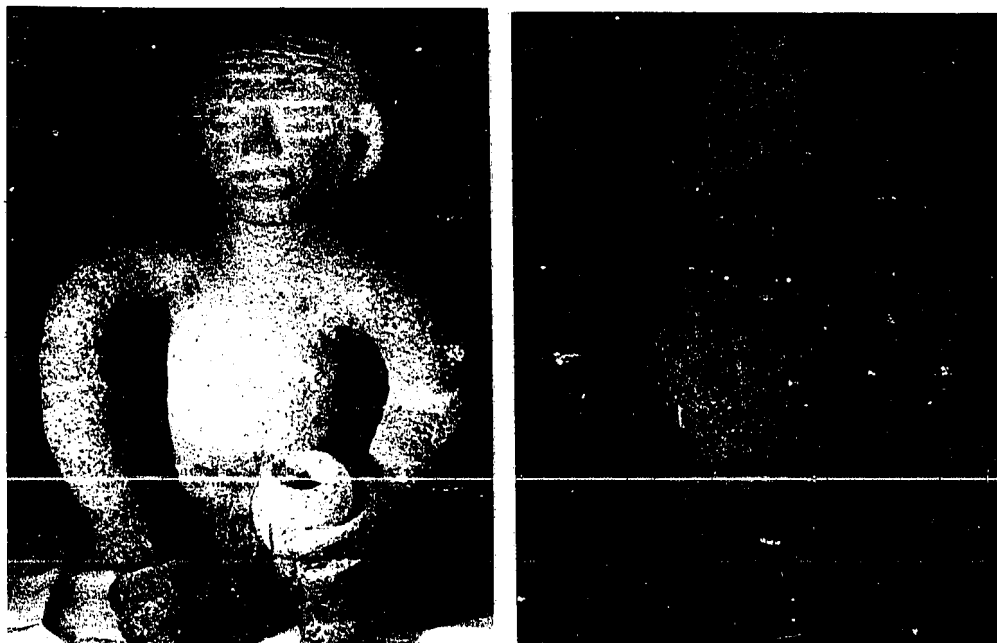
Figures 314a, 314b and
314c. Seated Figure.
Group 2b. Costa Rica. 9
cm high. Banco Nacional
de Costa Rica 965.



Figures 315a and 315b. Seated Figure. Group 1a. 14 cm high.
Costa Rica. Banco Nacional de Costa Rica 875.



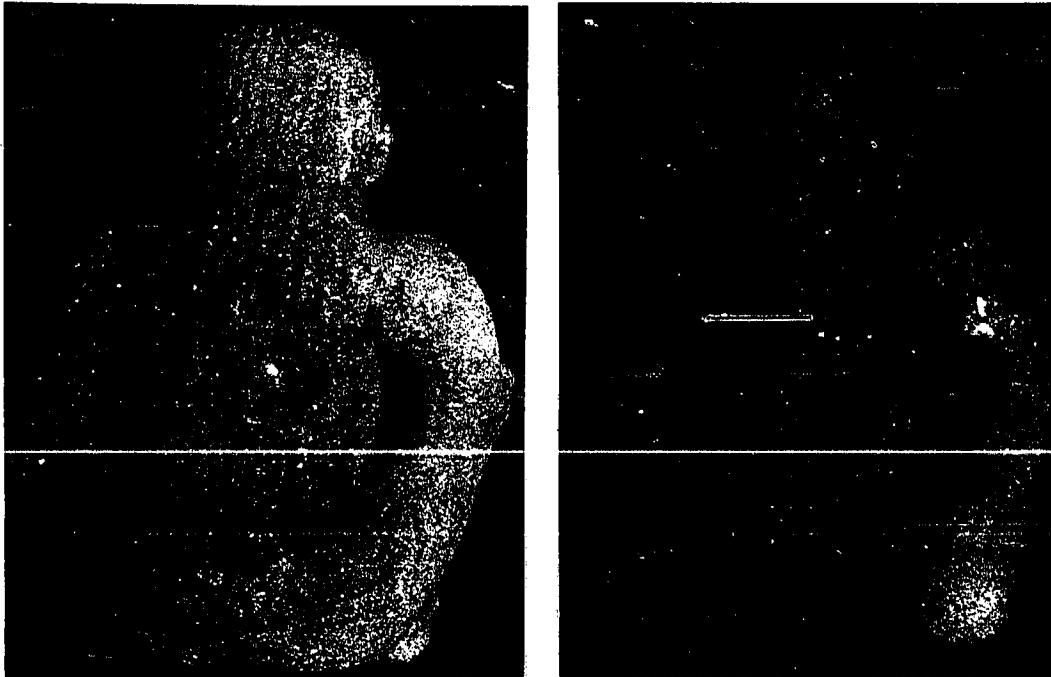
Figures 316a and 316b. Seated Figure. Group 1a. 29 cm high.
Costa Rica. Museum of the American Indian, Heye Foundation
7/3433.



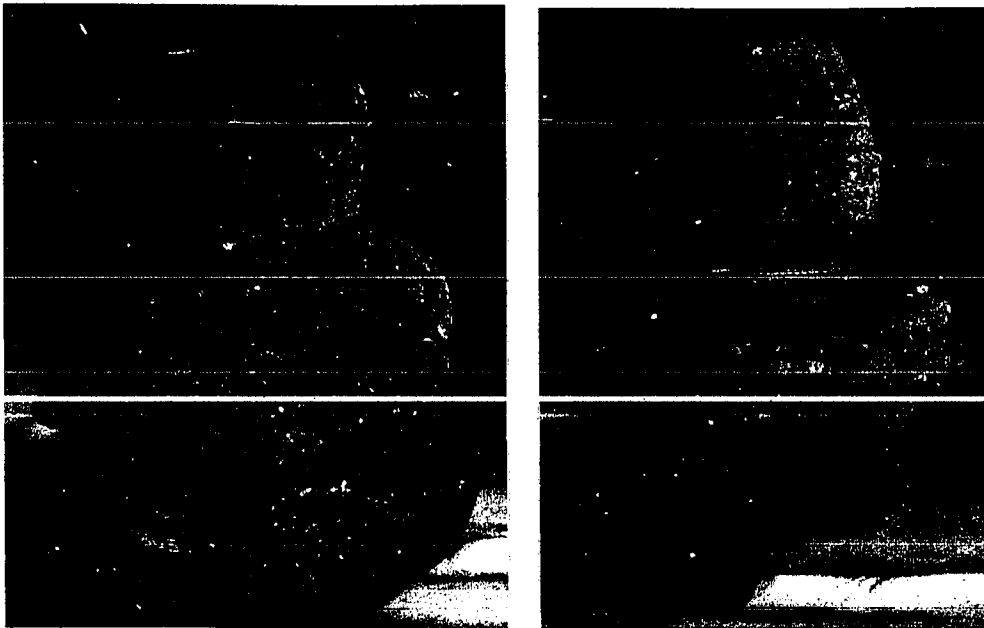
Figures 317a and 317b. Seated Figure. Group 1a. 32 cm high. Costa Rica. Banco Nacional de Costa Rica 986.



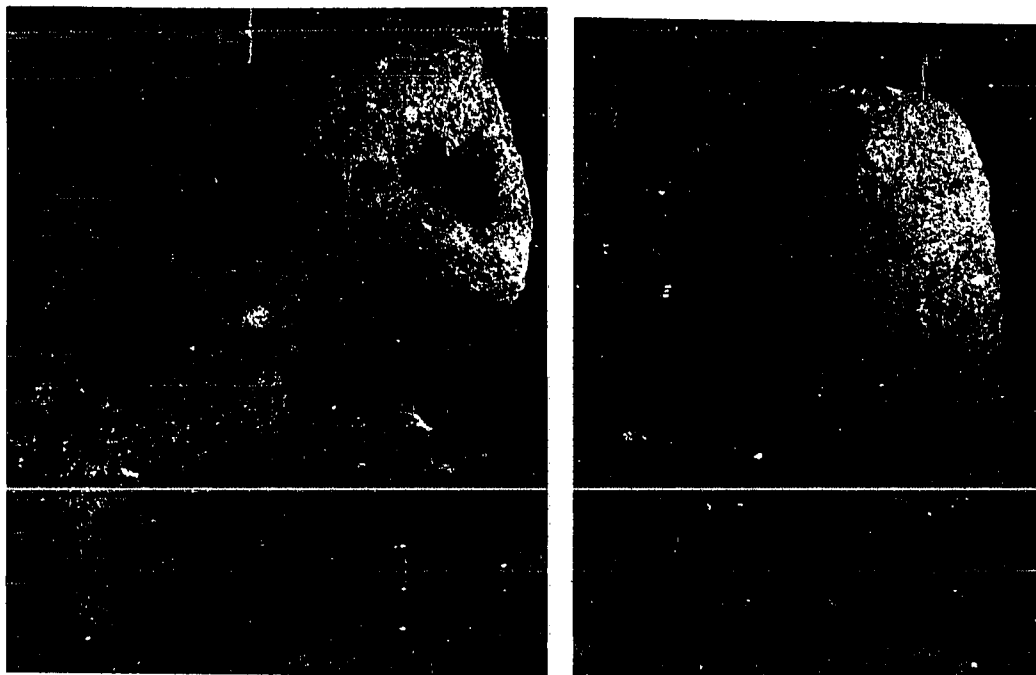
Figures 318a and 318b. Seated Figure. Group 1a. 31 cm high. Costa Rica. Carnegie Museum of Natural History 2439/2952.



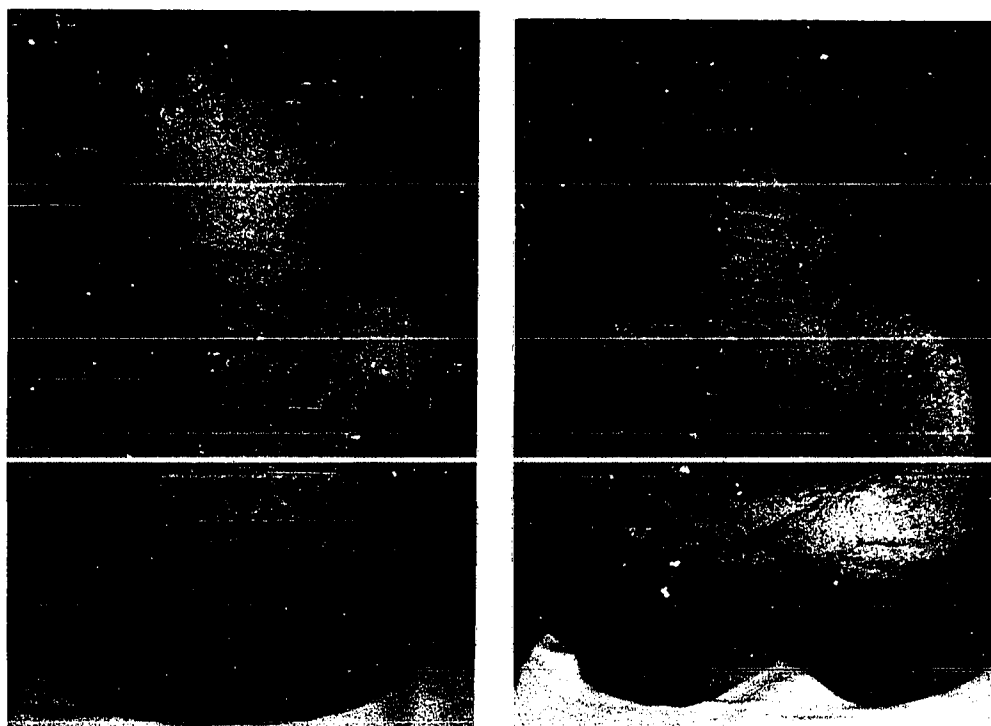
Figures 319a and 319b. Seated Figure. Group 1b. 32 cm high.
Costa Rica. Instituto Nacional de Seguros, Museo del Jade 3867.



Figures 320a and 320b. Seated Figure. Group 1b. 17 cm high.
Costa Rica. American Museum of Natural History 6805.



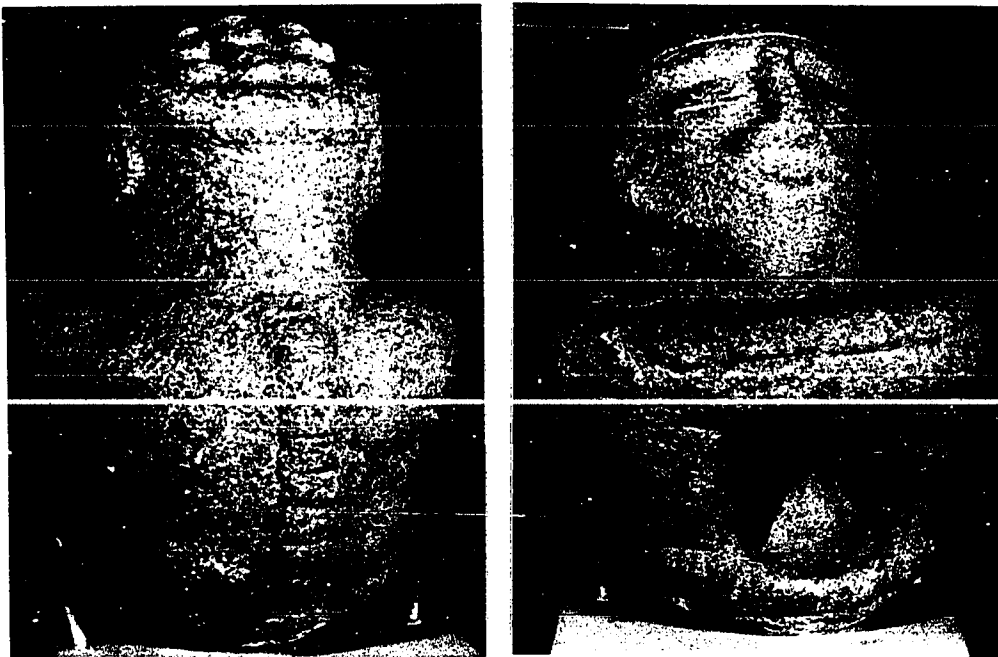
Figures 321a and 321b. Seated Figure. Group 2a. 20 cm high. Costa Rica. American Museum of Natural History 1709.



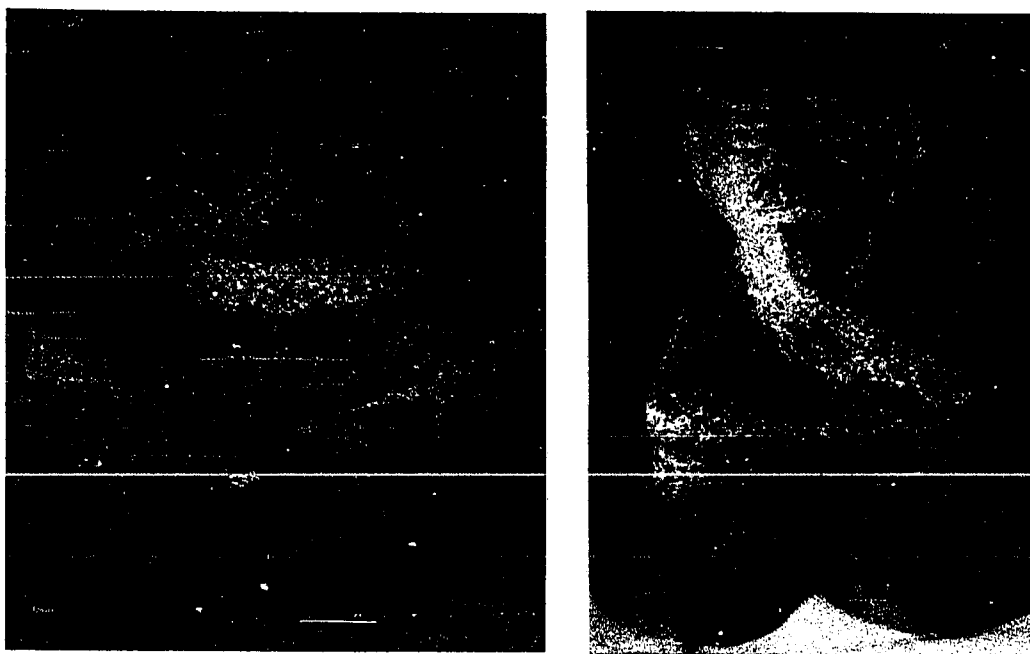
Figures 322a and 322b. Seated Figure. Group 2a. 29.5 cm high. Costa Rica. Banco Nacional de Costa Rica 973.



Figure 323. Seated Figure. Group 2a. 29.5 cm high. Costa Rica. Banco Nacional de Costa Rica 971. From Between Continents/Between Seas exhibition catalog 1981, No. 219.



Figures 324a and 324b. Seated Figure. Group 2a. 22 cm high. Costa Rica. Museo Nacional de Costa Rica 4829.



Figures 325a and 325b. Seated Figure. Group 2b. 23 cm high. Costa Rica. Banco Nacional de Costa Rica 984.



Figure 326. Seated Figure. Group 1a. 30.5 cm high. Costa Rica. Private Collection. From Von Winning 1968, Fig. 515.

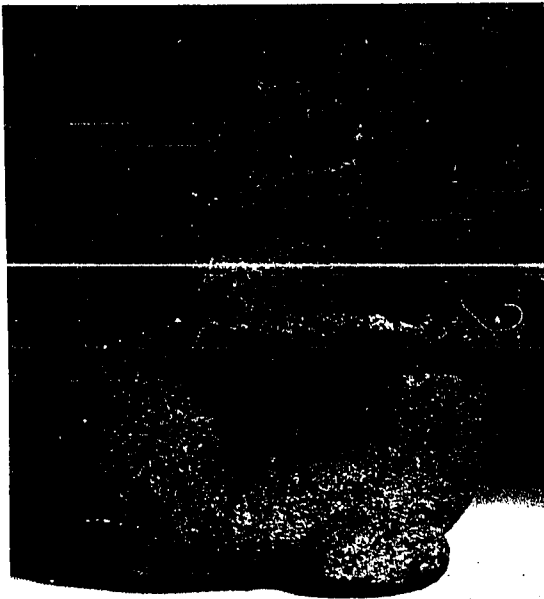


Figure 327. Seated Figure. Group 2a.
11.5 cm high. Costa Rica. Carnegie
Museum of Natural History 2439/2937.

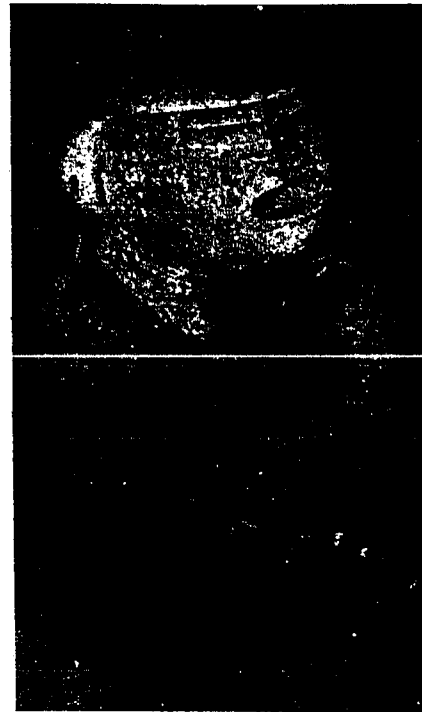


Figure 328. Seated Figure
Group 2b. 19.5 cm high.
Costa Rica. Banco Nacional
de Costa Rica 882.

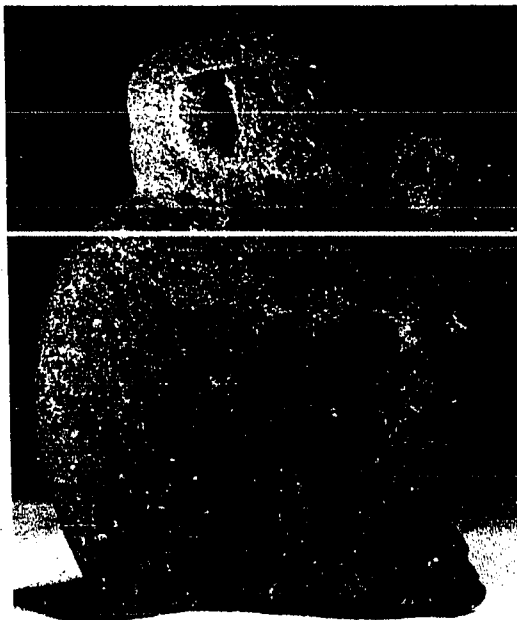


Figure 329. Seated
Figure. Group 2b. 12 cm
high. Costa Rica. Museum
of the American Indian,
Heye Foundation 15/7448.

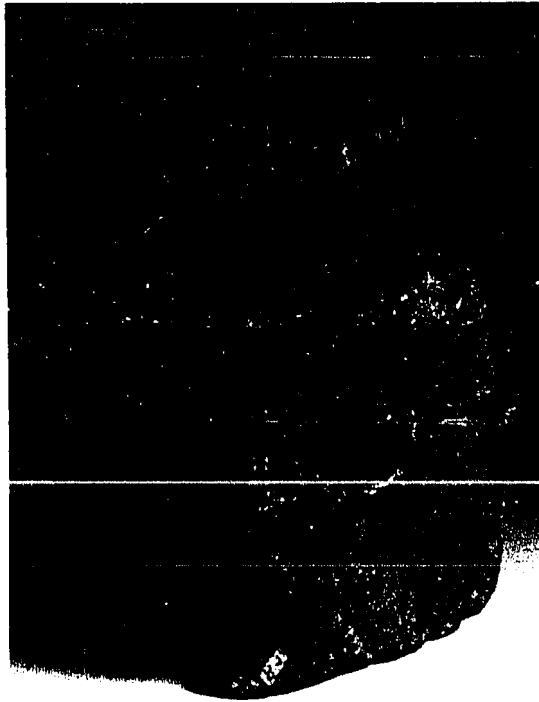


Figure 330. Seated Figure. Group 2b. 11 cm high. Costa Rica. Carnegie Museum of Natural History 2439/2936.



Figure 331. Seated Figure. Group 2b. Costa Rica. Private Collection. From Lines 1945, Fig. 13.

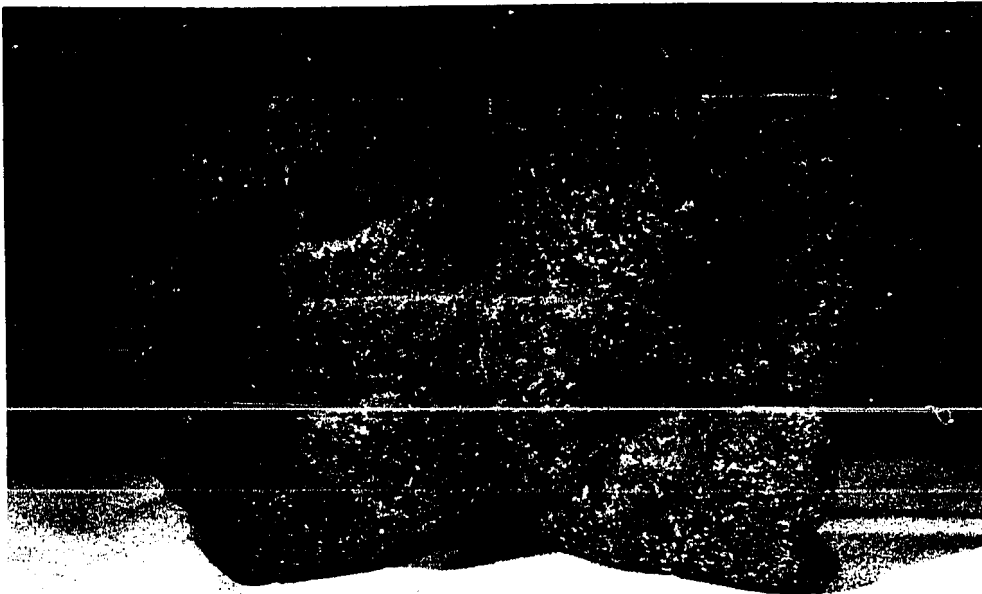


Figure 332. Seated Figure. Group 2b. 10.5 cm high. Costa Rica.
Banco Nacional de Costa Rica 966.

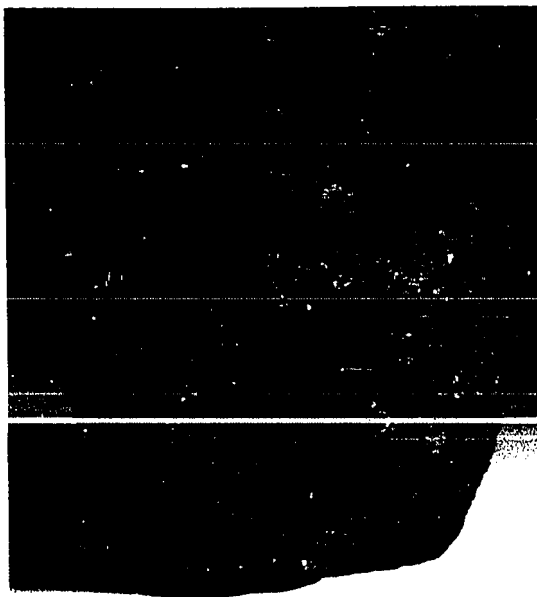


Figure 333. Seated Figure. Group
2b. 10 cm high. Costa Rica. Carnegie
Museum of Natural History .
2439/2939.



Figures 334a and 334b. Seated Figure. Group 3a. 12 cm high. Costa Rica. Banco Nacional de Costa Rica 865.

