THE TEOTIHUACAN VALLEY PROJECT

FINAL REPORT — VOLUME 4

THE TOLTEC PERIOD OCCUPATION OF THE VALLEY

Part 2 — Surface Survey and Special Studies

Edited and Compiled by:

William T. Sanders

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Department of Anthropology

The Pennsylvania State University

University Park, Pennsylvania

TABLE OF CONTENTS

Chapter		Page
	Part 1. Excavations and Ceramics	
	Preface	3
1	Excavations at Maquixco Bajo (TT25A) Thomas H. Koehler	7
2	Excavations at Xometla (TT21) Deborah Nichols and John McCullough	53
3	Excavations at Oxtotipac (TT82) Kenneth Good and Gerald Obermeyer	195
4	Excavations at Cuanalan East (TT28) William T. Sanders and Horacio Corona Olea	267
5	Analysis of the Surface Sample Ceramics Susan T. Evans	283
6	Ceramic Chronology William T. Sanders	367
	Part 2. Surface Survey and Special Studies	
	Preface	377
7	The Surface Survey Joseph D. Marino	381
8	Mapping Toltec Period Settlement in the Teotihuacan Valley: Commentary William T. Sanders and Carson N. Murdy	517
9	Surface Survey of the Upper Valley Thomas H. Charlton	539
10	Faunal Remains from Archaeological Sites in the Teotihuacan Valley Richard S. White, Jr.	577
11	Aplastic Analysis of Toltec Ceramics Ronald Corbyn	615
12	Non-Ceramic Artifacts from Oxtotipac, Xometla, and Cuanalan East William T. Sanders	641
13	Ceramic Figurines from Oxtotipac Warren Barbour	697

PREFACE

This monograph is Part 2 of Volume 4 of the final reports of the Teotihuacan Valley Project. Volume 4 deals with the Toltec Period, that segment of the occupation of the valley between the decline of Classic civilization, and the great city of Teotihuacan, and the rise of the Aztecs; this period dates from approximately A.D. 800 to 1200.

Part 1 of this volume consists of a description of the excavations at four Toltec Period sites; in terms of artifact analysis it focuses on ceramics and ceramic chronology. Also included in Part 1 is the analysis of the ceramic surface collections from the survey. Part 2 includes the report on the surface survey and a series of specialized studies.

A major activity and objective of the Teotihuacan Valley Project was a surface survey of the valley. This was done in two stages. Stage 1 consisted of what we called general survey, in which survey teams moved rapidly over large areas of the valley and recorded sites on tracings of aerial photographs, at a scale of 1:25,000. At that time, a preliminary assessment of the dating of the site was made on the basis of a cursory examination of surface pottery. This survey was completed between the years 1960 and 1963. In 1963, we began and completed more intensive surveys of the located sites and recorded the data on a site schedule, which is included as an appendix in the chapter by Joseph D. Marino. The intensive survey of the Toltec sites of the valley was conducted in 1963, primarily by John McCullough, with the assistance of William T. Sanders and Jeffrey R. Parsons. Subsequent to this survey conducted as part of the Teotihuacan Valley Project, Jeffrey R. Parsons obtained a separate National Science Foundation (NSF) grant in 1966, and completed some of the gaps in the survey areas; from 1968 to 1969, Thomas Charlton resurveyed many of the areas in the Upper Valley in a search for colonial sites. At the same time, he recorded all Prehispanic occupations. This survey was more intensive than those of the original survey and his research added additional Toltec sites. The initial survey was written up by Joseph D. Marino, a graduate student at The Pennsylvania State University during the Teotihuacan Valley Project, who, with William T. Sanders, did most of the intial, or general, survey that located many of the prehistoric sites in the valley. Marino then asisted Charles Kolb in the intensive survey of the Classic Teotihuacan sites, a survey analyzed by Charles Kolb and included in his Ph.D. dissertation. Marino analyzed the data from the Toltec site surveys and used them for his Ph.D. dissertation. At that time, he was a member of the faculty of California State College in Pennsylvania. Because of the long lapse of time between McCullough's, Parson's, and Sanders's compilation of the data on the Toltec period, Marino returned to the Valley in 1973 with several students from California State College and reexamined all of the Toltec sites, in some cases making amendments to the data from the original survey.