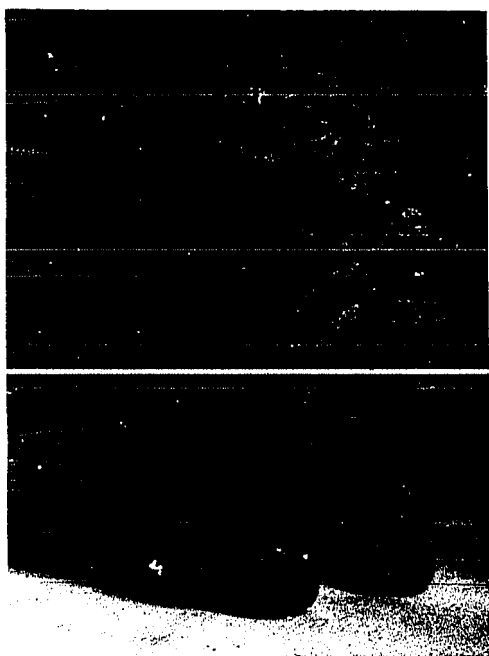
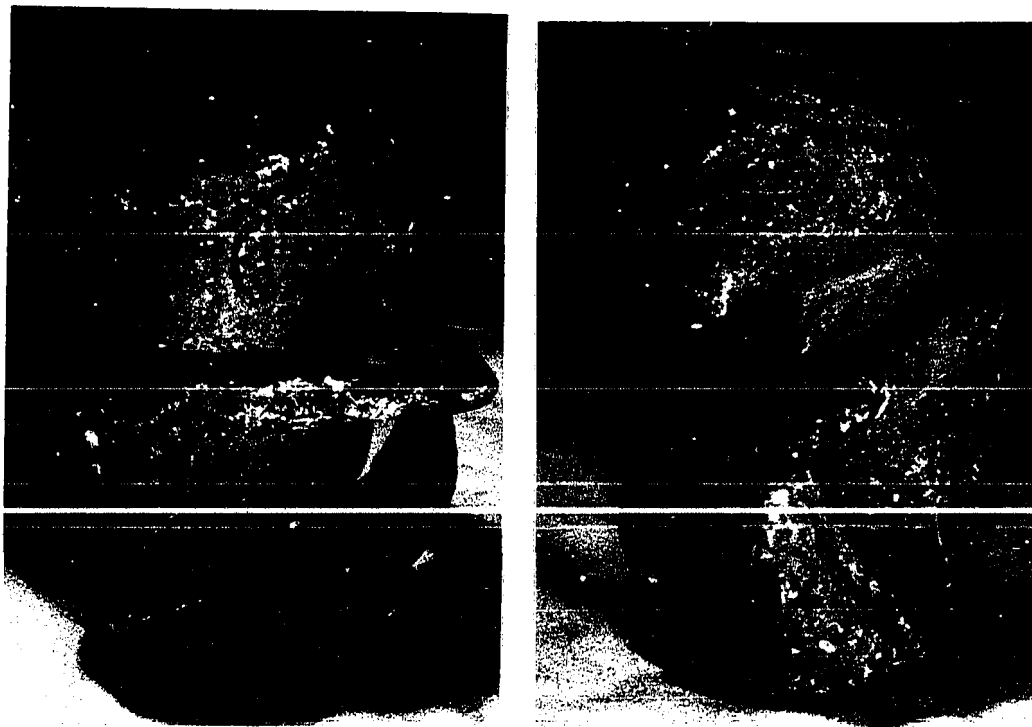


Figure 335. Seated Figure.
Group 3a. 10.5 cm high. Costa
Rica. Carnegie Museum of Natural
History 2439/2934.



Figure 336. Seated Figure. Group 3a. 8 cm high. Costa Rica. Museo de America, Madrid 3069. From Museo de America catalog 1980, Pl. XIVb.



Figures 337a and 337b. Seated Figure. Group 3a. 14.5 cm high. Costa Rica. Peabody Museum of Natural History, Yale University 2943/18765.



Figure 338. Seated Figure. Group
3a. 10.5 cm high. Costa Rica.
Carnegie Museum of Natural History
2439/2935.

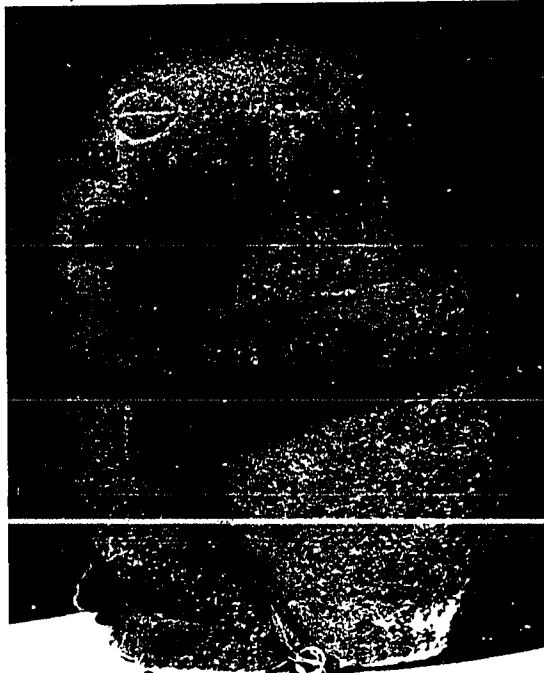


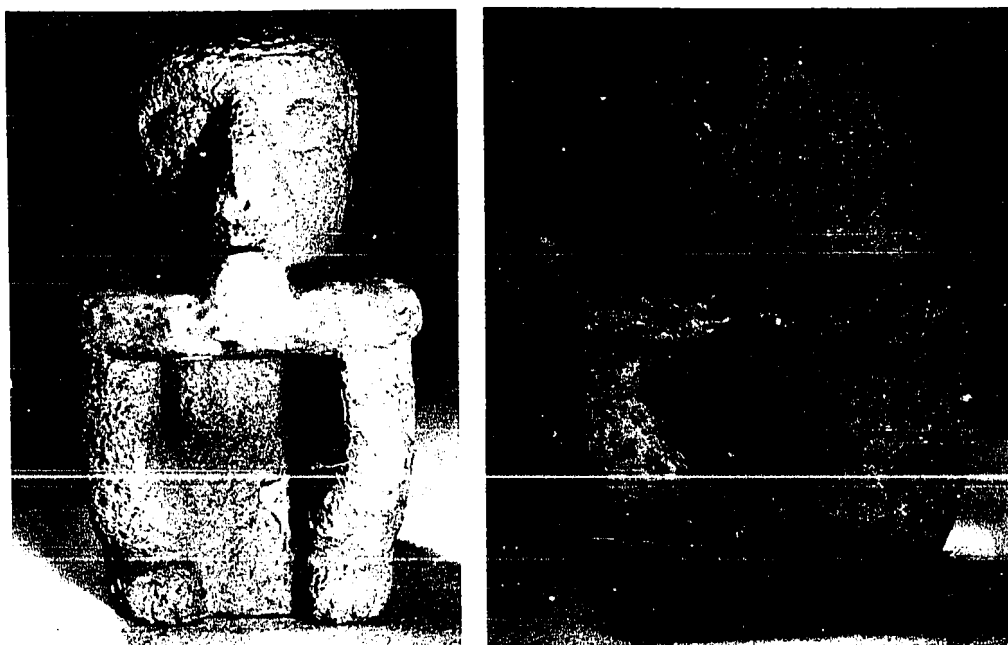
Figure 339. Seated Figure. Group
3a. 14.5 cm high. Costa Rica. Museo
Nacional de Costa Rica 2791.



Figure 340. Seated Figure. Group 3a. 11 cm high. Costa Rica. Museum of the American Indian, Heye Foundation 7/3500.



Figures 341a and 341b. Seated Figure. Group 3b. 16 cm high. Costa Rica. Museum of the American Indian, Heye Foundation 5/899.



Figures 342a and 342b. Seated Figure. Group 3b. 14.5 cm high. Costa Rica. Peabody Museum of Natural History, Yale University 2943/1866.



Figure 343. Seated Figure. Group 3b. 25.5 cm high. Costa Rica. Field Museum of Natural History, Chicago 191608.

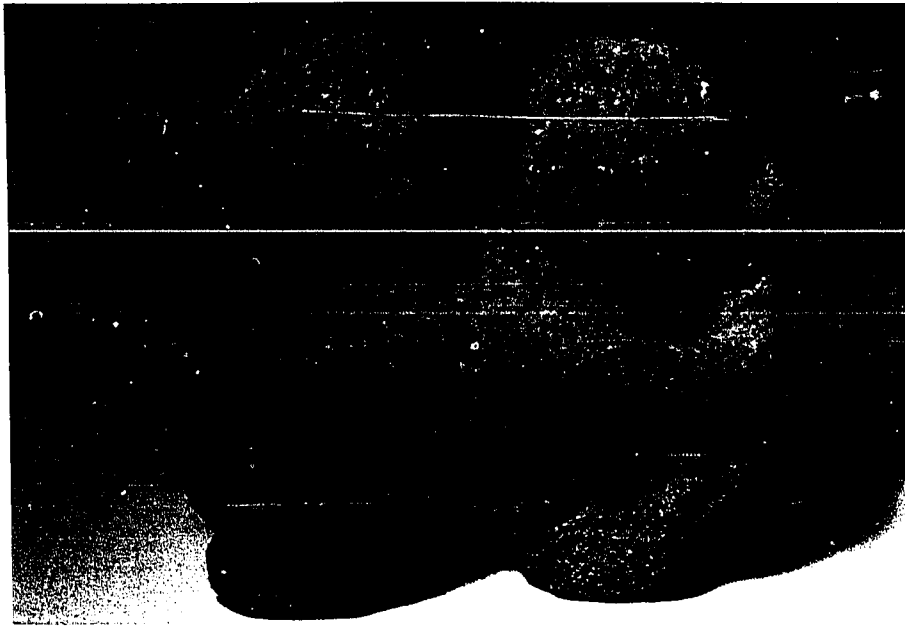
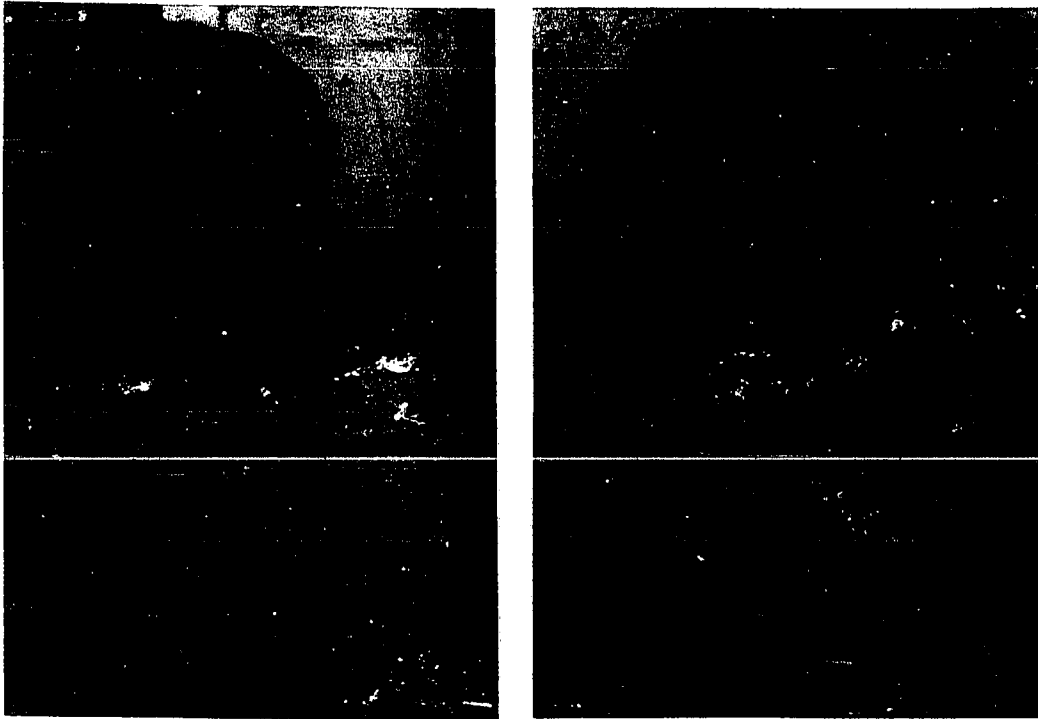


Figure 344. Seated Figure. Group 3b. 13 cm high. Costa Rica.
National Museum of Natural History, Smithsonian Institution
59120.



Figures 345a and 345b. Seated Figure. Group 3c. 55 cm high. Costa Rica. American Museum of Natural History.

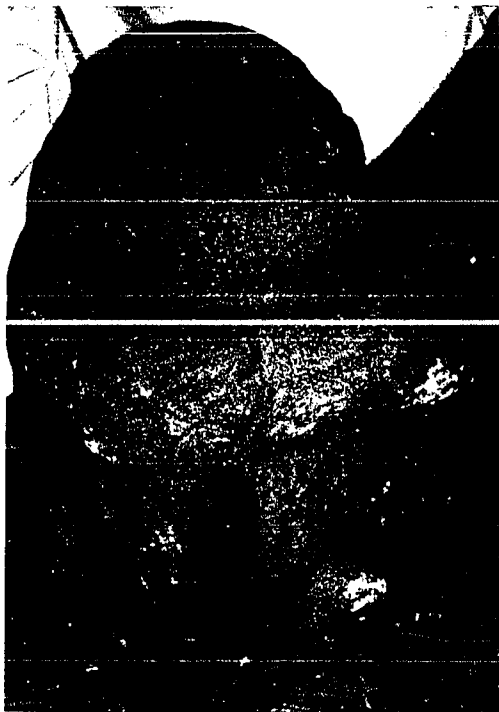
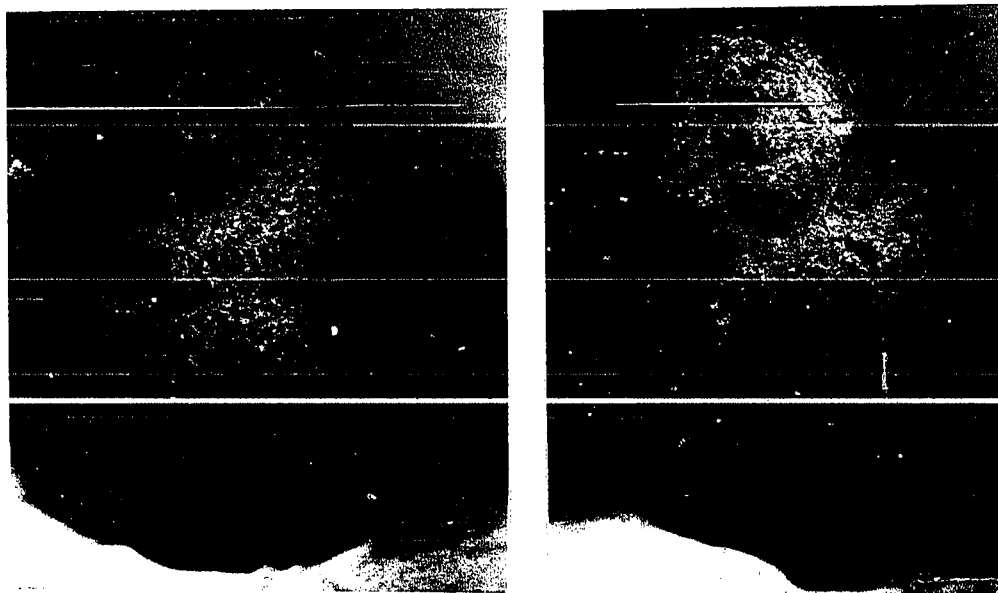


Figure 346. Seated Figure. Group 3c. 72 cm high. Costa Rica. National Museum of Natural History, Smithsonian Institution 61803.



Figure 347. Seated Figure. Group 3c. 67 cm high. Costa Rica. National Museum of Natural History, Smithsonian Institution 61804.



Figures 348a and 348b. Seated Figure. Group 3c. 37 cm high. Costa Rica. Carnegie Museum of Natural History 2793/1494.

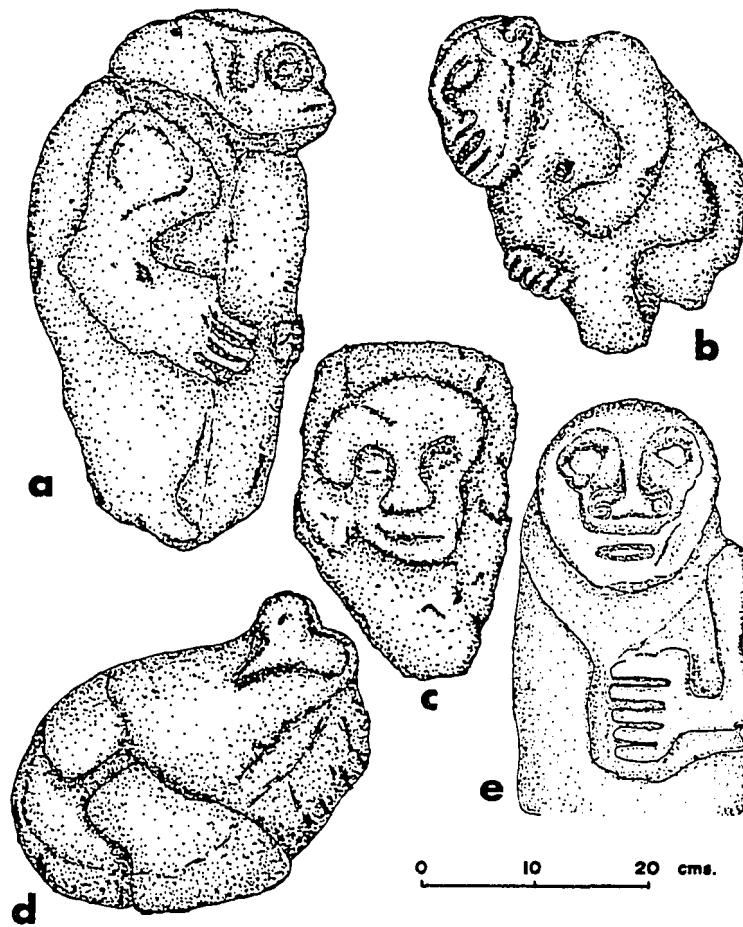
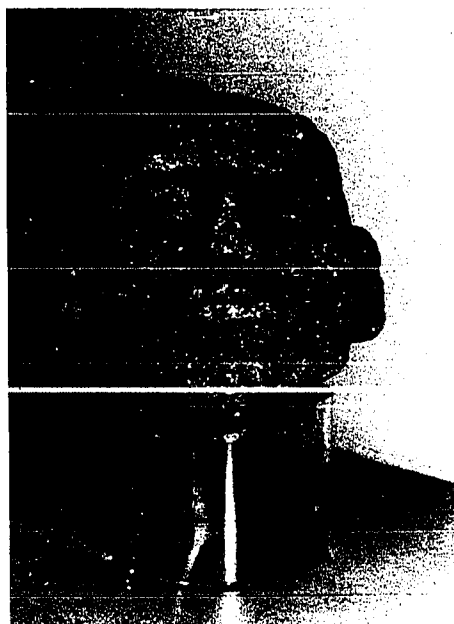


Figure 349. Seated Figure. Group 3c. Costa Rica. Guayabo de Turrialba. From Fonseca 1979, p. 50.



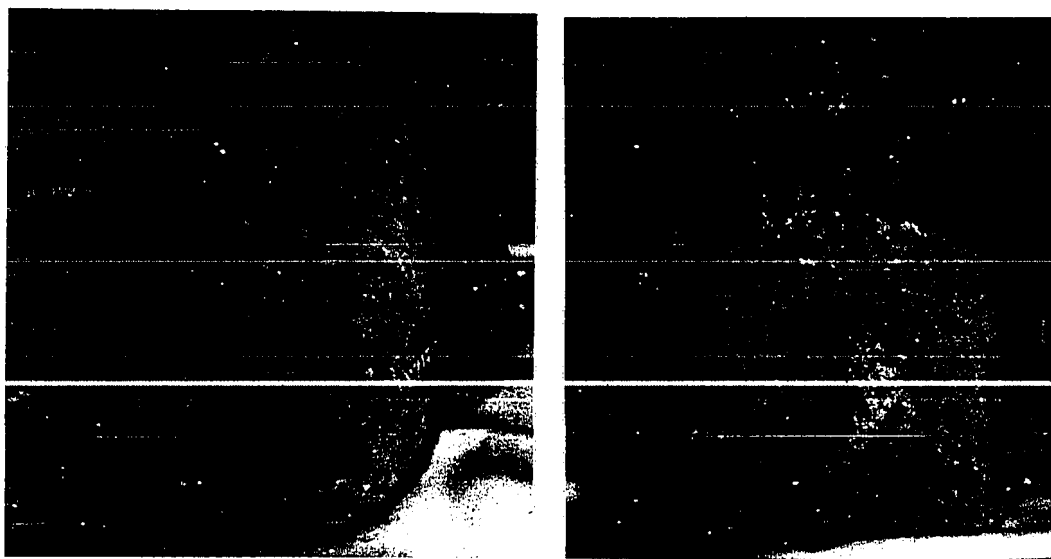
Figures 350a and 350b. Individual Head. Group 1a. 15.5 cm high.
Costa Rica. American Museum of Natural History 14427.



Figures 351a and 351b. Individual Head. Group 1a.
16 cm high. Costa Rica. Instituto Nacional de
Seguros, Museo del Jade 4082.



Figures 352a and 352b. Individual Head. Group Ia. 14 cm high.
Costa Rica. National Museum of Natural History, Smithsonian
Institution 60884.



Figures 353a and 353b. Individual Head. Group Ia. 13 cm high.
Costa Rica. American Museum of Natural History 1717

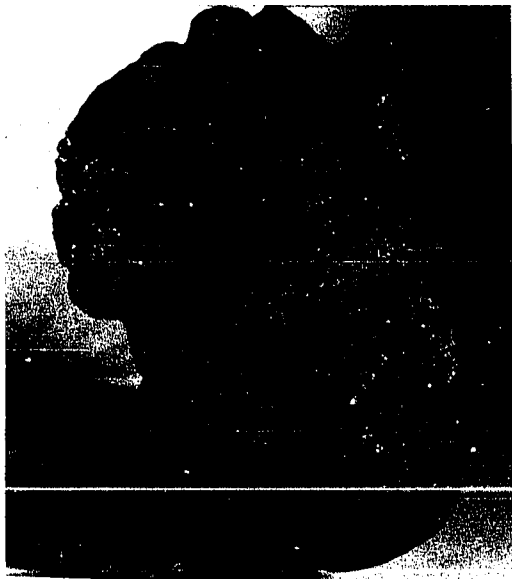


Figure 354. Individual Head.
Group 1a. 19.5 cm high. Costa
Rica. Carnegie Museum of
Natural History 2793/2107.



Figure 355. Individual Head.
Group 1b. 19 cm high. Costa Rica.
Brooklyn Museum 7148.

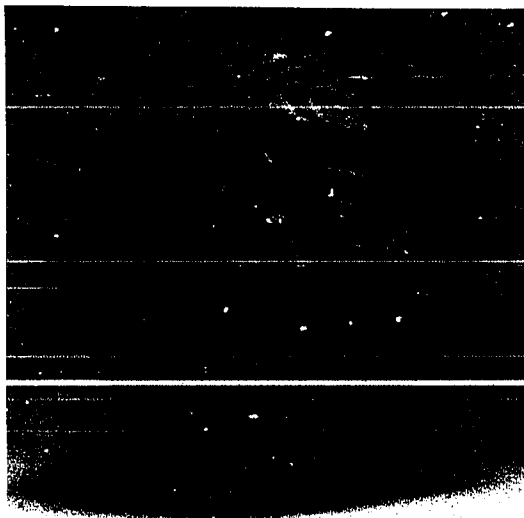


Figure 356. Individual Head.
Group 1b. 13 cm high. Costa Rica.
Instituto Nacional de Seguros,
Museo del Jade 3485.

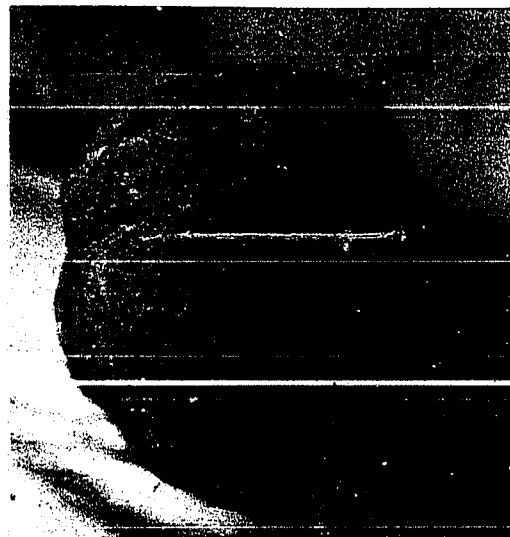
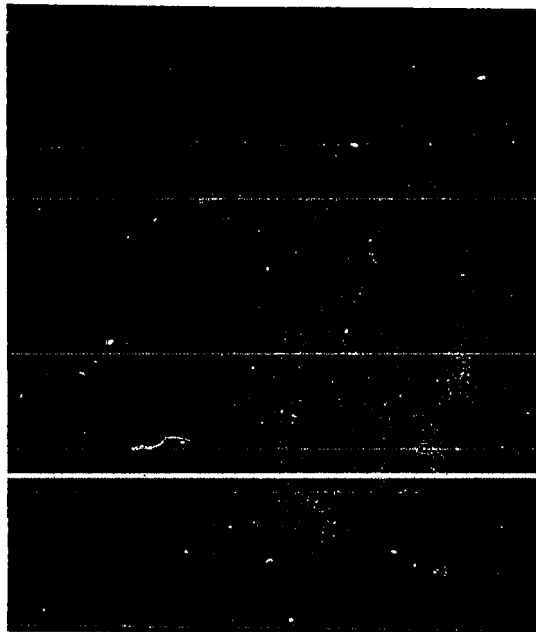
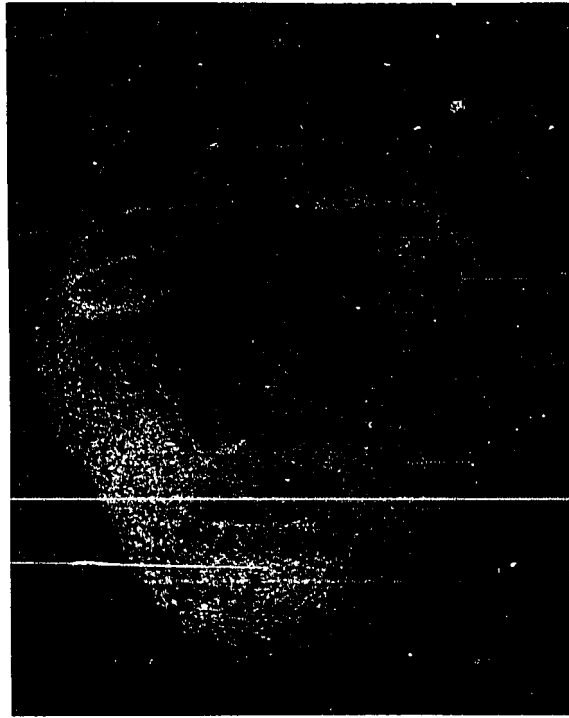


Figure 357. Individual Head.
Group 1b. 15.5 cm high. Costa
Rica. The Brooklyn Museum 7136.



Figures 358a and 358b. Individual Head.
Group 1b. 11 cm high. Costa Rica. Museo
Nacional de Costa Rica 2866.



Figure 359. Individual Head. Group 2a. 12 cm high. Costa Rica. Museum of the American Indian, Heye Foundation 1/9749.

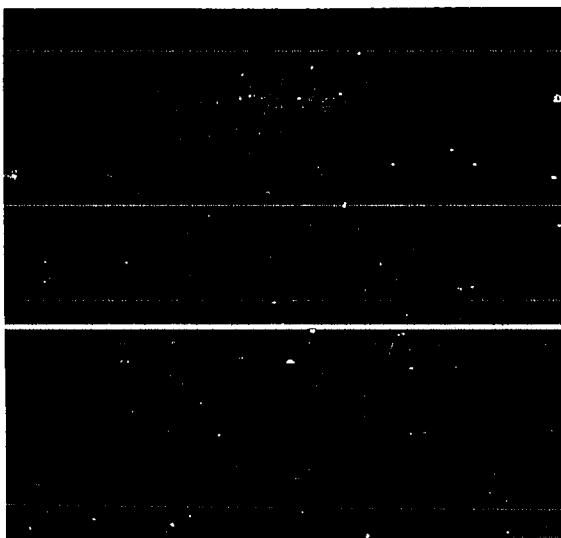


Figure 360. Individual Head. Group 2a. 5 cm high. Costa Rica. Museo Nacional de Costa Rica 24195.



Figure 361. Individual Head. Group
2a. 20.5 cm high. Costa Rica.
Carnegie Museum of Natural History
2793/1498.

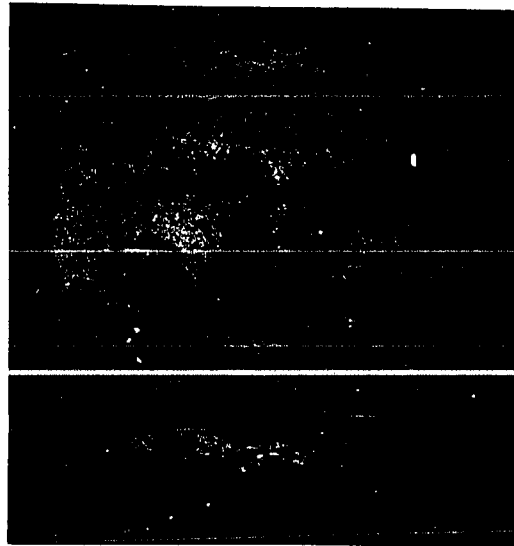


Figure 362. Individual Head. Group
2a. 14.5 cm high. Costa Rica. Museo
Nacional de Costa Rica 21369.

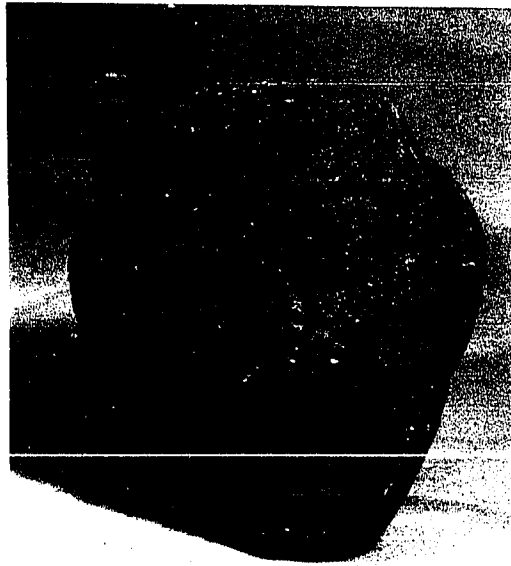
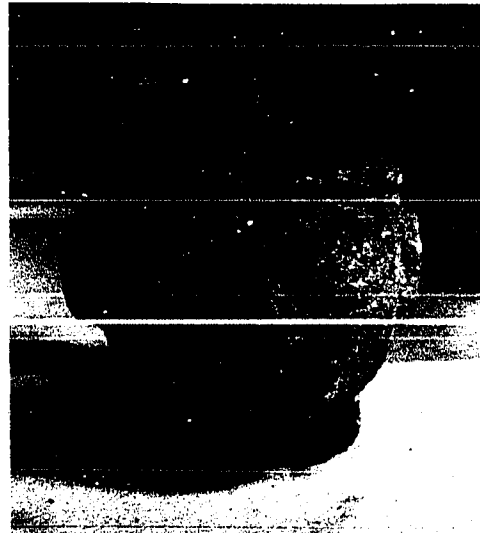


Figure 363. Individual Head. Group 3a. 13.5 cm high. Costa Rica.
Carnegie Museum of Natural History
2439/2981.



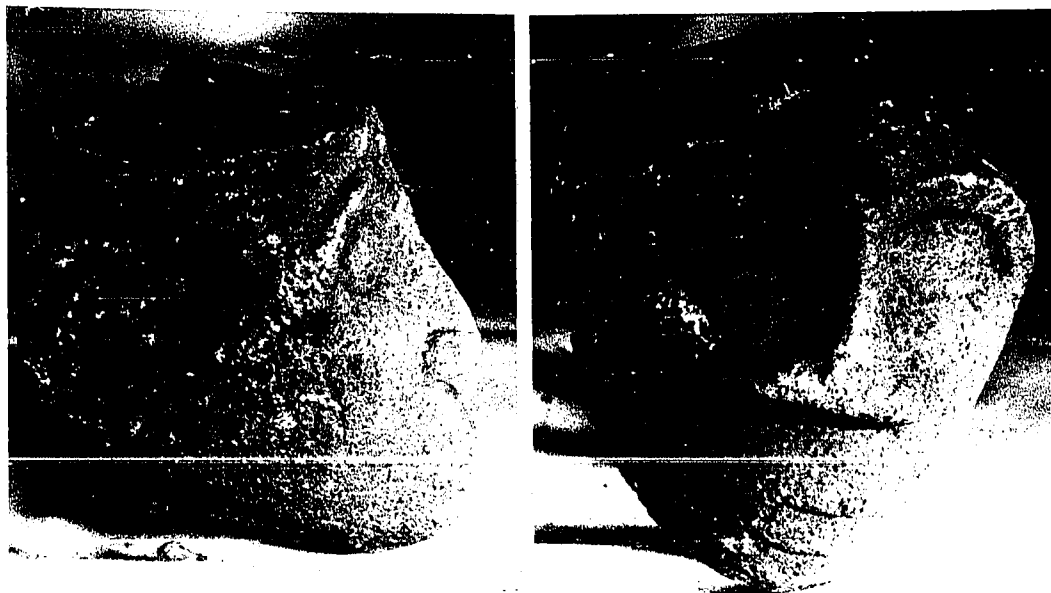
Figures 364a and 364b. Individual Head. Group 3a. 8 cm high.
Costa Rica. American Museum of Natural History 2841.



Figure 365. Individual Head. Group 3a. 58.5 cm high. Costa Rica. The Royal Ethnographical Museum of Stockholm 1900.3-1.41. From Hartman 1901, Pl. 4, No. 2.



Figures 366a and 366b. Individual Head. Group 3a. 13.5 cm high. Costa Rica. American Museum of Natural History 6840.



Figures 367a and 367b. Individual Head. Group 3a. 15 cm high.
Costa Rica. American Museum of Natural History 300/1433.

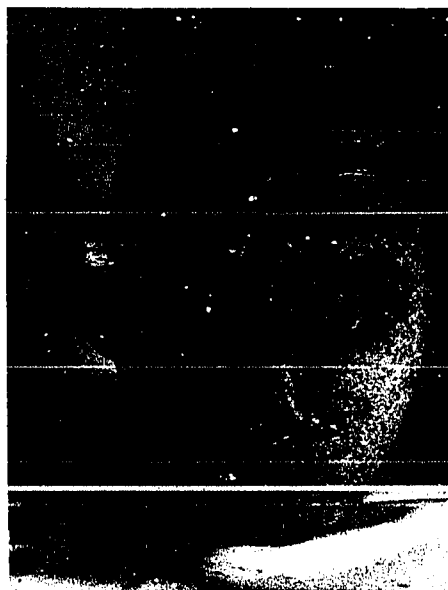
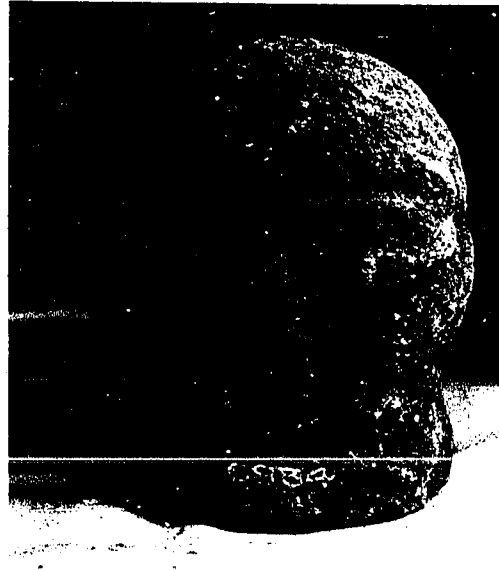
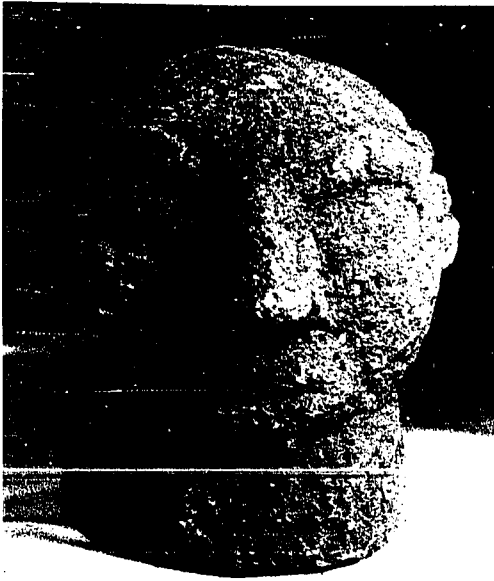
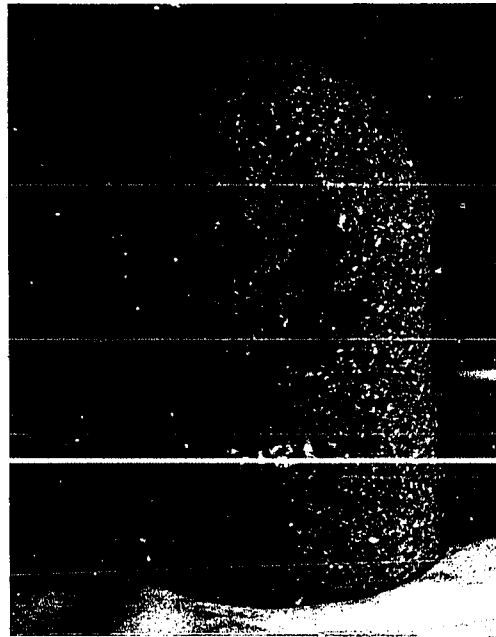
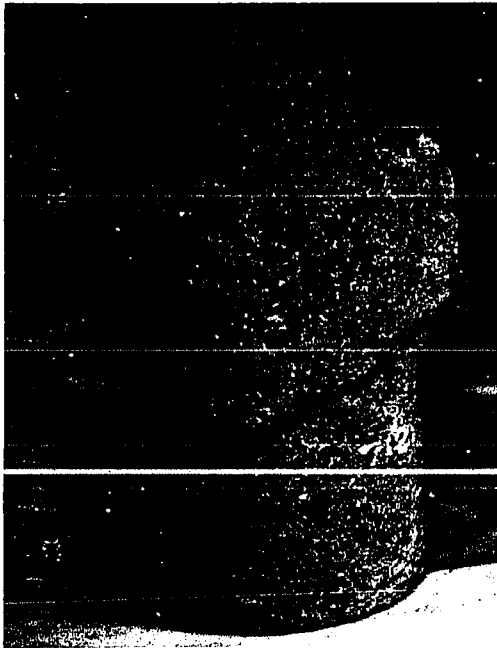


Figure 368. Individual Head. Group 3a.
17.5 cm high. Costa Rica. American Museum
of Natural History 7130.



Figures 369a and 369b. Individual Head. Group 3b. 11.5 cm high. Costa Rica. American Museum of Natural History 6834.



Figures 370a and 370b. Individual Head. Group 3b. 12.5 cm high. Costa Rica. American Museum of Natural History 7121.

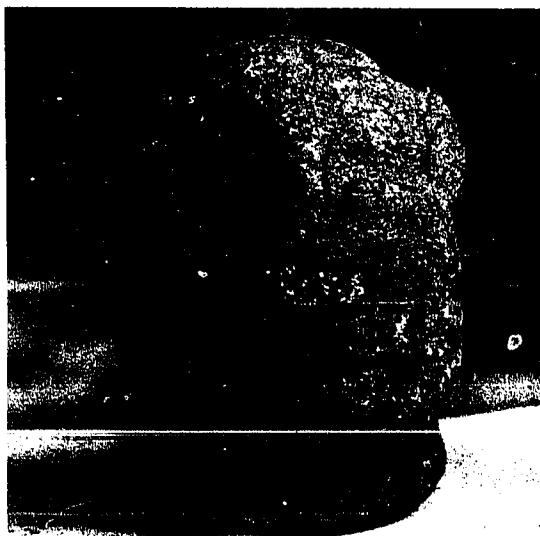


Figure 371. Individual Head. Group 3b. 11 cm high. Costa Rica.
American Museum of Natural History
1735.

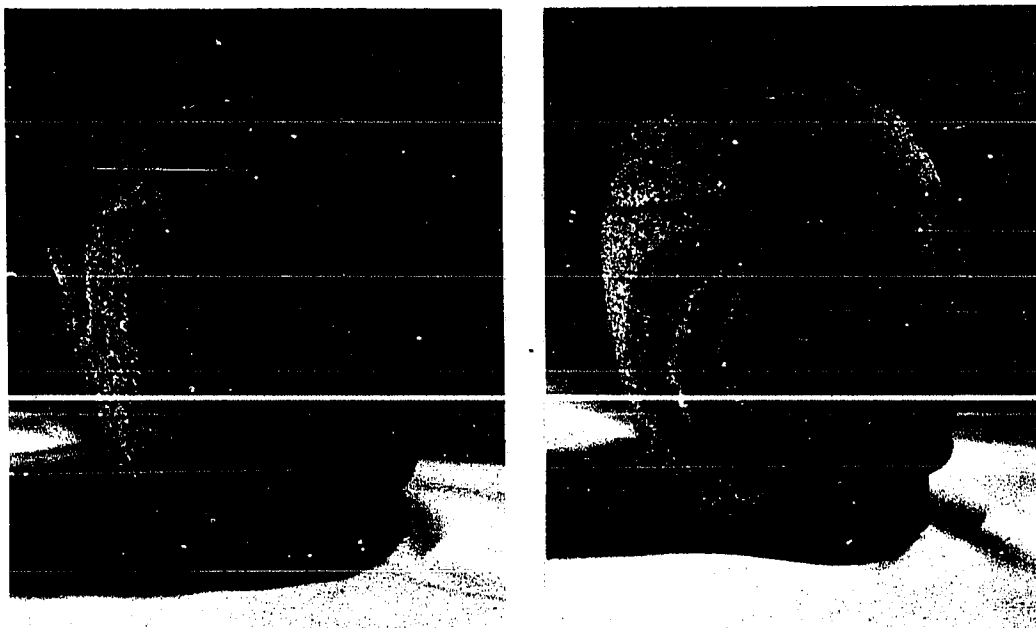


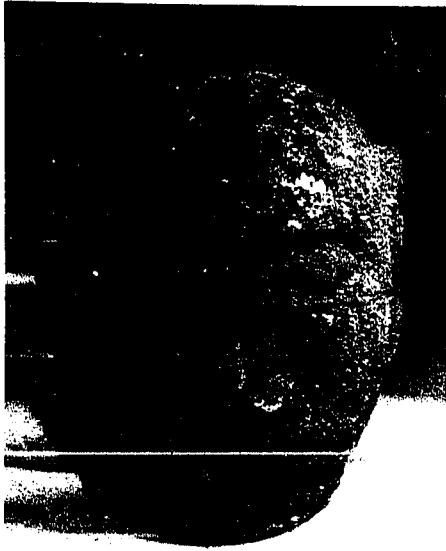
Figure 372. Individual Head. Group 3b. 14 cm high. Costa Rica.
Museum of the American Indian, Heye Foundation 7/3449.



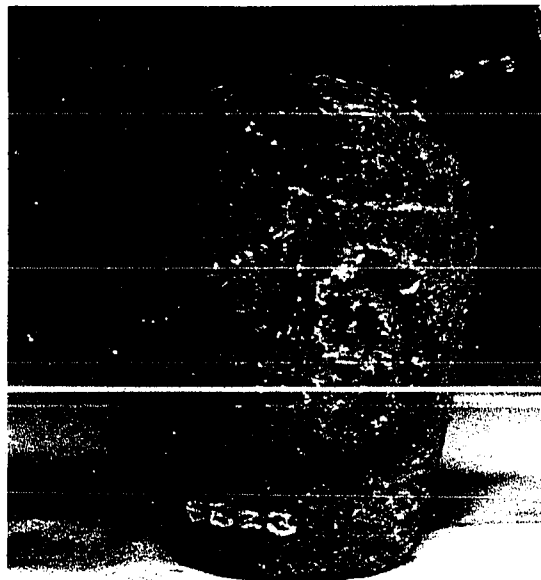
Figures 373a and 373b. Individual Head. Group 3b. 11 cm high.
Costa Rica. American Museum of Natural History 1729.



Figures 374a and 374b. Individual Head. Group 3b. 12.5
cm high. Costa Rica. American Museum of Natural History
6829.



Figures 375a and 375b. Individual Head. Group 3b. 12 cm high.
Costa Rica. American Museum of Natural History 6835.



Figures 376a and 376b. Individual Head. Group 3b. 10 cm high.
Costa Rica. American Museum of Natural History 6823.

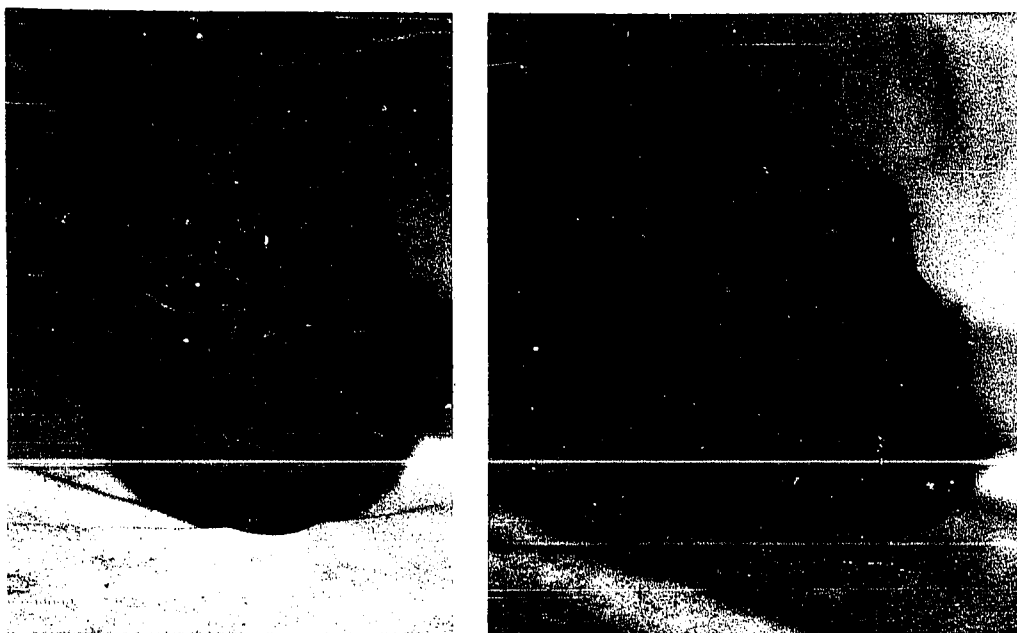
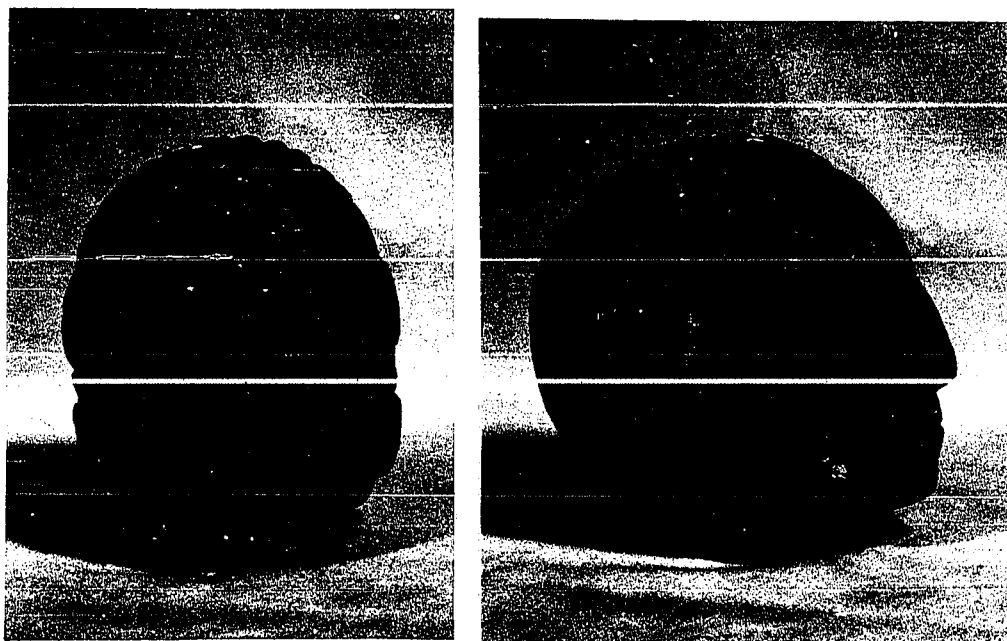
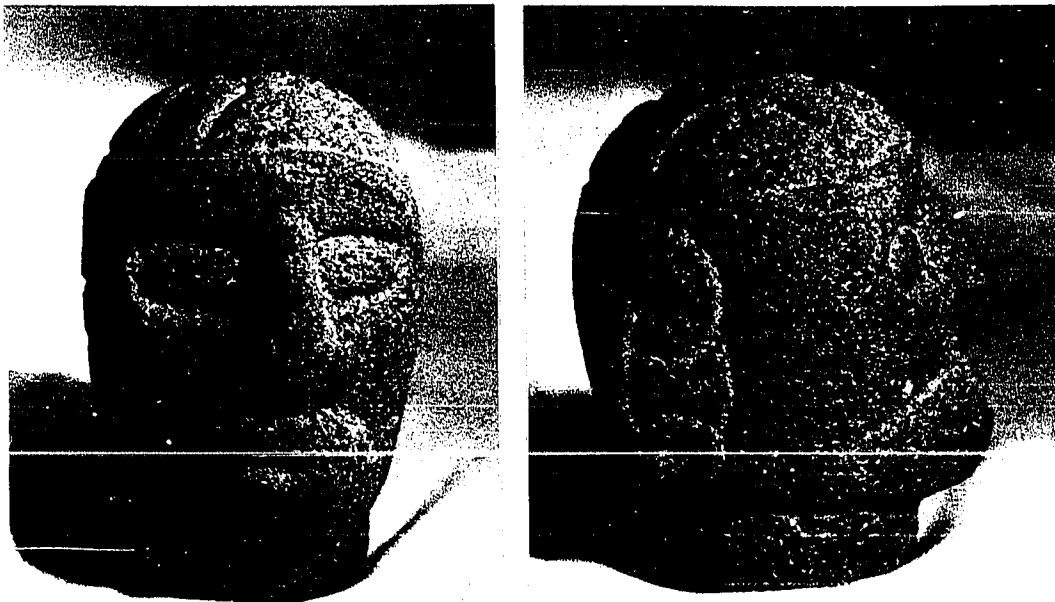


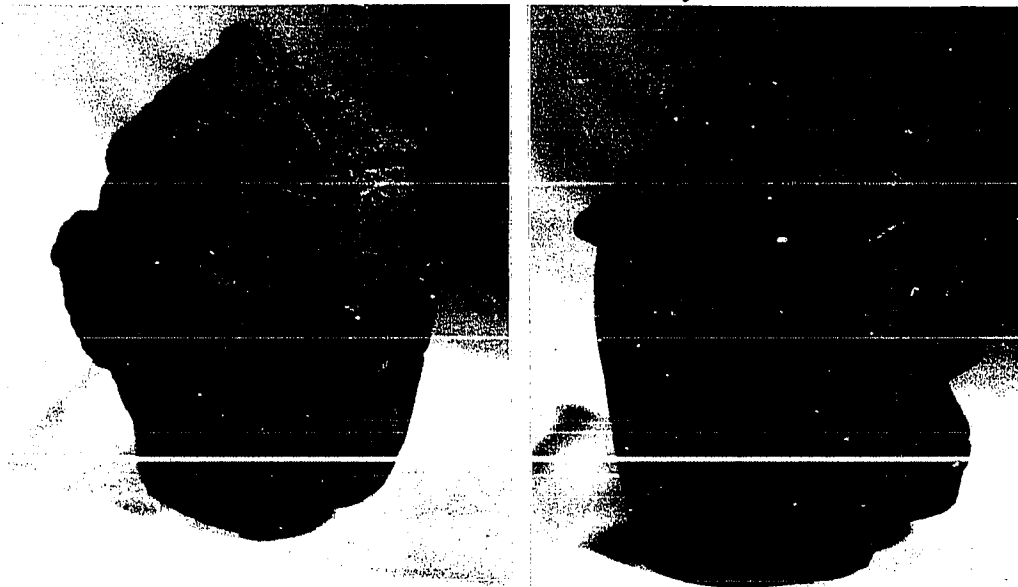
Figure 377a and 377b. Individual Head. Group 3b. 14.5 cm high.
Costa Rica. The Brooklyn Museum 34.35161.



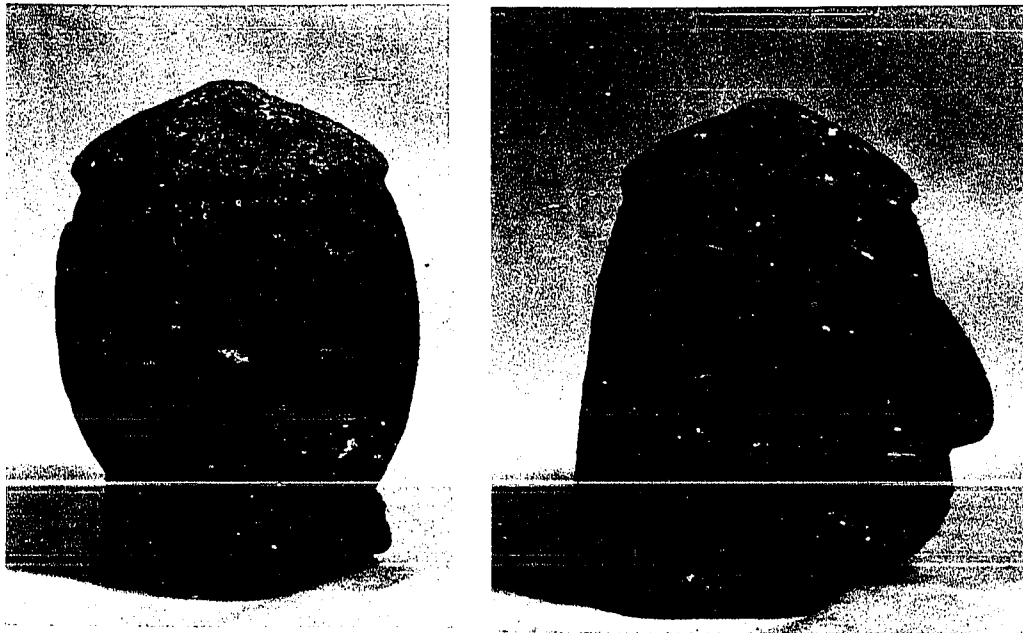
Figures 378a and 379b. Individual Head. Group 3b. 14.5 cm high.
Costa Rica. Carnegie Museum of Natural History 2439/2979.



Figures 379a and 379b. Individual Head. Group 3b. 14 cm high.
Costa Rica. American Museum of Natural History 21/9040.



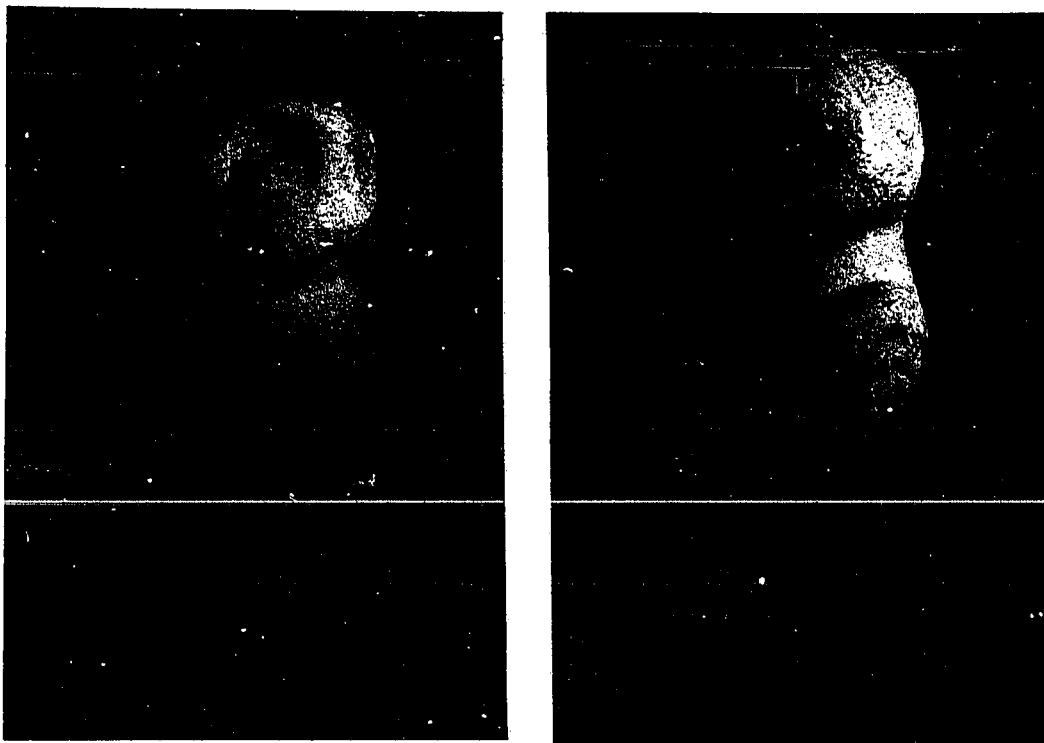
Figures 380a and 380b. Individual Head. Group 3b. 17 cm high.
Costa Rica. Museum of the American Indian, Heye Foundation
15/3550.



Figures 381a and 381b. Individual Head. Group 3b. 16.5 cm high.
Costa Rica. Carnegie Museum of Natural History 2439/2978.



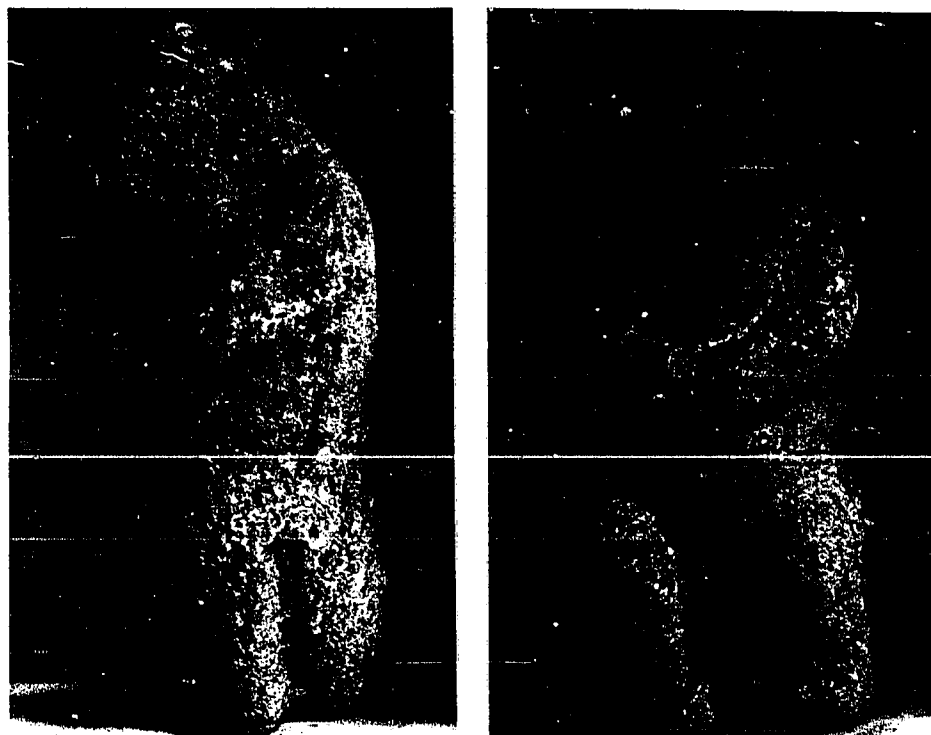
Figure 382. Individual Head.
Group 3b. 12 cm high. Costa
Rica. Private Collection. From
Between Continents/Between Seas
exhibition catalog 1981, No.
215.



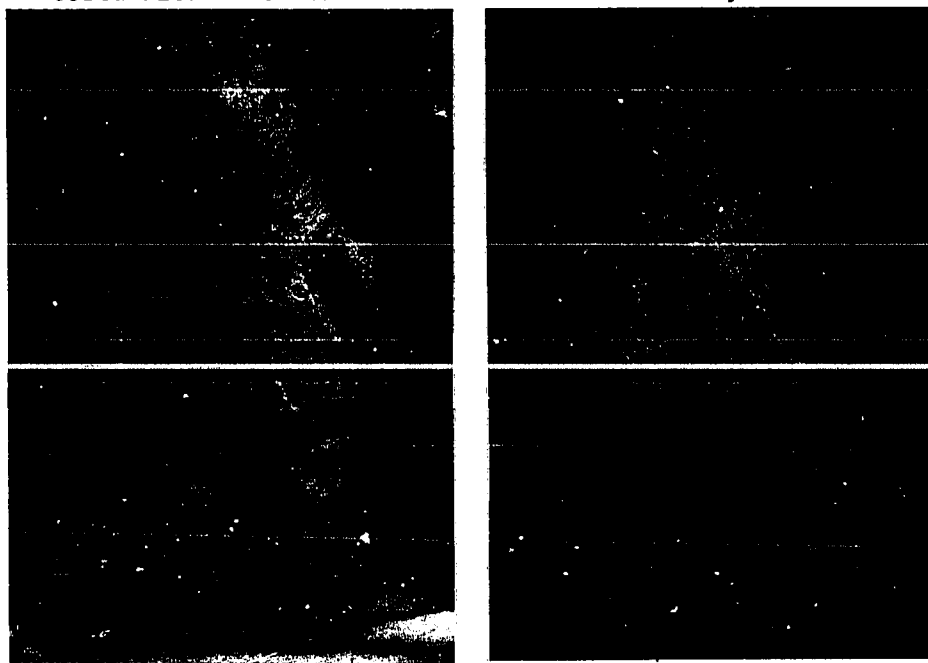
Figures 383a and 383b. Capellades Figure. 24.5 cm high. Costa Rica. American Museum of Natural History 6465.



Figures 384a and 384b. Capellades Figure. 14.5 cm high. Costa Rica. American Museum of Natural History 6467.



Figures 385a and 385b. Capellades Figure. 20.5 cm high.
Costa Rica. American Museum of Natural History 6472.



Figures 386a and 386b. Capellades Figure. 21 cm high.
Costa Rica. American Museum of Natural History 6478.

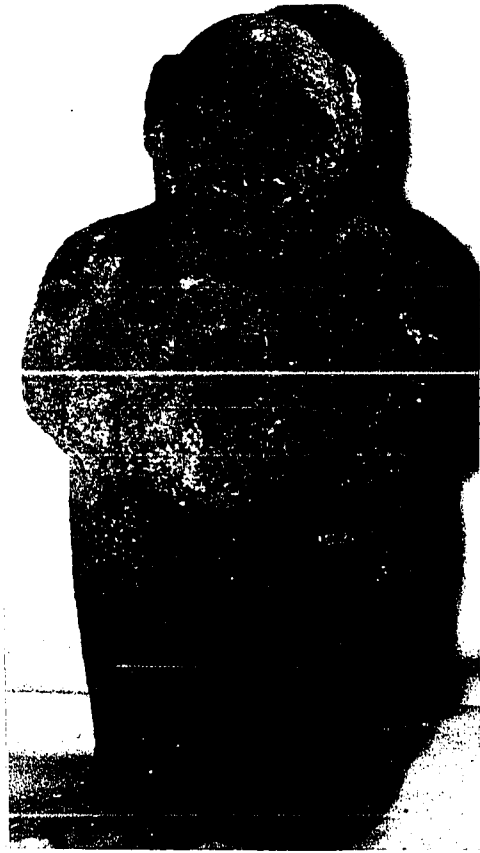


Figure 387. Standing Figure. Group 3b. 37 cm high. Costa Rica. American Museum of Natural History 1691.

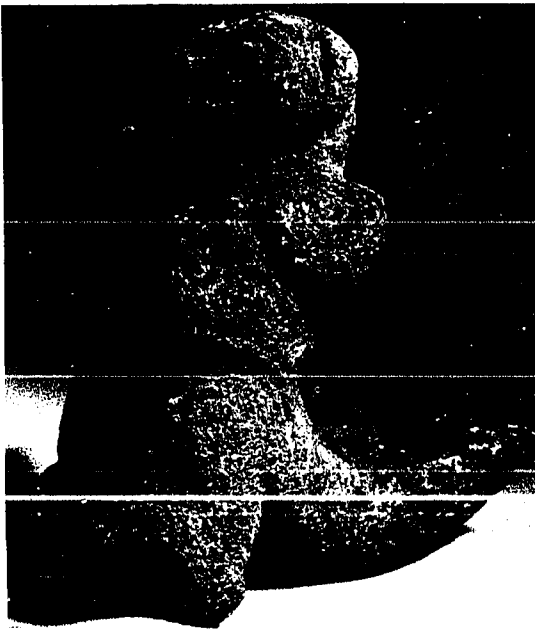
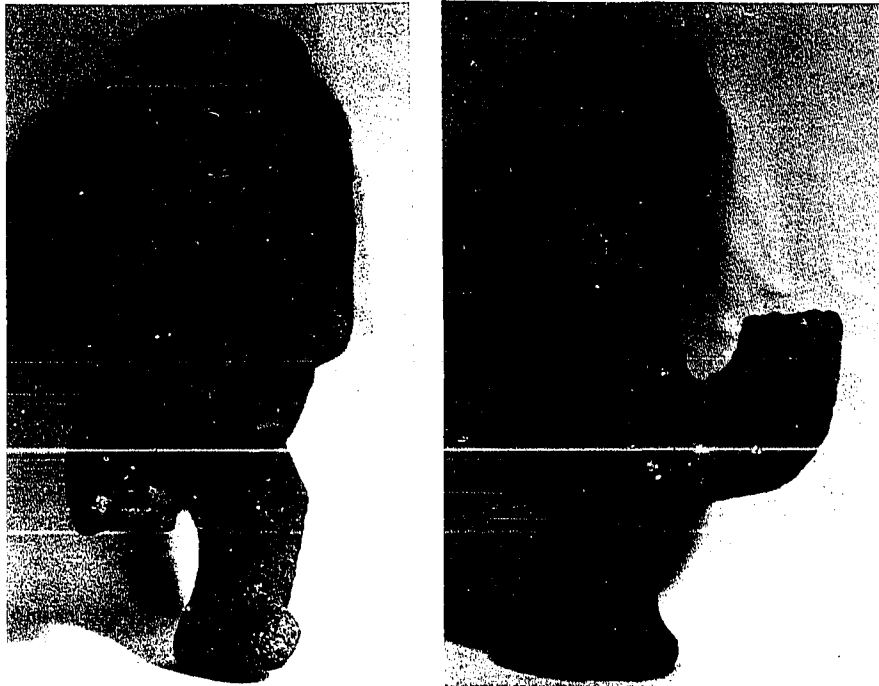


Figure 388. Animal Figure. 12.5 cm high. Costa Rica. Carnegie Museum of Natural History 2439/2953.



Figures 389a and 389b. Animal Figure. 16.5 cm high.
Costa Rica. Carnegie Museum of Natural History
2792/412.

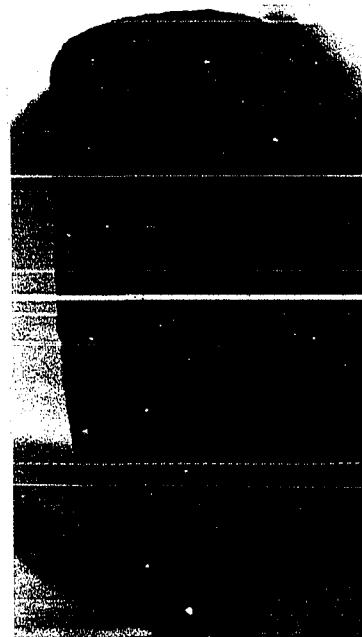


Figure 390. Animal Figure. 37
cm high. Costa Rica. Carnegie
Museum of Natural History
2793/1514.

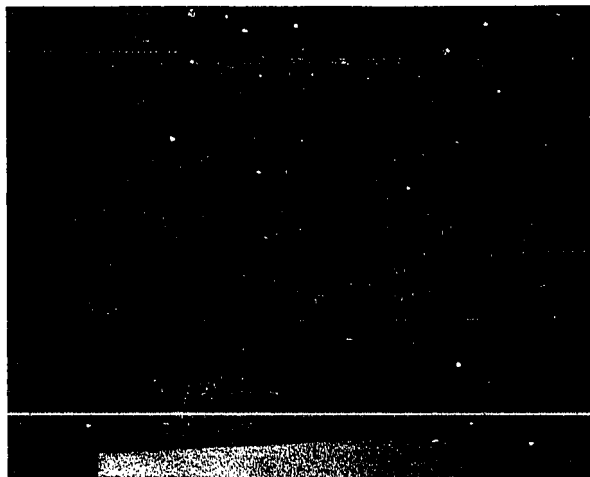


Figure 391. Animal Figure. 28 cm high.
Costa Rica. American Museum of Natural
History 7144. From Between
Continents/Between Seas exhibition
catalog 1981, No. 211.

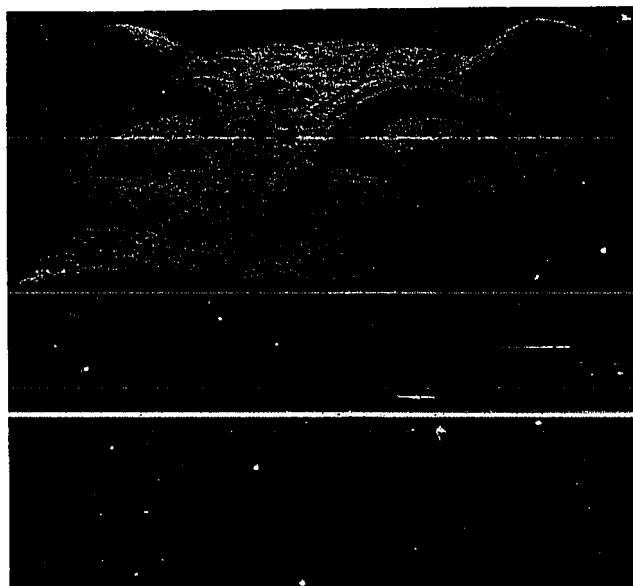


Figure 392. Animal Figure. 19 cm high.
Costa Rica. Private Collection.



Figure 393. Barriles Figure. 62 cm high. Panama. Museo del Hombre Panamaneño 1AL-4-00008.



Figures 394a and 394b. Barriles Figure. 196 cm high. Panama. Museo del Hombre Panamaneño 1AL-4-00010.

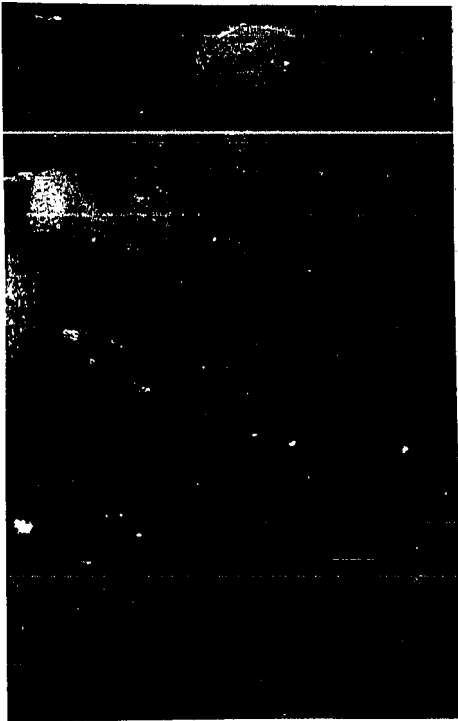


Figure 395. Barriles Figure.
107 cm high. Panama. Museo del
Hombre Panamano 1AL-4-00011.

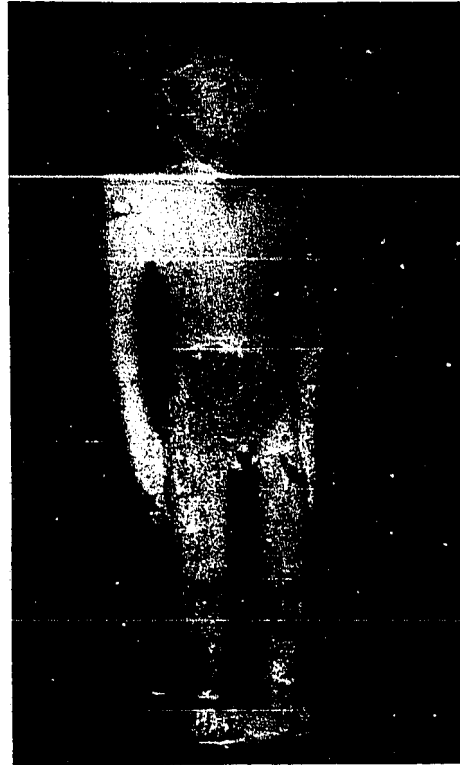
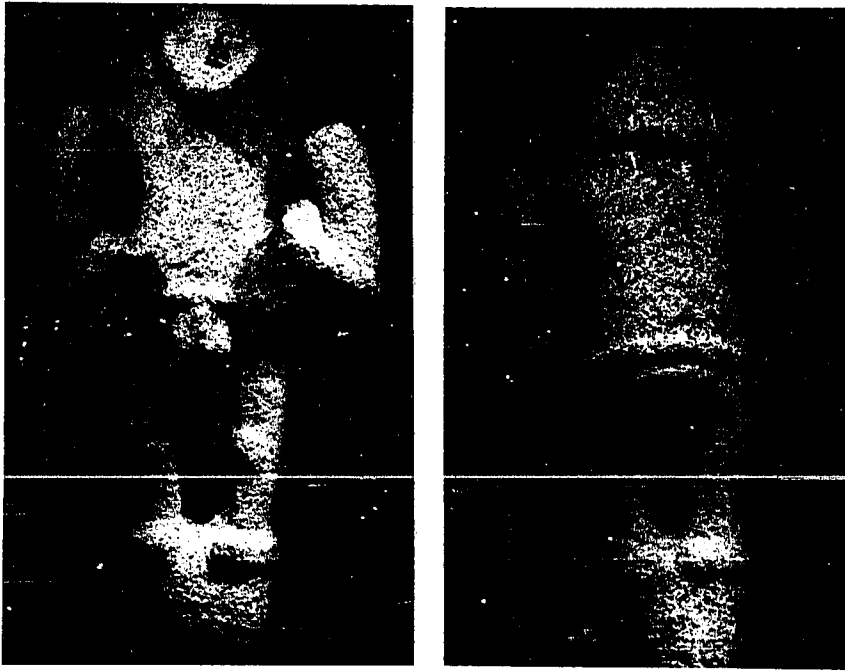


Figure 396. Barriles Figure.
145 cm high. Panama. Museo del
Hombre Panamano 1AL-4-00033.



Figures 397a and 397b. Barriles Figure. 44 cm high.
Panama. Museo del Hombre Panamano 1AL-4-00002.



Figures 398a and 398b. San Vito de Java Figure. 65 cm high.
Panama. Collection Unknown.



Figure 399. Canas Gordas
Figure. 89 cm high. Panama.
Metropolitan Museum of Art.

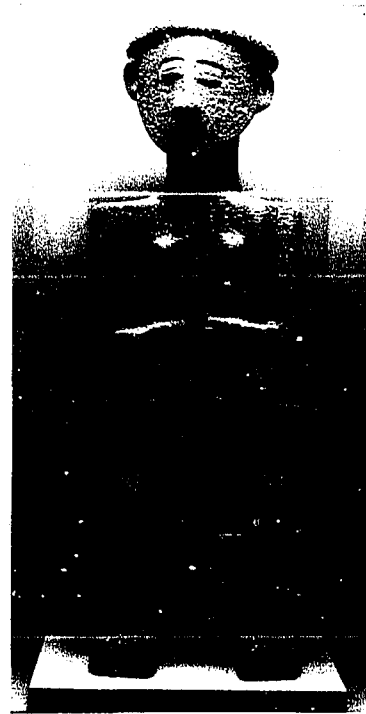


Figure 400. Venus Figure.
Panama. 78.5 cm high. Peabody
Museum of Natural History,
Yale University 302/292.

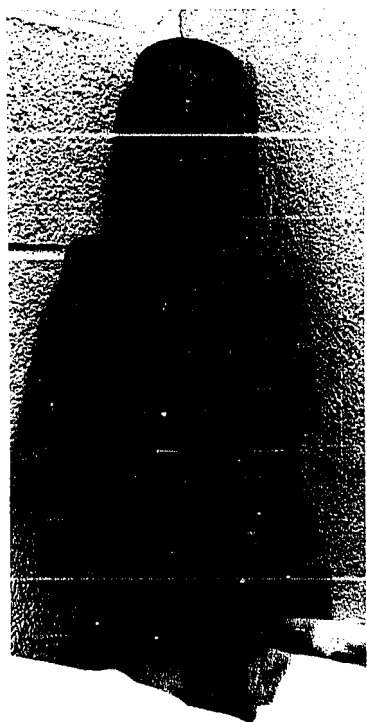


Figure 401. Venus Figure.
Panama. 58.5 cm high. National
Museum of Natural History,
Smithsonian Institution
98597.

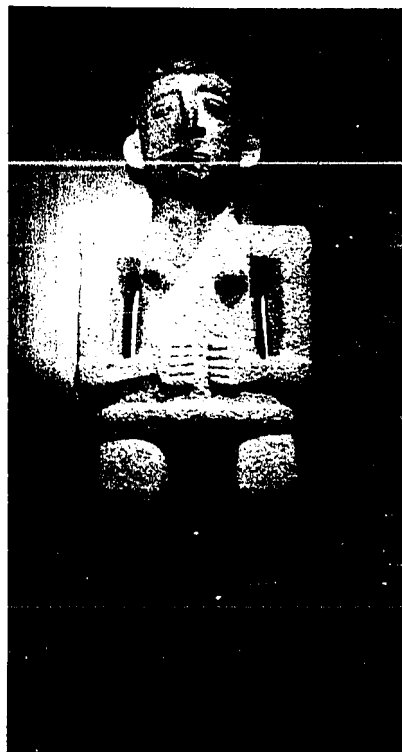


Figure 402. Venus Figure.
Panama. 75 cm high. Museo
del Hombre Panamano
313-AL-V.

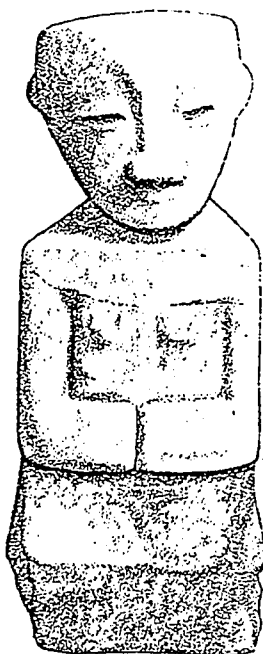


Figure 403. Villalba Figure.
Panama. 58 cm high. Villalba
Island. From Stone 1972,
Pl. 155.



Figure 404. Chiriqui Figure.
Panama. 87 cm high. The Brooklyn
Museum 34.2894. From Von Winning
1968, Fig. 520.

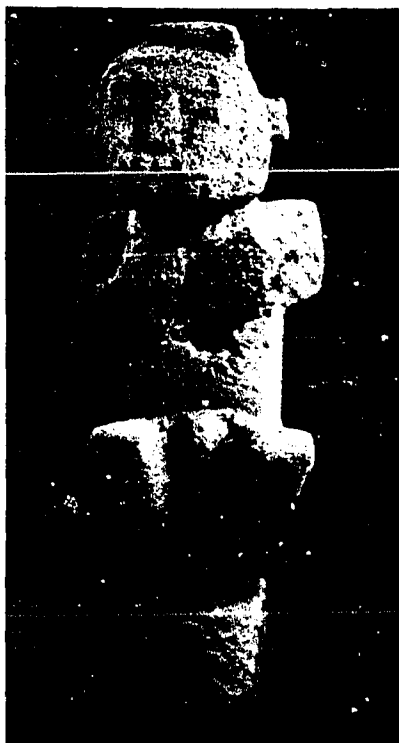
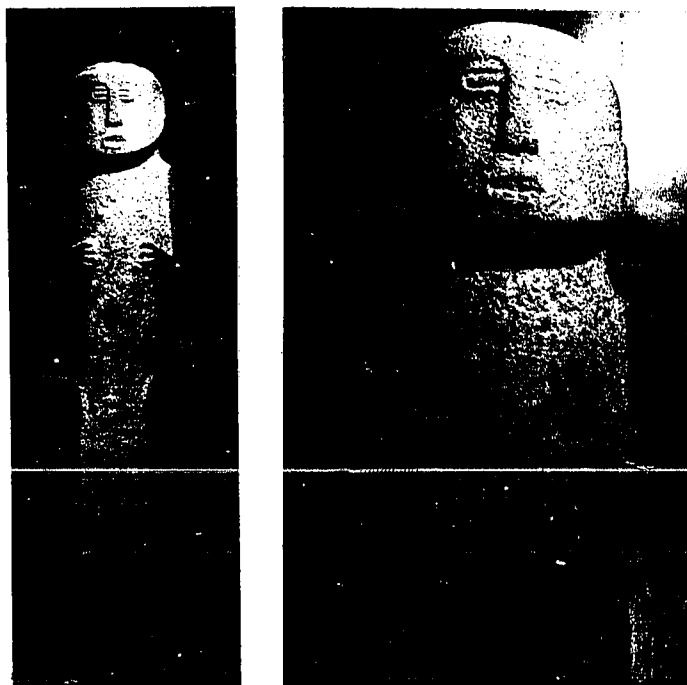
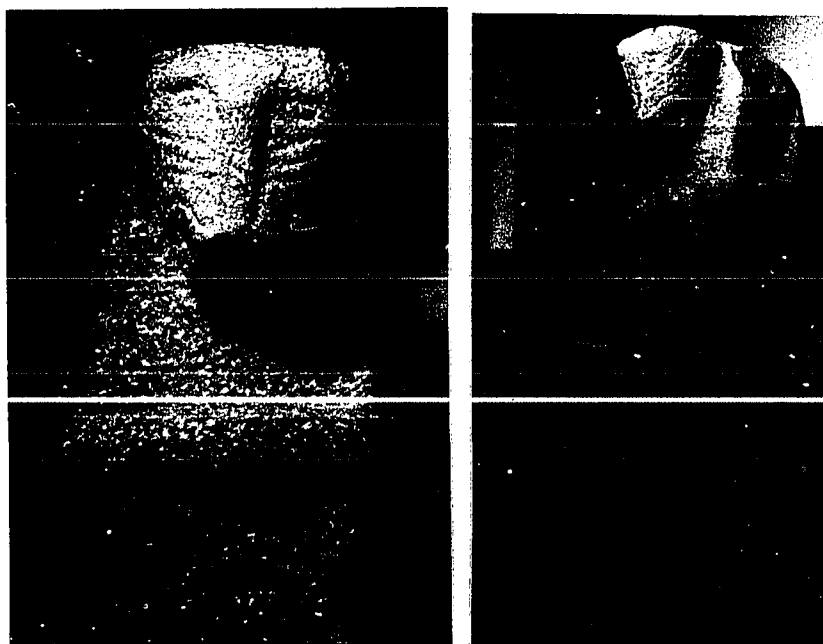


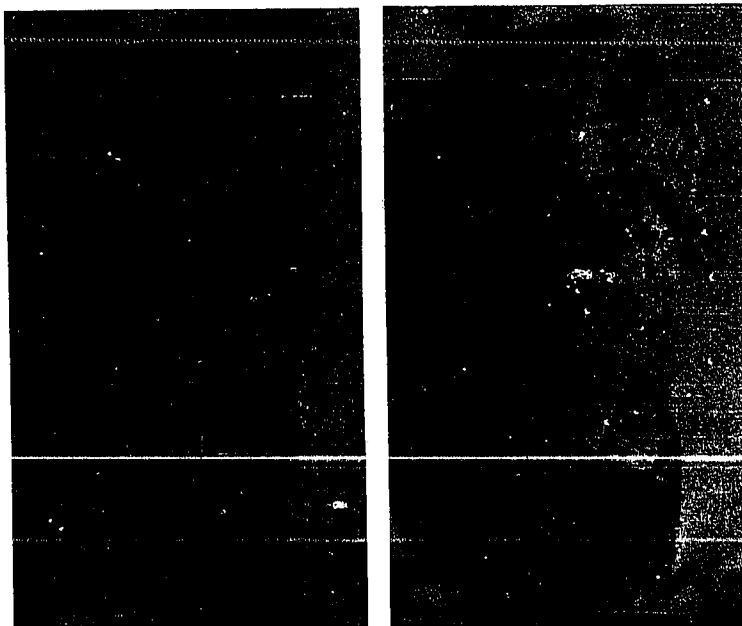
Figure 405. Chiriqui Figure. 57 cm high. Panama. Museo Escuela Felix Olivares, Chiriqui.



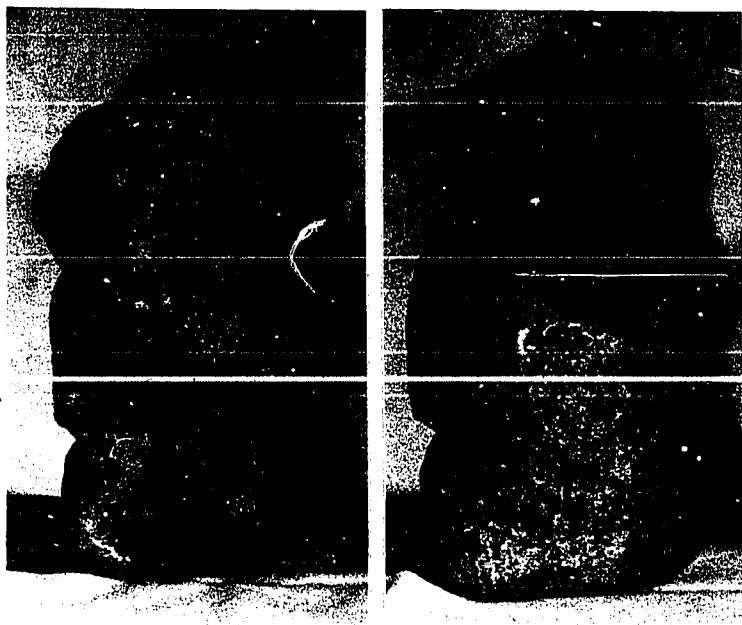
Figures 406a and 406b. Cocle Figure. 134 cm high. Panama. Museo del Hombre Panamaneó 1AL-2-00003.



Figures 407a and 407b. Cocle Figure. 104 cm high. Panama. Museo del Hombre Panamaneó 77-AL-C.



Figures 408a and 408b. Cocle Figure. 22.5 cm high. Panama. Museum of the American Indian, Heye Foundation 14/5169.



Figures 409a and 409b. Cocle Figure. 24 cm high. Panama. Museum of the American Indian, Heye Foundation 14/6008.

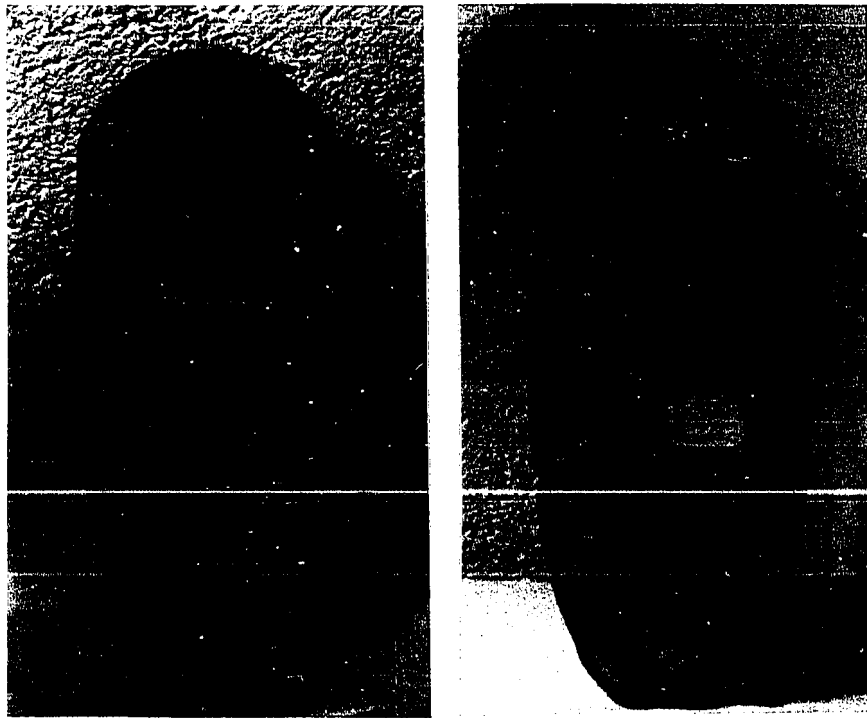


Figure 410. Chiriqui Figure. 22 cm high. Panama. National Museum of Natural History, Smithsonian Institution 248537.



Figure 411. Chiriqui Figure. 25.5 cm high. Panama. Museo del Hombre Panamano 1AL-4-00001.

Tables

TABLE 1

Effigy Grinding Stones Variables

<u>Eyes</u>	<u>Ears</u>
Oval/Plain	Erect/Flat
Oval/Rimmed	Erect/Sides
Circular	Flat/Top
Rectangular	Flat/Sides
Other/Undetermined	Other/Undetermined
<u>Nose Shape</u>	<u>Snout</u>
Flat	Wedge
Slightly Raised	Curvilinear
Raised	Rectangular
Undetermined	
<u>Nose</u>	<u>Mouth</u>
Single Outline	Canines/Teeth
Double Outline	Hollow
<u>Lip</u>	<u>Mouth Shape</u>
Nostrils	Open V
Whiskers	Open U
Snarl	Other
<u>Legs Shape</u>	<u>Legs</u>
Naturalistic	Joined
Semi-Naturalistic	Incised
Stylized	
<u>Tail Shape</u>	<u>Tail</u>
Cylindrical	Attached
Flat	Incised
Other/None	
<u>Head/Tail</u>	<u>Head</u>
From Rim	Double Headed
From Plate	Cheeks Incised

Rim
Incised
Scalloped
Heads

Plate Shape
Oval
Rectangular

Feet
Small
Medium
Large
None

Plate Shape
Concave/Bowl
Flat
Rim Raised

Incising
Rectilinear
Combination
Curvilinear
None

Image
Feline
Other/Undetermined

Incising Location
Legs
Tail
Head/Neck
Rim

TABLE 2

Standing Figure Variables

<u>Eye Traits</u>	<u>Nose Traits</u>
Rectangular/Plain	Triangular/Wedge
Rectangular/Slit	Triangular/Flat/Nostrils
Quasi-Rectangular/Slit	Triangular/Project/Nostrils
Oval/Plain	Naturalistic
Oval/Slit	Inverted/T-bridge/Nostrils
Oval/Concentric	Other/Undetermined
Circular/Plain	
Other/Undetermined	
<u>Ear Traits</u>	<u>Mouth Traits</u>
Pierced/Project	Rectangular/Lips/Slit
Solid/Project	Oval/Lips/Slit
Naturalistic/Project	Quasi-Rectangular/Oval/Slit
Naturalistic/Flat	Slit/No lips
Other/Undetermined	Other/Undetermined
<u>Head Traits</u>	<u>Face Shape</u>
Masked	Rectangular/Square
Laugh Lines	Oval/Circular
Eyebrows	Triangular
Cap	
Hair	
<u>Leg Traits</u>	<u>Leg Shapes</u>
Ankle Knobs	Heavy/Tapered
Knees Modeled	Thick/Columnar
Knees Incised	Thin/Cylindrical
<u>Hip Shapes</u>	<u>Back</u>
Massive/Bulbous	Spine Marked
Full/Rounded	Buttocks Rounded
Wide/Shapeless	
Thin/Shapeless	

Torso

Chest Muscular
Full/Muscular
Heavy/Paunchy
Broad/Shapeless

Arms

Symmetrical
Asymmetrical
Free
Attached

Feet

Large
Medium-small

Other Body Traits

Tattoos
Belt
Trophy Head
Weapon
Other

Sex

Male
Female
Hermaphrodite
Undetermined

Carving

Crude/Weathered
Well Finished

Table 3
 Effigy Grinding Stones: Four Facial Traits
 Total Group

ITEM..	V06		V02		V12		V15		TOTAL
	0	1	0	1	0	1	0	1	
T	I	I	I	I	I	I	I	I	I
A	4	0	24	0	24	0	24	0	24
B	I	I	I	I	I	I	I	I	I
L	I	I	I	I	I	I	I	I	I
E	3	32	3	32	0	35	0	35	35
3	I	I	I	I	I	I	I	I	I
2	1	86	9	35	10	85	9	86	95
I	I	I	I	I	I	I	I	I	I
I	I	I	I	I	I	I	I	I	I
1	1	5	5	9	11	9	11	7	31
I	I	I	I	I	I	I	I	I	I
I	I	I	I	I	I	I	I	I	I
0	1	41	0	41	0	41	0	41	41
SUMS	164	41	138	67	60	145	57	148	205
PCTS	80	20	67	33	29	71	28	72	58
ERRORS	0	17	3	11	10	1	16	0	58

Responses below ERR are errors
 Trait absent Trait present
 ← Total number of objects with 3 traits
 ↑ Total Errors
 ↑ Total Cases
 ↑ Objects having trait
 ↑ Percent having trait
 ↑ Objects lacking trait
 ↑ Percent lacking trait

Absent--should have been present
 Present-- should have been absent
 205 CASES WERE PROCESSED
 0 (OR 0.0 PCT) WERE MISSING

STATISTICS..
 COEFFICIENT OF REPRODUCIBILITY = 0.9293
 COEFFICIENT OF SCALABILITY = 0.7422

Table 4

Effigy Grinding Stones: Four Facial Traits
Group 1

V02 EYES-OVAL-RIMMED
V06 EARS-ERECT-TOP
V12 NOSE-SLIGHTLY-RAISED
V15 SNOUT-CURVILINEAR

ITEM..	V12		V15		V02		V06		TOTAL			
RESP..	0	1	0	1	0	1	0	1				
	I-ERR-----I		I-ERR-----I		I-ERR-----I		I-ERR-----I					
T	I		I		I		I		I			
A	4	I	0	14	I	0	14	I	0	14	I	14
B	I	-----ERRI			I		I		I		I	
L	I		I		I		I		I		I	
E	3	I	0	3	I	0	3	I	1	2	I	3
-	I		I	-----ERRI			I		I		I	
4	I		I		I		I		I		I	
	2	I	9	1	I	9	1	9	I	1	9	10
	I		I		I	-----ERRI			I		I	
	I		I		I		I		I		I	
	1	I	5	0	I	5	0	5	I	0	5	5
	I		I		I		I	-----ERRI			I	
	I		I		I		I		I		I	
	0	I	0	0	I	0	0	I	0	0	I	0
	I-ERR-----I		I-ERR-----I		I-ERR-----I		I-ERR-----I					
SUMS	14	18	14	18	7	25	3	29	32			
PCTS	44	56	44	56	22	78	9	91				
ERRORS	0	4	0	1	2	0	3	0	10			

32 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9219
COEFFICIENT OF SCALABILITY = 0.7368

Table 5

Effigy Grinding Stones: Five Facial Traits
Group 1

V02 EYES-OVAL-RIMMED
V06 EARS-ERECT-TOP
V12 NOSE-SLIGHTLY-RAISED
V15 SNOUT-CURVILINEAR
V22 MOUTH-OPEN-V

ITEM..	V12	V15	V02	V06	V22	TOTAL	
RESP..	0	1 1 0	1 1 0	1 1 0	1 1 0	1 1 0	TOTAL
	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	
T	I	I	I	I	I	I	
A	5 I 0	14 I 0	14 I 0	14 I 0	14 I 0	14 I	14
S	I	ERRI	I	I	I	I	
L	I	I	I	I	I	I	
E	4 I 0	3 I 0	3 I 1	2 I 2	1 I 0	3 I	3
-	I	I-ERRI	I	I	I	I	
S	I	I	I	I	I	I	
	3 I 9	1 I 9	1 I 1	9 I 1	9 I 0	10 I	10
	I	I	I-ERRI	I	I	I	
	I	I	I	I	I	I	
	2 I 5	0 I 5	0 I 5	0 I 0	5 I 0	5 I	5
	I	I	I	I-ERRI	I	I	
	I	I	I	I	I	I	
	1 I 0	0 I 0	0 I 0	0 I 0	0 I 0	0 I	0
	I	I	I	I	I-ERRI	I	
	I	I	I	I	I	I	
	0 I 0	0 I 0	0 I 0	0 I 0	0 I 0	0 I	0
	I	I	I	I	I	I	
SUMS	14	18 14	18 7	25 3	29 0	32	32
PCTS	14	56 44	56 22	78 9	91 0	100	
ERRORS	0	4 0	1 2	0 3	0 0	0	10

32 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9375
COEFFICIENT OF SCALABILITY = 0.7368

Table 6

Effigy Grinding Stones: Four Facial Traits
Group 2

V01 EYES-OVAL-PLAIN
V07 EARS-ERECT-SIDES
V12 NOSE-SLIGHTLY-RAISED
V15 SNOUT-CURVILINEAR

ITEM..	V01		V07		V12		V15		TOTAL
RESP..	0	1	0	1	0	1	0	1	
	I-ERR		I-ERR		I-ERR		I-ERR		I
T	I	I	I	I	I	I	I	I	
A	4	0	22	0	22	0	22	0	22
B	I-ERR		ERRI		I		I		I
L	I	I	I	I	I	I	I	I	
E	3	49	7	7	49	0	56	0	56
-	I		I-ERR		ERRI		I		I
6	I	I	I	I	I	I	I	I	
	2	16	1	16	1	2	15	0	17
	I		I		I-ERR		ERRI		I
	I		I		I		I		I
. 1	I	2	0	2	0	1	1	1	2
	I		I		I		I-ERR		ERRI
	I		I		I		I		I
0	I	1	0	1	0	1	0	1	1
	I-ERR		I-ERR		I-ERR		I-ERR		I
SUMS	68	30	26	72	4	94	2	96	98
PCTS	69	31	27	73	4	96	2	96	
ERRORS	0	8	7	1	2	1	1	0	20

98 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9490
COEFFICIENT OF SCALABILITY = 0.6774

Table 7
Effigy Grinding Stones: Four Facial Traits
Group 3

V03 EYES-CIRCULAR
V09 EARS-FLAT-SIDES
V13 NOSE-RAISED
V16 SNOUT-RECTANGULAR

ITEM..	V09		V16		V13		V03		TOTAL	
RESP..	0	1	0	1	0	1	0	1		
	I-ERR-----I		I-ERR-----I		I-ERR-----I		I-ERR-----I			
T	I		I		I		I		I	
A	4	I	0	20	I	0	20	I	0	20
3	I-----ERRI		I-----ERRI		I-----ERRI		I-----ERRI		I	
L	I		I		I		I		I	
E	3	I	9	5	I	0	14	I	5	9
-	I		I		I		I		I	
7	I-----ERRI		I-----ERRI		I-----ERRI		I-----ERRI		I	
	I		I		I		I		I	
	2	I	3	2	I	3	2	I	2	3
	I-----ERRI		I-----ERRI		I-----ERRI		I-----ERRI		I	
	I		I		I		I		I	
	1	I	13	1	I	14	0	I	1	13
	I-----ERRI		I-----ERRI		I-----ERRI		I-----ERRI		I	
	I		I		I		I		I	
	0	I	5	0	I	5	0	I	5	0
	I-----ERRI		I-----ERRI		I-----ERRI		I-----ERRI		I	
SUMS	30		28		22		36		21	37
PCTS	52		48		38		62		36	64
ERRORS	0		8		0		2		2	0

58 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9139
COEFFICIENT OF SCALABILITY = 0.7619

Table 8

Effigy Grinding Stones: Five Facial Traits
Group 3

V01 EYES-OVAL-PLAIN
V08 EARS-FLAT-TOP
V13 NOSE-RAISED
V16 SNOUT-RECTANGULAR
V21 LIP-SNARL

ITEM..	V08	V01	V16	V13	V21	TOTAL
RESP..	0	1	0	1	0	1
	I	I	I	I	I	I
A	5	0	3	0	3	3
B	I	ERR	I	I	I	I
L	I	I	I	I	I	I
E	4	6	2	6	0	8
	I	I	ERR	I	I	I
8	I	I	I	I	I	I
	3	24	1	25	0	25
	I	I	I	ERR	I	I
	I	I	I	I	I	I
	2	4	0	1	3	4
	I	I	I	I	ERR	I
	I	I	I	I	I	I
	1	15	0	12	3	15
	I	I	I	I	ERR	I
	I	I	I	I	I	I
	0	3	0	3	0	3
	I	I	I	I	I	I
SUMS	52	6	43	15	22	36
PCTS	90	10	74	26	38	62
ERRORS	0	3	2	6	0	3

58 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9379
COEFFICIENT OF SCALABILITY = 0.7465

Table 9

Effigy Grinding Stones: Four Facial Traits
Total Group

V01 EYES-OVAL-PLAIN
V07 EARS-ERECT-SIDES
V12 NOSE-SLIGHTLY-RAISED
V15 SNOUT-CURVILINEAR

ITEM..	V01	V07	V12	V15	TOTAL						
RESP..	0	1	0	1	0	1	0	1	0	1	TOTAL
	I-ERR-----I-ERR-----		I-ERR-----I-ERR-----		I-ERR-----I-ERR-----		I-ERR-----I-ERR-----		I-ERR-----I-ERR-----		
T	I	I	I	I	I	I	I	I	I	I	I
A	4	0	3	0	3	0	3	0	3	0	31
B	I	-----ERRI		I	I	I	I	I	I	I	I
L	I	I	I	I	I	I	I	I	I	I	I
E	3	68	9	9	68	0	77	0	77	0	77
-	I	I	-----ERRI		I	I	I	I	I	I	I
9	I	I	I	I	I	I	I	I	I	I	I
	2	38	3	37	4	5	36	2	39	2	41
	I	I	I	I	I	-----ERRI		I	I	I	I
	I	I	I	I	I	I	I	I	I	I	I
	1	8	10	12	6	17	1	17	1	1	18
	I	I	I	I	I	I	-----ERRI		I	I	I
	I	I	I	I	I	I	I	I	I	I	I
	0	38	0	38	0	38	0	38	0	0	38
	I-ERR-----I-ERR-----		I-ERR-----I-ERR-----		I-ERR-----I-ERR-----		I-ERR-----I-ERR-----		I-ERR-----I-ERR-----		
SUMS	152	53	96	109	60	145	57	148	205		205
PCTS	74	26	47	53	29	71	28	72			72
ERRORS	0	22	9	10	5	1	19	0			66

205 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9195
COEFFICIENT OF SCALABILITY = 0.7519

Table 10

Effigy Grinding Stones: Four Facial Traits
Total Group

OEYE OVAL EYE
V11 NOSE-FLAT
V14 SNOUT-WEDGE
V27 LEGS-NATURALISTIC

ITEM..	V11		V14		V27		OEYE		TOTAL
RESP..	0	1	0	1	0	1	0	1	
T	I	I	I	I	I	I	I	I	I
A	4	0	13	0	13	0	13	0	13
B	I	-----ERR	I	I	I	I	I	I	I
L	I	I	I	I	I	I	I	I	I
E	3	0	11	0	11	0	11	1	01
-	I	I	-----ERR	I	I	I	I	I	I
1	I	I	I	I	I	I	I	I	I
0	2	17	7	17	7	7	17	7	17
	I	I	I	I	I	-----ERR	I	I	I
	I	I	I	I	I	I	I	I	I
	1	84	01	84	01	80	41	4	801
	I	I	I	I	I	I	I	-----ERR	I
	I	I	I	I	I	I	I	I	I
0	I	83	01	83	01	83	01	83	01
	I	-----ERR	I	I	I	I	I	I	I
SUMS	184	21	184	21	170	35	95	110	205
PCTS	90	10	90	10	83	17	46	54	
ERRORS	0	8	0	7	7	4	12	0	38

205 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9537
COEFFICIENT OF SCALABILITY = 0.7791

Table 11
 Effigy Grinding Stones:
 Four Combined Body and Facial Traits
 Total Group

EEAR ERECT EAR
 V12 NOSE-SLIGHTLY-RAISED
 V15 SNOUT-CURVILINEAR
 V27 LEGS-NATURALISTIC

ITEM..	V27		EEAR		V12		V15		TOTAL
RESP..	0	1	0	1	0	1	0	1	
T	I	I	I	I	I	I	I	I	I
A	4	0	21	0	21	0	21	0	21
B	I	-----ERRI	I	I	I	I	I	I	I
L	I	I	I	I	I	I	I	I	I
E	3	97	0	0	97	0	97	0	97
-	I	I	-----ERRI	I	I	I	I	I	I
I	I	I	I	I	I	I	I	I	I
l	2	28	14	26	16	16	26	14	29
	I	I	I	I	I	-----ERRI	I	I	I
	I	I	I	I	I	I	I	I	I
	1	11	0	3	3	10	1	9	21
	I	I	I	I	I	I	-----ERRI	I	I
	I	I	I	I	I	I	I	I	I
	0	34	0	34	0	34	0	34	0
	I	-----ERRI	I	I	I	I	I	I	I
SUMS	170	35	63	142	60	145	57	148	205
PCTS	83	17	31	69	29	71	28	72	
ERRORS	0	14	0	24	16	1	23	0	78

205 CASES WERE PROCESSED
 0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9049
 COEFFICIENT OF SCALABILITY = 0.6372

Table 12

Effigy Grinding Stones
Five Combined Body and Facial Traits
Total Group

OEYE OVAL EYE
EEAR ERECT EAR
V11 NOSE-FLAT
V14 SNOUT-WEDGE
V27 LEGS-NATURALISTIC

ITEM..	V11		V14		V27		OEYE		EEAR		TOTAL
RESP..	0	1	0	1	0	1	0	1	0	1	
	I	I	I	I	I	I	I	I	I	I	I
A	5	0	13	0	13	0	13	0	13	0	13
B	I	I	ERRI	I	I	I	I	I	I	I	I
L	I	I	I	I	I	I	I	I	I	I	I
E	4	0	11	0	11	0	11	1	0	11	1
-	I	I	ERRI	I	I	I	I	I	I	I	I
1	I	I	I	I	I	I	I	I	I	I	I
2	3	17	0	17	0	17	0	17	0	17	17
	I	I	I	I	ERRI	I	I	I	I	I	I
	I	I	I	I	I	I	I	I	I	I	I
	2	61	7	61	7	64	4	11	57	7	68
	I	I	I	I	I	I	I	ERRI	I	I	I
	I	I	I	I	I	I	I	I	I	I	I
	1	73	0	73	0	73	0	50	23	50	73
	I	I	I	I	I	I	I	I	ERRI	I	I
	I	I	I	I	I	I	I	I	I	I	I
	0	33	0	33	0	33	0	33	0	33	33
	I	I	I	I	I	I	I	I	I	I	I
SUMS	184	21	184	21	170	35	95	110	63	142	205
PCTS	90	10	90	10	83	17	46	54	31	69	
ERRORS	0	8	0	7	0	4	12	23	30	0	84

205 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9180
COEFFICIENT OF SCALABILITY = 0.6426

Table 13

Effigy Grinding Stones:
Six Combined Body and Facial Traits
Total Group

DEYE OVAL EYE
EEAR ERECT EAR
V11 NOSE-FLAT
V14 SNOUT-WEDGE
V22 MOUTH-OPEN-V
V27 LEGS-NATURALISTIC

ITEM..	V11		V14		V27		V22		OEYE			EEAR		TOTAL	
RESP..	0	1	0	1	0	1	0	1	0	1	0	1	0	1	
T	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
A	6	I	0	13	I	0	13	I	0	13	I	0	13	I	13
B	I	I	ERR	I	I	I	I	I	I	I	I	I	I	I	I
L	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
E	5	I	0	11	I	0	11	I	0	11	I	1	01	0	11
1	I	I	I	I	I	ERR	I	I	I	I	I	I	I	I	I
3	4	I	17	01	17	01	0	17	I	0	17	I	0	17	17
	I	I	I	I	I	ERR	I	I	I	I	I	I	I	I	I
	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	3	I	25	01	25	01	23	21	0	25	I	2	23	0	25
	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	2	I	53	31	53	31	54	21	39	17	I	16	40	I	9
	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	1	I	58	01	58	01	58	01	55	31	41	17	20	38	58
	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
	0	I	30	01	30	01	30	01	30	01	30	01	30	01	30
SUMS	183	17	183	17	165	35	124	76	90	110	59	141		200	
PCTS	92	9	92	9	83	18	62	38	45	55	30	71			
ERRORS	0	4	0	3	0	4	0	20	19	17	29	0		96	

200 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9200
COEFFICIENT OF SCALABILITY = 0.6735

Table 14
 Effigy Grinding Stones:
 Six Combined Body and Facial Traits
 Total Group

OEYE OVAL EYE
 EEAR ERECT EAR
 V11 NOSE-FLAT
 V14 SNOUT-WEDGE
 V27 LEGS-NATURALISTIC
 V32 TAIL-CYLINDRICAL

ITEM..	V11		V14		V27		OEYE		EEAR		V32		TOTAL	
RESP..	0	1	0	1	0	1	0	1	0	1	0	1		
T	I	I	I	I	I	I	I	I	I	I	I	I	I	
A	6	0	11	0	11	0	11	0	11	0	11	0	11	11
B	I	-----ERRI	I	I	I	I	I	I	I	I	I	I	I	
L	I	I	I	I	I	I	I	I	I	I	I	I	I	
E	5	0	11	0	11	0	11	1	01	0	11	0	11	1
-	I	I	I	-----ERRI	I	I	I	I	I	I	I	I	I	
I	I	I	I	I	I	I	I	I	I	I	I	I	I	
4	4	14	01	14	01	0	141	0	141	0	141	0	141	14
I	I	I	I	I	I	-----ERRI	I	I	I	I	I	I	I	
I	I	I	I	I	I	I	I	I	I	I	I	I	I	
3	3	43	01	43	01	42	11	1	421	0	431	0	431	43
I	I	I	I	I	I	I	I	-----ERRI	I	I	I	I	I	
I	I	I	I	I	I	I	I	I	I	I	I	I	I	
2	2	57	01	57	01	56	11	36	211	13	441	9	481	57
I	I	I	I	I	I	I	I	I	I	-----ERRI	I	I	I	
I	I	I	I	I	I	I	I	I	I	I	I	I	I	
1	1	20	01	20	01	20	01	13	71	12	81	15	51	20
I	I	I	I	I	I	I	I	I	I	I	I	-----ERRI	I	
I	I	I	I	I	I	I	I	I	I	I	I	I	I	
0	0	22	01	22	01	22	01	22	01	22	01	22	01	22
I	I	I	I	I	I	I	I	I	I	I	I	I	I	
SUMS	156	12	156	12	140	28	73	95	47	121	46	122	168	
PCTS	93	7	93	7	83	17	43	57	28	72	27	73		
ERRORS	0	1	0	0	0	0	2	2	28	13	8	24	0	78

168 CASES WERE PROCESSED
 20 (OR 10.6 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9226
 COEFFICIENT OF SCALABILITY = 0.6422

Table 15

Effigy Grinding Stones:
Eight Combined Body and Facial Traits Total Group

V03 EYES-CIRCULAR
V09 EARS-FLAT-SIDES
V13 NOSE-RAISED
V16 SNOUT-RECTANGULAR
V21 LIP-SNARL
V23 MOUTH-OPEN-U
V29 LEGS-STYLIZED
V33 TAIL-FLAT

ITEM..	V09	V16	V33	V13	V29	V21	V03	V23	TOTAL
RESP..	0	1 1 0	1 1 0	1 1 0	1 1 0	1 1 0	1 1 0	1 1 0	
T	I	I	I	I	I	I	I	I	I
A 8	I 0	15 I 0	15 I 0	15 I 0	15 I 0	15 I 0	15 I 0	15 I 0	15
B	I	ERRI	I	I	I	I	I	I	I
L	I	I	I	I	I	I	I	I	I
E 7	I 4	9 I 0	12 I 3	9 I 0	12 I 0	12 I 0	12 I 5	7 I 0	12
1	I	I	ERRI	I	I	I	I	I	I
S	I	I	I	I	I	I	I	I	I
6	I 5	0 I 1	4 I 3	2 I 0	5 I 0	5 I 0	5 I 1	4 I 0	5
I	I	I	ERRI	I	I	I	I	I	I
5	I 6	2 I 5	3 I 4	4 I 5	3 I 1	7 I 2	6 I 1	7 I 0	8
I	I	I	I	ERRI	I	I	I	I	I
4	I 10	4 I 14	0 I 11	3 I 12	2 I 3	11 I 2	12 I 3	11 I 1	14
I	I	I	I	I	ERRI	I	I	I	I
3	I 10	1 I 10	1 I 8	3 I 9	2 I 6	5 I 8	3 I 4	7 I 0	11
I	I	I	I	I	I	ERRI	I	I	I
2	I 24	2 I 26	0 I 26	0 I 26	0 I 22	4 I 16	10 I 14	12 I 2	26
I	I	I	I	I	I	I	ERRI	I	I
1	I 23	0 I 22	1 I 23	0 I 23	0 I 23	0 I 23	0 I 18	5 I 6	23
I	I	I	I	I	I	I	I	ERRI	I
0	I 51	0 I 51	0 I 51	0 I 51	0 I 51	0 I 51	0 I 51	0 I 51	51
SUMS	133	32 129	36 129	36 126	39 106	59 102	63 97	68 60	165
PCTS	81	19 78	22 78	22 76	24 64	36 62	38 59	41 36	64
ERRORS	0	17 0	9 6	10 5	4 4	9 12	10 28	5 9	128

188 CASES WERE PROCESSED
23 (OR 12.2 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9030
COEFFICIENT OF SCALABILITY = 0.6743

Table 16
 Effigy Grinding Stones:
 Seven Combined Body and Facial Traits
 Group 1

OEYE OVAL EYE
 EEAR ERECT EAR
 V11 NOSE-FLAT
 V14 SNOUT-WEDGE
 V27 LEGS-NATURALISTIC
 V32 TAIL-CYLINDRICAL
 V37 HEAD-TAIL-FRUM-RIM

ITEM..	V11	V14	V37	OEYE	EEAR	V27	V32	TOTAL
RESP..	0	1 1 0	1 1 0	1 1 0	1 1 0	1 1 0	1 1 0	1 1 0
T	I	I	I	I	I	I	I	I
A 7	I 0	111 0	111 0	111 0	111 0	111 0	111 0	111
B	I	ERRI	I	I	I	I	I	I
L	I	I	I	I	I	I	I	I
E 6	I 0	11 0	11 0	11 0	01 0	11 0	11 0	11
-	I	ERRI	I	I	I	I	I	I
1	I	I	I	I	I	I	I	I
6 5	I 8	01 8	01 0	81 0	81 0	81 0	81 0	81
I	I	I	ERRI	I	I	I	I	I
I	I	I	I	I	I	I	I	I
4	I 6	01 6	01 6	01 0	61 0	61 0	61 0	61
I	I	I	I	ERRI	I	I	I	I
I	I	I	I	I	I	I	I	I
3	I 0	01 0	01 0	01 0	01 0	01 0	01 0	01
I	I	I	I	I	ERRI	I	I	I
I	I	I	I	I	I	I	I	I
2	I 0	01 0	01 0	01 0	01 0	01 0	01 0	01
I	I	I	I	I	I	ERRI	I	I
I	I	I	I	I	I	I	I	I
1	I 0	01 0	01 0	01 0	01 0	01 0	01 0	01
I	I	I	I	I	I	I	ERRI	I
I	I	I	I	I	I	I	I	I
0	I 0	01 0	01 0	01 0	01 0	01 0	01 0	01
SUMS	14	12 14	12 6	20	1 25	0 26	0 26	26
PCTS	54	46 54	46 23	77	4 96	0 100	0 100	100
ERRORS	0	1 0	0 0	0	1 0	0 0	0 0	0

32 CASES WERE PROCESSED
 6 (OR 18.8 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9890
 COEFFICIENT OF SCALABILITY = 0.9355

Table 17

Effigy Grinding Stones:
Five Combined Body and Facial Traits
Group 2

OEYE OVAL EYE
EEAR ERECT EAR
V12 NOSE-SLIGHTLY-RAISED
V15 SNOUT-CURVILINEAR
V28 LEGS-SEMI-NATURALISTIC

ITEM..	OEYE		EEAR		V28		V12		V15		TOTAL
RESP..	0	1	0	1	0	1	0	1	0	1	
	I-ERR-----I		I-ERR-----I		I-ERR-----I		I-ERR-----I		I-ERR-----I		
T	I		I		I		I		I		I
A	5	0	46	0	46	0	46	0	46	0	46
B	I	-----ERRI			I		I		I		I
L	I		I		I		I		I		I
E	4	24	12	10	26	2	34	0	36	0	36
-	I		I	-----ERRI			I		I		I
1	I		I		I		I		I		I
7	3	8	2	4	6	5	5	3	7	0	10
	I		I		I	-----ERRI			I		I
	I		I		I		I		I		I
	2	3	1	4	0	2	2	1	3	2	2
	I		I		I		I	-----ERRI			I
	I		I		I		I		I		I
	1	0	0	0	0	0	0	0	0	0	0
	I		I		I		I		I	-----ERRI	
	I		I		I		I		I		I
	0	0	0	0	0	0	0	0	0	0	0
	I-ERR-----I		I-ERR-----I		I-ERR-----I		I-ERR-----I		I-ERR-----I		
SUMS	35	61	18	70	9	87	4	92	2	94	96
PCTS	36	64	19	81	9	91	4	96	2	98	
ERRORS	0	15	10	6	7	2	4	0	2	0	46

98 CASES WERE PROCESSED
2 (OR 2.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9042
COEFFICIENT OF SCALABILITY = 0.3235

Table 18

Effigy Grinding Stones:
Five Combined Body and Facial Traits
Group 3

V03 EYES-CIRCULAR
V09 EARS-FLAT-SIDES
V13 NOSE-RAISED
V16 SNOUT-RECTANGULAR
V29 LEGS-STYLIZED

ITEM..	V09		V16		V13		V03		V29		TOTAL
RESP..	0	1	0	1	0	1	0	1	0	1	
T	I		I		I		I		I		I
A	5	0	18	0	19	0	18	0	18	0	18
B	I		ERRI		I		I		I		I
L	I		I		I		I		I		I
E	4	8	5	0	13	0	13	5	8	0	13
-	I		I		ERRI		I		I		I
1	I		I		I		I		I		I
8	3	4	2	3	3	2	4	2	4	1	5
	I		I		I		ERRI		I		I
	I		I		I		I		I		I
	2	12	1	13	0	13	0	1	12	0	13
	I		I		I		ERRI		I		I
	I		I		I		I		I		I
	1	6	0	6	0	6	0	5	1	1	5
	I		I		I		I		I		ERRI
	I		I		I		I		I		I
	0	0	0	0	0	0	0	0	0	0	0
	I		I		I		ERRI		I		I
SUMS	30	26	22	34	21	35	13	43	2	54	56
PCTS	54	46	39	61	38	63	23	77	4	96	
ERRORS	0	8	0	3	2	0	8	1	2	0	24

58 CASES WERE PROCESSED
2 (OR 3.4 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9143
COEFFICIENT OF SCALABILITY = 0.7143

Table 19

Effigy Grinding Stones:
Six Combined Body and Facial Traits
Total Group

OEYE OVAL EYE
V11 NOSE-FLAT
V14 SNOUT-WEDGE
V27 LEGS-NATURALISTIC
V32 TAIL-CYLINDRICAL
V22 MOUTH-OPEN-V

ITEM..	V11		V14		V27		V22		OEYE		V32		TOTAL
RESP..	0	1	0	1	0	1	0	1	0	1	0	1	
T	I	I	I	I	I	I	I	I	I	I	I	I	I
A	6	0	11	0	11	0	11	0	11	0	11	0	11
B	I	I	ERR	I	I	I	I	I	I	I	I	I	I
L	I	I	I	I	I	I	I	I	I	I	I	I	I
E	5	0	11	0	11	0	11	0	11	1	01	0	11
-	I	I	I	ERR	I	I	I	I	I	I	I	I	I
1	I	I	I	I	I	I	I	I	I	I	I	I	I
9	4	14	01	14	01	0	14	0	14	0	14	0	14
	I	I	I	I	I	ERR	I	I	I	I	I	I	I
	I	I	I	I	I	I	I	I	I	I	I	I	I
	3	22	01	22	01	22	01	0	22	0	22	0	22
	I	I	I	I	I	I	I	ERR	I	I	I	I	I
	I	I	I	I	I	I	I	I	I	I	I	I	I
	2	42	01	42	01	41	11	32	10	9	33	2	40
	I	I	I	I	I	I	I	I	I	ERR	I	I	I
	I	I	I	I	I	I	I	I	I	I	I	I	I
	1	47	01	47	01	46	11	45	21	34	13	16	31
	I	I	I	I	I	I	I	I	I	I	ERR	I	I
	I	I	I	I	I	I	I	I	I	I	I	I	I
	0	28	01	28	01	28	01	28	01	26	01	28	01
SUMS	153	12	153	12	137	28	105	60	72	93	46	119	165
PCTS	93	7	93	7	83	17	64	36	44	56	28	72	
ERRORS	0	1	0	0	0	2	0	12	10	13	18	0	56

138 CASES WERE PROCESSED
23 (OR 12.2 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9434
COEFFICIENT OF SCALABILITY = 0.7565

Table 20

Effigy Grinding Stones:
Six Combined Body and Facial Traits
Total Group

V03 EYES-CIRCULAR
V13 NOSE-RAISED
V16 SNOUT-RECTANGULAR
V29 LEGS-STYLIZED
V33 TAIL-FLAT
V23 MOUTH-OPEN-U

ITEM..	V16		V33		V13		V29		V03		V23		TOTAL
RESP..	0	1	0	1	0	1	0	1	0	1	0	1	
I	I	I	I	I	I	I	I	I	I	I	I	I	I
A	6	0	19	0	19	0	19	0	19	0	19	0	19
B	I	I	I	I	I	I	I	I	I	I	I	I	I
L	I	I	I	I	I	I	I	I	I	I	I	I	I
E	5	1	13	7	7	0	14	0	14	6	8	0	14
2	I	I	I	I	I	I	I	I	I	I	I	I	I
0	4	4	2	2	4	4	2	1	5	1	5	0	6
I	I	I	I	I	I	I	I	I	I	I	I	I	I
I	I	I	I	I	I	I	I	I	I	I	I	I	I
3	19	1	14	6	18	2	4	16	4	16	1	19	20
I	I	I	I	I	I	I	I	I	I	I	I	I	I
I	I	I	I	I	I	I	I	I	I	I	I	I	I
2	20	0	20	0	18	2	16	4	5	15	1	19	20
I	I	I	I	I	I	I	I	I	I	I	I	I	I
I	I	I	I	I	I	I	I	I	I	I	I	I	I
1	34	1	35	0	35	0	34	1	30	5	7	28	35
I	I	I	I	I	I	I	I	I	I	I	I	I	I
I	I	I	I	I	I	I	I	I	I	I	I	I	I
0	51	0	51	0	51	0	51	0	51	0	51	0	51
SUMS	129	36	129	36	126	39	106	59	97	68	60	105	165
PCTS	78	22	78	22	76	24	64	36	59	41	36	64	
ERRORS	0	17	7	10	4	4	5	5	16	5	9	0	82

188 CASES WERE PROCESSED
23 (OR 12.2 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9172
COEFFICIENT OF SCALABILITY = 0.7248

Table 21

Effigy Grinding Stones:
Six Combined Body and Facial Traits
Group 1

OEYE OVAL EYE
V11 NOSE-FLAT
V14 SNOUT-WEDGE
V27 LEGS-NATURALISTIC
V32 TAIL-CYLINDRICAL
V22 MOUTH-OPEN-V

ITEM..	V11		V14		OEYE		V27		V32		V22		TOTAL		
RESP..	0	1	0	1	0	1	0	1	0	1	0	1			
T	I		I		I		I		I		I		I		
A	6	I	0	13	I	0	13	I	0	13	I	0	13	13	
B	I		ERR		I		I		I		I		I		
L	I		I		I		I		I		I		I		
E	5	I	0	11	I	0	11	I	0	11	I	0	11	1	
-	I		I		ERR		I		I		I		I		
2	I		I		I		I		I		I		I		
1	4	I	17	0	17	I	0	17	I	0	17	I	0	17	17
	I		I		I		ERR		I		I		I		
	I		I		I		I		I		I		I		
	3	I	1	0	1	I	0	1	I	0	1	I	0	1	1
	I		I		I		I		ERR		I		I		
	I		I		I		I		I		I		I		
	2	I	0	0	0	I	0	0	I	0	0	I	0	0	0
	I		I		I		I		I		ERR		I		
	I		I		I		I		I		I		I		
	1	I	0	0	0	I	0	0	I	0	0	I	0	0	0
	I		I		I		I		I		I		ERR		
	I		I		I		I		I		I		I		
	0	I	0	0	0	I	0	0	I	0	0	I	0	0	0
	I		I		I		I		I		I		I		
SUMS	18	14	18	14	1	31	1	31	0	32	0	32	32		
PCTS	56	44	56	44	3	97	3	97	0	100	0	100			
ERRORS	0	1	0	0	1	1	1	0	0	0	0	0	4		

32 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9792
COEFFICIENT OF SCALABILITY = 0.8667

Table 22

Effigy Grinding Stones:
Five Combined Body and Facial Traits
Group 2

OEYE OVAL EYE
V12 NOSE-SLIGHTLY-RAISED
V15 SNOUT-CURVILINEAR
V32 TAIL-CYLINDRICAL
V28 LEGS-SEMI-NATURALISTIC

ITEM..	OEYE		V28		V32		V12		V15		TOTAL
RESP..	0	1	0	1	0	1	0	1	0	1	
A	5	0	54	0	54	0	54	0	54	0	54
B	1				1		1		1		1
L	1		1		1		1		1		1
E	4	25	51	1	29	2	26	2	26	0	30
2	1		1		1		1		1		1
2	3	6	21	4	41	2	61	2	61	2	61
2	1	6	01	6	01	6	01	0	61	0	61
1	1	0	01	0	01	0	01	0	01	0	01
0	1	0	01	0	01	0	01	0	01	0	01
SUMS	37	61	11	87	10	88	4	94	2	96	98
PCTS	38	62	11	89	10	90	4	96	2	98	
ERRORS	0	7	1	4	4	0	4	0	2	0	22

98 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9551
COEFFICIENT OF SCALABILITY = 0.6563

Table 23

Effigy Grinding Stones:
Six Combined Body and Facial Traits
Group 3

V03 EYES-CIRCULAR
V13 NOSE-RAISED
V16 SNOUT-RECTANGULAR
V29 LEGS-STYLIZED
V33 TAIL-FLAT
V23 MOUTH-OPEN-U

ITEM..	V33		V16		V13		V03		V29		V23		TOTAL	
	0	1	0	1	0	1	0	1	0	1	0	1		
T	I	I	I	I	I	I	I	I	I	I	I	I	I	
A	6	0	20	0	20	0	20	0	20	0	20	0	20	20
B	I	ERR	I	ERR	I	ERR	I	ERR	I	ERR	I	ERR	I	
L	I	I	I	I	I	I	I	I	I	I	I	I	I	
E	5	8	7	1	14	0	15	6	9	0	15	0	15	15
2	I	I	I	ERR	I	ERR	I	ERR	I	ERR	I	ERR	I	
3	4	2	3	3	2	3	2	1	4	1	4	0	5	5
3	I	11	3	14	0	14	0	2	12	1	13	0	14	14
2	I	3	0	3	0	3	0	3	0	0	3	0	3	3
1	I	1	0	1	0	1	0	1	0	0	1	1	0	1
0	I	0	0	0	0	0	0	0	0	0	0	0	0	0
SUMS	25	33	22	36	21	37	13	45	2	56	1	57	58	
PCTS	43	57	38	62	36	64	22	78	3	97	2	98		
ERRORS	0	13	1	2	3	0	9	0	2	1	1	0	32	

50 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9080
COEFFICIENT OF SCALABILITY = 0.6190

Table 24

Effigy Grinding Stones:
Six Combined Body and Facial Traits
Groups 1 and 2

OEYE OVAL EYE
V11 NOSE-FLAT
V14 SNOUT-WEDGE
V27 LEGS-NATURALISTIC
V32 TAIL-CYLINDRICAL
V22 MOUTH-OPEN-V

ITEM..	V11		V14		V27		V22		OEYE		V32		TOTAL	
	0	1	0	1	0	1	0	1	0	1	0	1		
RESP..	0	1	0	1	0	1	0	1	0	1	0	1		
	I-ERR		I-ERR		I-ERR		I-ERR		I-ERR		I-ERR		I	
T	I	I	I	I	I	I	I	I	I	I	I	I	I	
A	6	0	11	0	11	0	11	0	11	0	11	0	11	11
B	I-ERR		ERRI		I		I		I		I		I	
L	I	I	I	I	I	I	I	I	I	I	I	I	I	
E	5	0	11	0	11	0	11	0	11	1	0	11	1	
--	I		I-ERR		ERRI		I		I		I		I	
2	I	I	I	I	I	I	I	I	I	I	I	I	I	
4	4	14	0	14	0	14	0	14	0	14	0	14	14	
	I		I		I-ERR		ERRI		I		I		I	
	I		I		I		I		I		I		I	
	I		I		I		I-ERR		ERRI		I		I	
3	22	0	22	0	22	0	22	0	22	0	22	0	22	22
	I		I		I		I-ERR		ERRI		I		I	
	I		I		I		I		I		I		I	
2	40	0	40	0	39	1	31	9	9	31	1	39	40	
	I		I		I		I		I-ERR		ERRI		I	
	I		I		I		I		I		I		I	
1	20	0	20	0	19	1	16	2	16	2	5	15	20	
	I		I		I		I		I		I-ERR		ERRI	
	I		I		I		I		I		I		I	
0	2	0	2	0	2	0	2	0	2	0	2	0	2	
	I		I		I		I		I		I		I	
SUMS	98	12	98	12	82	28	51	59	30	80	8	102	110	
PCTS	89	11	89	11	75	25	46	54	27	73	7	93		
ERRORS	0	1	0	0	0	2	0	11	10	2	6	0	32	

130 CASES WERE PROCESSED
20 (OR 15.4 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9515
COEFFICIENT OF SCALABILITY = 0.7730

Table 25

Effigy Grinding Stones:
Five Combined Body and Facial Traits
Groups 2 and 3

OEYE OVAL EYE
V12 NOSE-SLIGHTLY-RAISED
V15 SNOUT-CURVILINEAR
V28 LEGS-SEMI-NATURALISTIC
V32 TAIL-CYLINDRICAL

ITEM..	OEYE	V28		V32		V12		V15		TOTAL						
RESP..	0	1	0	1	0	1	0	1	0	1						
T	I	I	I	I	I	I	I	I	I	I						
A	5	0	5	1	0	5	1	0	5	1	51					
B	I	ERRI		I	I	I	I	I	I	I						
L	I	I	I	I	I	I	I	I	I	I						
E	4	1	20	4	1	0	24	1	2	22	1	0	24	24		
2	I	I	I	ERRI		I	I	I	I	I						
S	3	1	17	8	1	21	4	1	8	17	1	2	23	2	23	25
	I	I	I	I	I	I	ERRI		I	I						
	I	I	I	I	I	I	I	I	I	I						
	2	1	8	11	1	8	11	7	2	1	2	7	1	7	9	
	I	I	I	I	I	I	ERRI		I	I						
	I	I	I	I	I	I	I	I	I	I						
	1	1	5	6	1	11	0	1	7	4	11	0	1	10	1	11
	I	I	I	I	I	I	I	I	I	ERRI		I	I			
	I	I	I	I	I	I	I	I	I	I	I	I	I			
	0	1	22	0	1	22	0	1	22	0	1	22	0	1	22	22
I-----I-----I-----I-----I-----I																
SUMS	72	70	62	80	46	96	39	103	36	106	142					
PCTS	51	49	44	56	32	68	27	73	25	75						
ERRORS	0	19	0	5	10	6	6	0	14	0	60					

156 CASES WERE PROCESSED
14 (OR 9.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9155
COEFFICIENT OF SCALABILITY = 0.7628

Table 26

Effigy Grinding Stones:
Six Combined Body and Facial Traits
Groups 2 and 3

V03 EYES-CIRCULAR
V13 NOSE-RAISED
V16 SNOUT-RECTANGULAR
V29 LEGS-STYLIZED
V33 TAIL-FLAT
V23 MOUTH-OPEN-U

ITEM..	V16		V33		V13		V29		V03		V23		TOTAL
RESP..	0	1	0	1	0	1	0	1	0	1	0	1	
T	I	I	I	I	I	I	I	I	I	I	I	I	I
A	6	0	19	0	19	0	19	0	19	0	19	0	19
B	I	ERR	I	I	I	I	I	I	I	I	I	I	I
L	I	I	I	I	I	I	I	I	I	I	I	I	I
E	5	1	13	7	7	0	14	0	14	6	8	0	14
-	I	I	ERR	I	I	I	I	I	I	I	I	I	I
2	I	I	I	I	I	I	I	I	I	I	I	I	I
6	4	4	2	2	4	4	2	1	5	1	5	0	6
	I	I	I	ERR	I	I	I	I	I	I	I	I	I
	I	I	I	I	I	I	I	I	I	I	I	I	I
	3	19	1	14	6	18	2	4	16	4	16	1	19
	I	I	I	I	I	ERR	I	I	I	I	I	I	I
	I	I	I	I	I	I	I	I	I	I	I	I	I
	2	20	0	20	0	18	2	16	4	5	15	1	19
	I	I	I	I	I	I	I	ERR	I	I	I	I	I
	I	I	I	I	I	I	I	I	I	I	I	I	I
	1	34	1	35	0	35	0	34	1	30	5	7	28
	I	I	I	I	I	I	I	I	I	I	ERR	I	I
	I	I	I	I	I	I	I	I	I	I	I	I	I
	0	25	0	25	0	25	0	25	0	25	0	25	0
	I	I	I	I	I	I	I	I	I	I	I	I	I
SUMS	103	36	103	36	100	39	80	59	71	68	34	105	139
PCTS	74	26	74	26	72	28	58	42	51	49	24	76	
ERRORS	0	17	7	10	4	4	5	5	16	5	9	0	82

156 CASES WERE PROCESSED
17 (OR 10.9 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9017
COEFFICIENT OF SCALABILITY = 0.6985

Table 27

Standing Figures: Four Facial Traits
Total Group

AE RECTANGULAR EYES
V10 NOSE-TRIANGULAR-FLAT-NOSTRILS
V15 EARS-SOLID-PROJECT
OM RECTANGULAR MOUTH

ITEM..	V10		AE		OM		V15		TOTAL
RESP..	0	1	0	1	0	1	0	1	
T	4	12	0	12	0	12	0	12	12
B	3	13	1	5	3	4	9	43	52
L	2	17	34	27	32	29	12	49	61
7	1	30	17	47	0	42	5	22	47
0	48	0	48	0	48	0	48	0	48
SUMS	161	59	130	90	125	95	91	129	220
PCTS	73	27	59	41	57	43	41	59	
ERRORS	0	47	1	27	35	5	43	0	158

220 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.8205
COEFFICIENT OF SCALABILITY = 0.5294

Table 28

Standing Figures: Four Facial Traits
Total Group

OE OVAL EYES
V12 NOSE-NATURALISTIC
V17 EARS-NATURALISTIC-FLAT
V22 MOUTH-SLIT-NO LIPS

ITEM..	V17		V12		OE		V22		TOTAL
RESP..	0	1	0	1	0	1	0	1	
	I-ERR-----I		I-ERR-----I		I-ERR-----I		I-ERR-----I		
T	I	I	I	I	I	I	I	I	
A	4	0	44	0	44	0	44	0	44
B	I-----ERRI		I		I		I		
L	I	I	I	I	I	I	I	I	
E	3	6	20	7	19	11	15	2	24
-	I		I-----ERRI		I		I		
2	I	I	I	I	I	I	I	I	
8	2	38	31	23	18	20	21	1	40
	I		I		I-----ERRI		I		
	I		I		I		I		
	1	21	11	20	21	17	51	8	141
	I		I		I		I-----ERRI		
	I		I		I		I		
0	I	87	01	87	01	87	01	87	01
	I-----I		I-----I		I-----I		I-----I		
SUMS	152	68	137	83	135	85	98	122	220
PCTS	69	31	62	38	61	39	45	55	
ERRORS	0	24	7	20	31	5	11	0	98

220 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.8886
COEFFICIENT OF SCALABILITY = 0.7066

Table 29

Standing Figures: Four Combined Facial Traits
Total Group

AE RECTANGULAR EYES
ON TRIANGULAR NOSE
ER PROJECTING EARS
OM RECTANGULAR MOUTH

ITEM..	ON		AE		OM		ER		TOTAL
	0	1	0	1	0	1	0	1	
T	I	I	I	I	I	I	I	I	
A	4	0	31	0	31	0	31	0	31
B	I	-----ERRI	I	I	I	I	I	I	
L	I	I	I	I	I	I	I	I	
E	3	40	4	1	43	2	42	1	43
2	I	I	I	-----ERRI	I	I	I	I	
9	2	35	3	22	16	19	19	0	38
	I	I	I	I	I	-----ERRI	I	I	
	I	I	I	I	I	I	I	I	
	1	38	11	39	0	36	3	4	35
	I	I	I	I	I	I	-----ERRI	I	
	I	I	I	I	I	I	I	I	
	0	68	0	68	0	68	0	68	68
	I	-----ERRI	I	-----ERRI	I	-----ERRI	I	-----ERRI	
SUMS	181	39	130	90	125	95	73	147	220
PCTS	82	18	59	41	57	43	33	67	
ERRORS	0	8	1	16	21	3	5	0	54

220 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9386
COEFFICIENT OF SCALABILITY = 0.8182

Table 30
 Standing Figures: Four Facial Traits
 Total Group

OE OVAL EYES
 V12 NOSE-NATURALISTIC
 XR STYLIZED EARS
 V22 MOUTH-SLIT-NO LIPS

ITEM..	V12		XR		OE		V22		TOTAL
	0	1	0	1	0	1	0	1	
T	I	I	I	I	I	I	I	I	I
A	4	0	37	0	37	0	37	0	37
B	I	-----ERRI	I	I	I	I	I	I	I
L	I	I	I	I	I	I	I	I	I
E	3	7	5	3	9	0	12	2	10
-	I	I	-----ERRI	I	I	I	I	I	I
3	I	I	I	I	I	I	I	I	I
0	2	21	0	20	1	0	21	1	20
	I	I	I	I	I	-----ERRI	I	I	I
	I	I	I	I	I	I	I	I	I
	1	16	1	16	1	12	5	7	10
	I	I	I	I	I	I	-----ERRI	I	I
	I	I	I	I	I	I	I	I	I
0	I	87	0	87	0	87	0	87	0
	I	-----ERRI	I	I	I	I	I	I	I
SUMS	131	43	126	48	99	75	97	77	174
PCTS	75	25	72	28	57	43	56	44	
ERRORS	0	6	3	2	0	5	10	0	26

220 CASES WERE PROCESSED
 46 (OR 20.9 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9626
 COEFFICIENT OF SCALABILITY = 0.8930

Table 31
 Standing Figures: Four Facial Traits
 Total Group

BE OVAL-CIRCULAR
 ER PROJECTING EARS
 VII NOSE-TRIANGULAR-PROJECT-NOSTRIL
 OM RECTANGULAR MOUTH

ITEM..	BE		VII		OM		ER		TOTAL
RESP..	0	1	0	1	0	1	0	1	
	I-ERR		I-ERR		I-ERR		I-ERR		I
T	I	I	I	I	I	I	I	I	I
A	4	0	13	0	13	0	13	0	13
B	I	ERRI		I	I	I	I	I	I
L	I	I	I	I	I	I	I	I	I
E	3	27	21	2	27	0	29	0	29
-	I	I-ERRI		I	I	I	I	I	I
3	I	I	I	I	I	I	I	I	I
1	2	55	21	49	81	9	48	1	56
	I	I	I	I	I	ERRI		I	I
	I	I	I	I	I	I	I	I	I
	1	34	0	33	11	30	4	5	29
	I	I	I	I	I	I-ERRI		I	I
	I	I	I	I	I	I	I	I	I
	0	49	0	49	0	49	0	49	49
	I-ERR		I-ERR		I-ERR		I-ERR		I
SUMS	165	17	133	49	88	94	55	127	182
PCTS	91	9	73	27	48	52	30	70	
ERRORS	0	4	2	9	9	4	6	0	34

220 CASES WERE PROCESSED
 38 (OR 17.3 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9533
 COEFFICIENT OF SCALABILITY = 0.8373

Table 32

Standing Figures: Four Combined Facial Traits
Group 1

AE RECTANGULAR EYES
ON TRIANGULAR NOSE
ER PROJECTING EARS
OM RECTANGULAR MOUTH

ITEM..	ON	AE		OM		ER		TOTAL	
RESP..	0	1	0	1	0	1	0	1	
T	I	I	I	I	I	I	I	I	
A	4	0	23	0	23	0	23	0	23
B	I	ERRI		I	I	I	I	I	
L	I	I	I	I	I	I	I	I	
E	3	30	11	1	30	0	31	0	31
3	I	ERRI		I	I	I	I	I	
2	2	19	11	16	4	5	15	0	20
	I	I	I	I	I	ERRI		I	
	I	I	I	I	I	I	I	I	
	1	15	01	15	01	15	01	0	15
	I	I	I	I	I	ERRI		I	
	I	I	I	I	I	I	I	I	
	0	7	01	7	01	7	01	7	
SUMS	71	25	39	57	27	69	7	89	96
PCTS	74	26	41	59	28	72	7	93	
ERRORS	0	2	1	4	5	0	0	0	12

96 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9688
COEFFICIENT OF SCALABILITY = 0.8776

Table 33
 Standing Figures: Four Facial Traits
 Group 2

BE OVAL-CIRCULAR
 V12 NOSE-NATURALISTIC
 XR STYLIZED EARS
 OM RECTANGULAR MOUTH

ITEM..	BE		V12		XR		OM		TOTAL
RESP..	0	1	0	1	0	1	0	1	
	I-ERR-----I		I-ERR-----I		I-ERR-----I		I-ERR-----I		
T	I	I	I	I	I	I	I	I	
A	4	0	0	0	0	0	0	0	0
B	I-----ERRI				I		I	I	
L	I	I	I	I	I	I	I	I	
E	3	0	0	0	0	0	0	0	0
-	I		I-----ERRI				I	I	
3	I	I	I	I	I	I	I	I	
3	2	1	0	1	0	0	1	1	1
	I		I		I-----ERRI		I		
	I		I		I		I		
	1	18	0	18	0	18	0	18	18
	I		I		I		I-----ERRI		
	I		I		I		I		
	0	16	0	16	0	16	0	16	16
	I-----I		I-----I		I-----I		I-----I		
SUMS	35	0	35	0	34	1	16	19	35
PCTS	100	0	100	0	97	3	46	54	
ERRORS	0	0	0	0	0	0	0	0	0

36 CASES WERE PROCESSED
 1 (OR 2.8 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 1.0000
 COEFFICIENT OF SCALABILITY = 1.0000

Table 34

Standing Figures: Four Combined Facial Traits
Group 2

AE RECTANGULAR EYES
ON TRIANGULAR NOSE
ER PROJECTING EARS
OM RECTANGULAR MOUTH

ITEM..	ON		OM		AE		ER		TOTAL
	0	1	0	1	0	1	0	1	
RESP..	0	1	0	1	0	1	0	1	TOTAL
	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I-ERR	I
T	I	I	I	I	I	I	I	I	I
A	4	0	8	0	8	0	8	0	8
B	I	ERR	I	ERR	I	ERR	I	ERR	I
L	I	I	I	I	I	I	I	I	I
E	3	10	3	2	11	0	13	1	12
-	I	I	I	ERR	I	ERR	I	ERR	I
3	I	I	I	I	I	I	I	I	I
4	2	12	11	13	0	1	12	0	13
	I	I	I	I	I	ERR	I	ERR	I
	I	I	I	I	I	I	I	I	I
	1	1	1	2	0	2	0	1	1
	I	I	I	I	I	I	I	ERR	I
	I	I	I	I	I	I	I	I	I
	0	0	0	0	0	0	0	0	0
	I	I	I	I	I	I	I	I	I
SUMS	23	13	17	19	3	33	2	34	36
PCTS	64	36	47	53	8	92	6	94	
ERRORS	0	5	2	0	1	0	2	0	10

36 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9306
COEFFICIENT OF SCALABILITY = 0.7143

Table 35
 Standing Figures: Four Facial Traits
 Group 1

AE RECTANGULAR EYES
 ON TRIANGULAR NOSE
 ER PROJECTING EARS
 V20 MOUTH-OVAL-LIPS-SLIT

ITEM..	AE		V20		ON		ER		TOTAL
RESP..	0	1	0	1	0	1	0	1	
	I-ERR-----I		I-ERR-----I		I-ERR-----I		I-ERR-----I		
T	I		I		I		I		I
A	4	I	0	0	0	I	0	0	0
B	I-----ERRI				I		I		I
L	I		I		I		I		I
E	3	I	0	0	0	I	0	0	0
-	I-----ERRI				I		I		I
3	I		I		I		I		I
S	2	I	1	0	1	0	1	0	1
	I		I		I-----ERRI		I		I
	I		I		I		I		I
	1	I	23	0	23	0	23	0	23
	I		I		I		I-----ERRI		I
	I		I		I		I		I
	0	I	54	0	54	0	54	0	54
	I-----ERRI				I-----ERRI		I-----ERRI		I
SUMS	78	0	78	0	77	1	54	24	78
PCTS	100	0	100	0	99	1	69	31	
ERRORS	0	0	0	0	0	0	0	0	0

88 CASES WERE PROCESSED
 10 (OR 11.4 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 1.0000
 COEFFICIENT OF SCALABILITY = 1.0000

Table 36
 Standing Figures: Four Facial Traits
 Group 3

OE OVAL EYES
 V12 NOSE-NATURALISTIC
 XR STYLIZED EARS
 V22 MOUTH-SLIT-NO LIPS

ITEM..	V12		XR		V22		OE		TOTAL
RESP..	0	1	0	1	0	1	0	1	
	I-ERR-----		I-ERR-----		I-ERR-----		I-ERR-----		
T	I	I	I	I	I	I	I	I	
A	4	0	37	0	37	0	37	0	37
B	I-----ERRI			I		I		I	
L	I	I	I	I	I	I	I	I	
E	3	7	5	3	9	2	10	0	12
-	I	I-----ERRI			I		I		
3	I	I	I	I	I	I	I	I	
6	2	21	0	20	1	1	20	0	21
	I	I	I	I	I-----ERRI			I	
	I	I	I	I	I	I	I	I	
	1	4	0	4	0	4	0	4	4
	I	I	I	I	I	I	I-----ERRI		
	I	I	I	I	I	I	I	I	
	0	0	0	0	0	0	0	0	0
	I-----		I-----		I-----		I-----		
SUMS	32	42	27	47	7	67	0	74	74
PCTS	43	57	36	64	9	91	0	100	
ERRORS	0	5	3	1	3	0	0	0	12

88 CASES WERE PROCESSED
 14 (OR 15.9 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9595
 COEFFICIENT OF SCALABILITY = 0.0102

Table 37

Standing Figures: Three Body Traits
Total Group

V32 LEG TRAITS-ANKLE KNOBS
V33 LEG TRAITS-KNEES MODELED
V35 LEGS SHAPE-HEAVY-TAPERED

ITEM..	V33			V35			V32			TOTAL
RESP..	0	1	I	0	1	I	0	1	I	
	I-ERR-----			I-ERR-----			I-ERR-----			I
T	I		I		I		I		I	
A	3	I	0	38	I	0	38	I	0	38
B	I	-----ERRI					I		I	
L	I		I		I		I		I	
E	2	I	14	14	I	8	20	I	6	22
-	I		I	-----ERRI					I	
3	I		I		I		I		I	
7	1	I	31	4	I	30	5	I	9	26
	I		I		I		I	-----ERRI		
	I		I		I		I		I	
	0	I	98	0	I	98	0	I	98	0
	I-ERR-----			I-ERR-----			I-ERR-----			I
SUMS	143	56	136	63	113	86	199			
PCTS	72	28	68	32	57	43				
ERRORS	0	18	8	5	15	0	46			

220 CASES WERE PROCESSED
21 (OR 9.5 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9229
COEFFICIENT OF SCALABILITY = 0.7756

Table 38

Standing Figures: Four Body Traits
Total Group

V32 LEG TRAITS-ANKLE KNOBS
V33 LEG TRAITS-KNEES MODELED
V35 LEGS SHAPE-HEAVY-TAPERED
V42 TORSO-CHEST MUSCLES

ITEM..	V42		V33		V35		V32		TOTAL	
RESP..	0	1	0	1	0	1	0	1	0	1
T	I	I	I	I	I	I	I	I	I	I
A	4	0	26	0	26	0	26	0	26	26
B	I	ERR	I	I	I	I	I	I	I	I
L	I	I	I	I	I	I	I	I	I	I
E	3	12	12	2	22	7	17	3	21	24
-	I	I	ERR	I	I	I	I	I	I	I
3	I	I	I	I	I	I	I	I	I	I
8	2	16	5	16	5	6	15	4	17	21
	I	I	I	I	ERR	I	I	I	I	I
	I	I	I	I	I	I	I	I	I	I
	1	30	0	27	3	25	5	8	22	30
	I	I	I	I	I	I	ERR	I	I	I
	I	I	I	I	I	I	I	I	I	I
	0	98	0	98	0	98	0	98	0	98
	I	I	I	I	I	I	I	I	I	I
SUMS	156	43	143	56	136	63	113	86		199
PCTS	78	22	72	28	68	32	57	43		
ERRORS	0	17	2	8	13	5	15	0		60

220 CASES WERE PROCESSED
21 (OR 9.5 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9246
COEFFICIENT OF SCALABILITY = 0.7581

Table 39

Standing Figures: Three Body Traits
Group 1

V35 LEGS SHAPE-HEAVY-TAPERED
V38 HIP SHAPE-MASSIVE-BULBOUS
V45 TORSO-BROAD-SHAPELESS

ITEM..	V45			V38			V35			TOTAL
RESP..	0	1	0	1	1	0	1	1	0	
T	I		I		I		I		I	
A	3	I	0	2	I	0	2	I	0	2
B	I		ERR	I		ERR	I		ERR	I
L	I		I		I		I		I	
E	2	I	37	3	I	3	37	I	0	40
-	I		I		I		ERR		ERR	I
3	I		I		I		I		I	
9	1	I	23	3	I	26	0	I	3	23
	I		I		I		I		ERR	I
	I		I		I		I		I	
	0	I	27	0	I	27	0	I	27	0
SUMS	87		8	56		39	30		65	95
PCTS	92		8	59		4	32		60	
ERRORS	0		6	3		0	3		0	12

96 CASES WERE PROCESSED
1 (OR 1.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9579
COEFFICIENT OF SCALABILITY = 0.8442

Table 40

Standing Figures: Three Body Traits
Group 2

V37 LEGS SHAPE-THIN-CYLINDRICAL
V41 HIP SHAPE-THIN-SHAPELESS
V45 TORSO-BROAD-SHAPELESS

ITEM..	V45		V41		V37		TOTAL
RESP..	0	1	0	1	0	1	
	I-ERR-----I		I-ERR-----I		I-ERR-----I		
T	I		I		I		I
A	3	0	6	0	6	0	6
B	I-----ERRI				I		I
L	I		I		I		I
E	2	12	11	0	13	1	12
-	I		I-----ERRI				I
4	I		I		I		I
0	1	11	0	9	2	2	9
	I		I		I-----ERRI		I
	I		I		I		I
0	I	3	0	3	0	3	0
	I-----I		I-----I		I-----I		I
SUMS	26	7	12	21	6	27	33
PCTS	79	21	36	64	18	82	
ERRORS	0	1	0	2	3	0	6

36 CASES WERE PROCESSED
3 (OR 8.3 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9394
COEFFICIENT OF SCALABILITY = 0.7600

Table 41
 Standing Figures: Four Body Traits
 Group 3

V36 LEGS SHAPE-THICK-COLUMNAR
 V40 HIP SHAPE-WIDE-SHAPELESS
 V42 TORSO-CHEST MUSCLES
 V43 TORSO-FULL-MUSCULAR

ITEM..	V42		V43		V40		V36		TOTAL
RESP..	0	1	0	1	0	1	0	1	
T	I	I	I	I	I	I	I	I	
A	4	0	0	0	0	0	0	0	0
B	I	ERRI	I	I	I	I	I	I	
L	I	I	I	I	I	I	I	I	
E	3	1	0	0	1	0	1	0	1
-	I	I	ERRI	I	I	I	I	I	
4	I	I	I	I	I	I	I	I	
1	2	58	0	58	0	0	58	0	58
I	I	I	I	I	ERRI	I	I	I	
I	I	I	I	I	I	I	I	I	
1	1	2	0	2	0	2	0	0	2
I	I	I	I	I	I	I	ERRI	I	
I	I	I	I	I	I	I	I	I	
0	1	17	0	17	0	17	0	17	17
I	I	I	I	I	I	I	I	I	
SUMS	78	0	77	1	19	59	17	61	78
PCTS	100	0	99	1	24	76	22	78	
ERRORS	0	0	0	0	0	0	0	0	0

88 CASES WERE PROCESSED
 10 (OR 11.4 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 1.0000
 COEFFICIENT OF SCALABILITY = 1.0000

Table 42

Standing Figures:
Eight Combined Body and Facial Traits
Total Group

AE RECTANGULAR EYES
ER PROJECTING EARS
DM RECTANGULAR MOUTH
V32 LEG TRAITS-ANKLE KNOBS
V33 LEG TRAITS-KNEES MODELED
V35 LEGS SHAPE-HEAVY-TAPERED
AH FULL HIPS
V43 TORSO-FULL-MUSCULAR

ITEM..	V33	V35		V43		AH		V32		AE		DM		ER		
RESP..	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0
T	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
A	8	1	0	26	1	0	26	1	0	26	1	0	26	1	0	26
B	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
L	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
C	7	1	5	13	1	4	14	1	2	16	1	0	18	1	4	14
4	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
2	5	1	3	31	1	3	31	1	2	41	1	0	61	1	0	61
5	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
4	1	9	21	6	5	4	7	1	0	11	1	6	5	1	6	5
3	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
4	1	7	11	8	0	1	8	0	1	6	2	1	6	1	0	8
3	1	21	11	22	0	1	22	0	1	20	2	1	13	9	1	19
2	1	13	0	13	0	1	12	1	1	13	0	1	11	2	1	6
1	1	20	1	21	0	1	21	0	1	18	3	1	21	0	1	20
0	1	47	0	47	0	1	47	0	1	47	0	1	47	0	1	47
SUMS	125	47	124	48	118	54	107	65	101	71	90	82	87	85	14	14
PCTS	73	27	72	28	69	31	62	38	59	41	52	48	51	49	31	31
ERRORS	9	21	6	2	4	2	2	4	12	14	16	7	20	1	7	7

179 CASES WERE PROCESSED
7 (OR 3.9 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9084
COEFFICIENT OF SCALABILITY = 0.7510

Table 43

Standing Figures:
Five Combined Body and Facial Traits
Total Group

AE RECTANGULAR EYES
ER PROJECTING EARS
OM RECTANGULAR MOUTH
V35 LEGS SHAPE-HEAVY-TAPERED
AH FULL HIPS

ITEM..	V35	AH		AE		OM		ER		TOTAL	
RESP..	0	1	0	1	0	1	0	1	0	1	
T	I	I	I	I	I	I	I	I	I	I	
A	5	0	42	0	42	0	42	0	42	42	
B	I	-----ERRI	I	I	I	I	I	I	I	I	
L	I	I	I	I	I	I	I	I	I	I	
E	4	6	7	0	13	5	6	2	11	0	13
-	I	I	-----ERRI	I	I	I	I	I	I	I	
4	I	I	I	I	I	I	I	I	I	I	
3	3	27	0	18	9	8	19	1	26	0	27
	I	I	I	I	I	-----ERRI	I	I	I	I	
	I	I	I	I	I	I	I	I	I	I	
	2	24	0	19	5	9	15	19	5	1	23
	I	I	I	I	I	I	-----ERRI	I	I	I	
	I	I	I	I	I	I	I	I	I	I	
	1	20	0	20	0	20	0	17	3	3	17
	I	I	I	I	I	I	I	I	-----ERRI	I	
	I	I	I	I	I	I	I	I	I	I	
	0	5	0	5	0	5	0	5	0	5	5
	I	-----ERRI	I	I	I	I	I	I	I	I	
SUMS	128	49	108	69	93	84	90	87	55	122	177
PCTS	72	28	61	39	53	47	51	49	31	69	
ERRORS	0	7	0	14	13	15	22	3	4	0	78

179 CASES WERE PROCESSED
2 (OR 1.1 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9119
COEFFICIENT OF SCALABILITY = 0.7733

Table 44

Standing Figures:
Five Combined Body and Facial Traits
Group 3

V35
AH
AE
ER
OM

ITEM..	V35	AE		OM		AH		ER		TOTAL
RESP..	0	1	0	1	0	1	0	1	0	1
T	I	I	I	I	I	I	I	I	I	I
A	5	0	42	0	42	0	42	0	42	42
B	I	ERRI		I	I	I	I	I	I	I
L	I	I	I	I	I	I	I	I	I	I
E	4	6	7	5	8	2	11	0	13	13
-	I	ERRI		I	I	I	I	I	I	I
4	3	10	0	8	2	1	9	1	9	10
I	I	I	I	ERRI		I	I	I	I	I
I	I	I	I	I	I	I	I	I	I	I
2	1	5	0	5	0	5	0	5	0	5
I	I	I	I	I	I	ERRI		I	I	I
I	I	I	I	I	I	I	I	I	I	I
1	1	0	0	0	0	0	0	0	0	0
I	I	I	I	I	I	I	I	ERRI		I
I	I	I	I	I	I	I	I	I	I	I
0	1	0	0	0	0	0	0	0	0	0
I	I									
SUMS	21	49	18	52	8	62	1	69	0	70
PCTS	30	70	26	74	11	89	1	99	0	100
ERRORS	0	7	5	2	3	0	1	0	0	19

70 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9486
COEFFICIENT OF SCALABILITY = 0.6250

Table 45
 Standing Figures:
 Five Combined Body and Facial Traits
 Group 2

AE RECTANGULAR EYES
 ER PROJECTING EARS
 OM RECTANGULAR MOUTH
 V37 LEGS SHAPE-THIN-CYLINDRICAL
 BH SHAPELESS HIPS

ITEM..	OM	V37		ER		AE		BH		TOTAL	
RESP..	0	1	0	1	0	1	0	1	0	1	
T	I	I	I	I	I	I	I	I	I	I	
A	S	0	14	0	14	0	14	0	14	0	14
B	I	ERRI		I	I	I	I	I	I	I	
L	I	I	I	I	I	I	I	I	I	I	
E	4	I	12	2	12	0	14	0	14	0	14
4	I	I	ERRI		I	I	I	I	I	I	
S	3	I	2	1	3	0	1	2	0	3	3
	I	I	I	ERRI		I	I	I	I	I	
	I	I	I	I	I	I	I	I	I	I	
	2	I	0	0	0	0	0	0	0	0	0
	I	I	I	I	I	ERRI		I	I	I	
	I	I	I	I	I	I	I	I	I	I	
	1	I	0	0	0	0	0	0	0	0	0
	I	I	I	I	I	I	I	ERRI		I	
	I	I	I	I	I	I	I	I	I	I	
	0	I	0	0	0	0	0	0	0	0	0
	I	ERRI		I	I	I	I	I	I	I	
SUMS		14	17	5	26	1	30	0	31	0	31
PCTS		45	55	16	84	3	97	0	100	0	100
ERRORS		0	3	2	0	1	0	0	0	0	0

32 CASES WERE PROCESSED
 1 (OR 3.1 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9613
 COEFFICIENT OF SCALABILITY = 0.7000

Table 46

Standing Figures:
Five Combined Body and Facial Traits
Group 3

UE UVAL EYES
XR STYLIZED EARS
V22 MOUTH-SLIT-NO LIPS
BH SHAPELESS HIPs
V36 LEGS SHAPE-THICK-COLUMNAR

ITEM..	XR		V36		V22		UE		BH		TOTAL
RESP..	0	1	0	1	0	1	0	1	0	1	
T	I	I	I	I	I	I	I	I	I	I	I
A	5	0	37	0	37	0	37	0	37	0	37
B	I	-----ERRI	I	I	I	I	I	I	I	I	I
L	I	I	I	I	I	I	I	I	I	I	I
E	4	13	51	4	14	1	17	0	16	0	16
-	I	I	I	-----ERRI	I	I	I	I	I	I	I
4	I	I	I	I	I	I	I	I	I	I	I
6	3	7	21	9	01	2	7	0	9	0	9
	I	I	I	I	I	-----ERRI	I	I	I	I	I
	I	I	I	I	I	I	I	I	I	I	I
	2	4	01	4	01	4	01	0	4	0	4
	I	I	I	I	I	I	I	-----ERRI	I	I	I
	I	I	I	I	I	I	I	I	I	I	I
	1	0	01	0	01	0	01	0	01	0	01
	I	I	I	I	I	I	I	I	I	-----ERRI	I
	I	I	I	I	I	I	I	I	I	I	I
	0	0	01	0	01	0	01	0	01	0	01
	I	I	I	I	I	I	I	I	I	I	I
SUMS	24	44	17	51	7	61	0	68	0	63	68
PCTS	35	65	25	75	10	90	0	100	0	100	
ERRORS	0	7	4	0	3	0	0	0	0	0	14

77 CASES WERE PROCESSED
9 (OR 11.7 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9588
COEFFICIENT OF SCALABILITY = 0.7083

Table 47

Standing Figures:
Five Combined Body and Facial Traits
Group 1 and 2

V35 LEGS SHAPE-HEAVY-TAPERED
AH FULL HIPS
AE RECTANGUALR EYES
ER PROJECTING EARS
OM RECTANGULAR MOUTH

ITEM..	V35	AH		OM		AE		ER		TOTAL
RESP..	0	1	0	1	0	1	0	1	0	1
T	I	I	I	I	I	I	I	I	I	I
A	5 I 0	42I	0	42I	0	42I	0	42I	0	42I
B	I	ERRI	I	I	I	I	I	I	I	I
L	I	I	I	I	I	I	I	I	I	I
E	4 I 6	7I	0	13I	2	11I	5	8I	0	13I
4	I	I	ERRI	I	I	I	I	I	I	I
7	3 I 27	0I	18	9I	1	26I	8	19I	0	27I
I	I	I	I	I	ERRI	I	I	I	I	I
I	I	I	I	I	I	I	I	I	I	I
2	I 20	0I	15	5I	19	1I	5	15I	1	19I
I	I	I	I	I	I	ERRI	I	I	I	I
I	I	I	I	I	I	I	I	I	I	I
1	I 0	0I	0	0I	0	0I	0	0I	0	0I
I	I	I	I	I	I	I	I	I	ERRI	I
I	I	I	I	I	I	I	I	I	I	I
0	I 0	0I	0	0I	0	0I	0	0I	0	0I
I	I	I	I	I	I	I	I	I	I	I
SUMS	53	49	33	69	22	80	18	84	1	101
PCTS	52	48	32	68	22	78	18	82	1	99
ERRORS	0	7	0	14	3	1	18	0	1	0

102 CASES WERE PROCESSED
0 (OR 0.0 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9137
COEFFICIENT OF SCALABILITY = 0.6423

Table 48

Standing Figures:
Five Combined Body and Facial Traits
Groups 2 and 3

OE OVAL EYES
XR STYLIZED EARS
V22 MOUTH-SLIT-NO LIPS
BH SHAPELESS HIPS
V36 LEGS SHAPE-THICK-COLUMNAR

ITEM..	XR		V36		OE		V22		BH		TOTAL
RESP..	0	1	0	1	0	1	0	1	0	1	
	I-ERR		I-ERR		I-ERR		I-ERR		I-ERR		I
T.	I	I	I	I	I	I	I	I	I	I	
A	5	0	37	0	37	0	37	0	37	0	37
B	I-ERR		ERRI		I		I		I		I
L	I	I	I	I	I	I	I	I	I	I	
E	4	13	5	4	14	0	10	1	17	0	10
-	I		I-ERR		I		I		I		I
4	I	I	I	I	I	I	I	I	I	I	
B	3	8	3	9	2	2	9	3	8	0	11
	I		I		I-ERR		I		I		I
	I		I		I		I		I		I
	2	14	0	12	2	10	4	6	8	0	14
	I		I		I		I-ERR		I		I
	I		I		I		I		I		I
	1	18	0	18	0	18	0	18	0	0	18
	I		I		I		I		I-ERR		I
	I		I		I		I		I		I
	0	0	0	0	0	0	0	0	0	0	0
	I-ERR		I		I-ERR		I		I-ERR		I
SUMS	53	45	43	55	30	68	28	70	0	98	98
PCTS	54	46	44	56	31	69	29	71	0	100	
ERRORS	0	8	4	4	2	4	10	0	0	0	32

109 CASES WERE PROCESSED
11 (OR 10.1 PCT) WERE MISSING

STATISTICS..

COEFFICIENT OF REPRODUCIBILITY = 0.9347
COEFFICIENT OF SCALABILITY = 0.7808

Table 49
Effigy Grinding Stones:
Graphic Illustration of Scalogram
Group 1

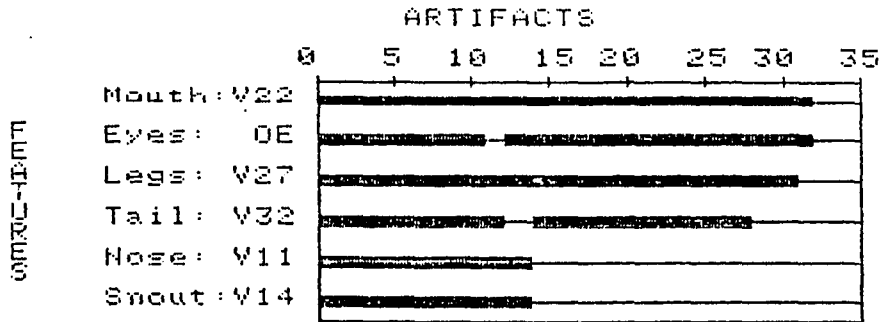


Table 51

Effigy Grinding Stones:
Graphic Illustration of Scalogram
Group 3

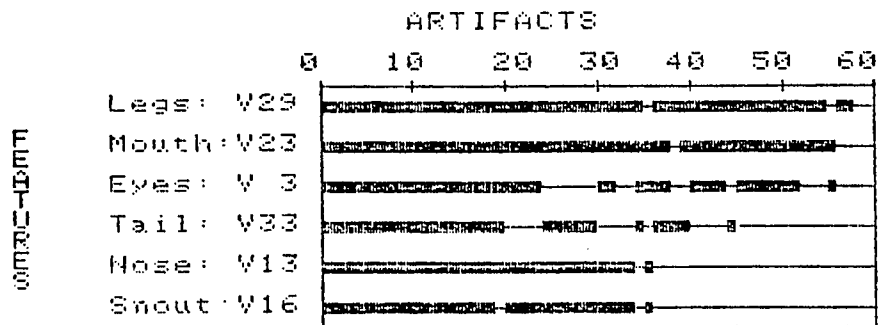


Table 52

Standing Human Figures:
Graphic Illustration of Scalogram
Group 1

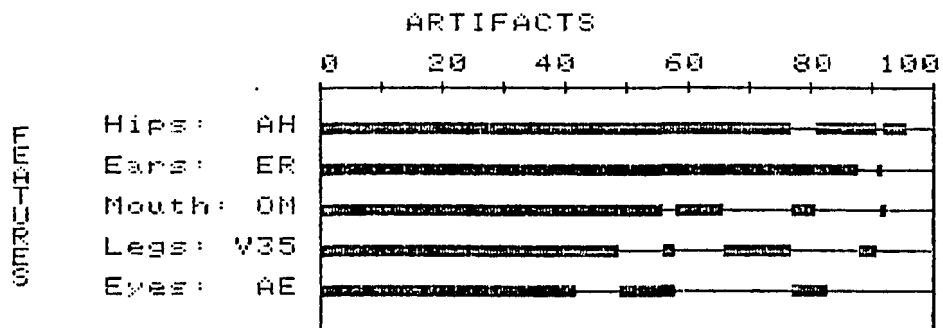


Table 53
 Standing Human Figures:
 Graphic Illustration of Scalogram
 Group 2

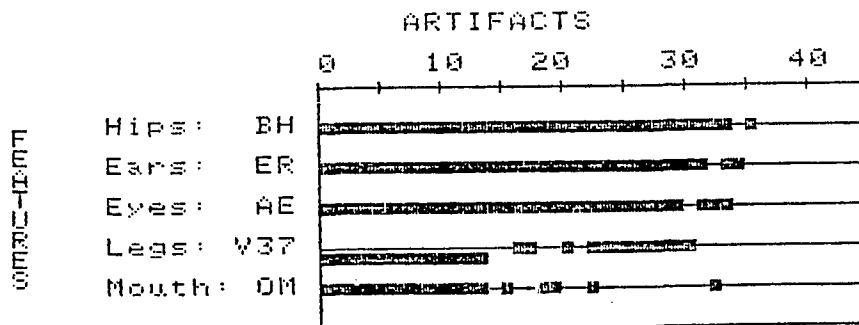
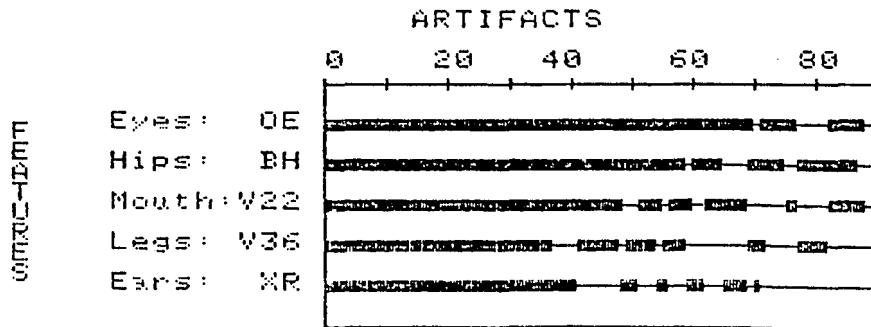


Table 54
 Standing Human Figures:
 Graphic Illustration of Scalogram
 Group 3



EFFIGY GRINDING STONES
ALL GROUPS
ARTIFACTS

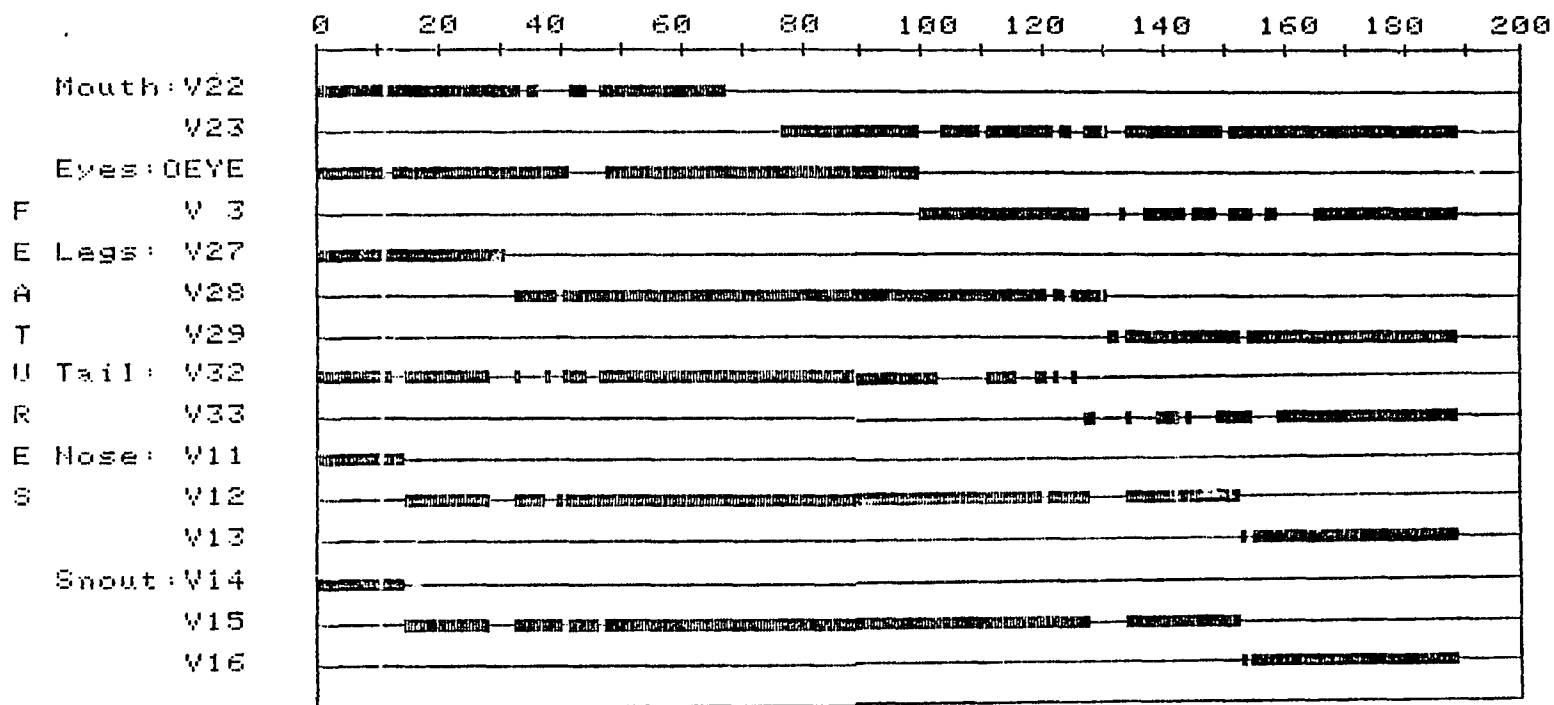


Table 55. Graphic Illustration of Scalogram for All Groups

STANDING HUMAN IMAGES
ALL GROUPS
ARTIFACTS

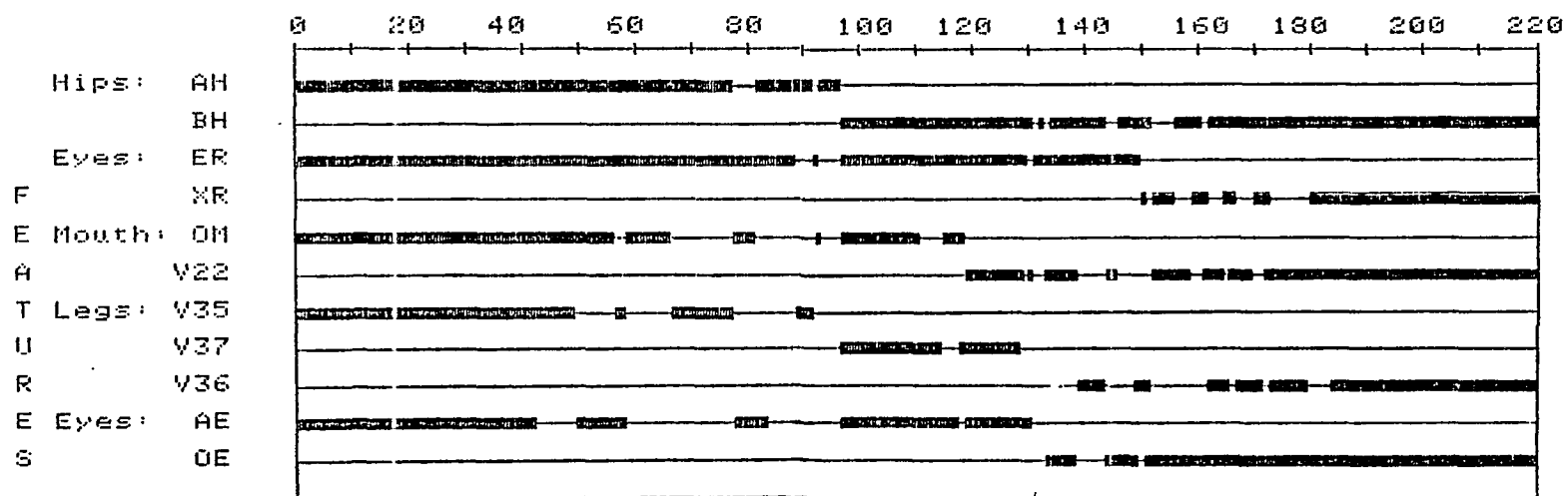


Table 56. Graphic Illustration of Scalogram for All Groups

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