As the reader will have noted, the production of the data from the survey was a complex process involving many people over a long period of time, not the ideal way to conduct research. Our major problem during the years of the Teotihuacan Valley Project was that, although we offered a Master's degree, we did not have a doctoral program at The Pennsylvania State University, and the project was, from the beginning, viewed as intimately related to the development of graduate studies at the university. What this meant was that many of the students who conducted the original surveys left the university and enrolled in doctoral programs in other institutions before the analysis of the data, and the writing of the reports took place. Because of the complexity of the

processing of the data, these reports on the Toltec Period suffer a certain lack of integration. We decided to resolve the problem in the following way.

Chapter 7 is essentially the descriptive part of Joseph D. Marino's Ph.D. dissertation. We have reduced the methodological section to bare essentials because the methods are described in more detail in Volume 2 of our series, that dealing with the Formative Period. We have also deleted the more theoretical parts of Marino's dissertation since the aim of the first five volumes of the project reports is to present a body of data and reserve a more analytical treatment for the final volume. In the process of conversion of the dissertation into a chapter for this publication, we encountered a number of problems. We also made the decision to assign separate numbers to each component of our two-part division of the Toltec Period (Early and Late). For these reasons, we have made some amendments to the body of Marino's dissertation and have added an additional chapter concerning the the survey written and compiled by William T. Sanders and Carson N. Murdy. In that chapter, we discuss a variety of problems in interpretation, summarize the data from the survey, in chart form, and re-do the maps of the survey area for the Toltec Period. That chapter, Chapter 8, could be considered as simply the concluding section of Marino's paper.

During the conduct of the original survey of the valley, and all subsequent surveys in the Basin of Mexico, we were constantly faced with the problem of how much time to spend on a particular site. This was a constant problem because our object was always the larger picture of population and community distribution on the landscape. With our primary interest in reconstructing land use and settlement systems, we always felt compelled to cover as much ground as possible and to obtain a 100% survey coverage. This meant sacrificing detail and information on particular sites to obtain a broader regional survey. The problem of a survey of this type was particularly acute for the Late Toltec Period when the population was distributed in a great number of small settlemets, many less than 1 ha in size. For this reason, we decided to publish parallel surveys for that portion of the valley more intensively surveyed by Thomas Charlton, and have added an additional survey chapter (Chapter 9), by him, of an area in the southeastern portion of the Upper Valley. What Charlton's survey accomplished was to add a number of small Toltec sites missed in the intitial survey, and to convert some of what we called trace occupations (which were greatly masked by a much heavier Aztec occupation in the same area) into small hamlets.

The balance of the volume consists of a series of special studies. Sanders presents a very preliminary description and study of the ground stone, shell, and bone artifacts from the excavated sites reported in Part 1 (Chapter 12). Corbyn, who at the time he wrote his chapter was a Master's degree candidate at The Pennsylvania State Univeristy, did a technical analysis of Toltec ceramics, which is reported in Chapter 11; White analyzed all of the faunal remains from our excavations, including those from the Classic and Formative Periods as well as the Toltec, and this study is presented in Chapter 10. Warren Barbour, who assisted in the survey of 1963, presents an analysis of the figurines and other ceramic artifacts from the excavations.

Still to be published from the Project are two volumes on the Classic and Aztec occupations, a volume on the obsidian industry and the final synthesis of the project.

We acknowledge the services of Candace Levy who performed the herculean task of the editoral preparation of the Toltec volume for publication. Finally, we dedicate Part 2 of Volume 4 to Joseph D. Marino, who participated in all four years of the Project, from 1960 to 1964, and wrote a Master's thesis and a Ph.D.dissertation from data generated by the Project. He was my first graduate student, a close friend, and one of the most energetic, enthusiastic co-workers I have had the pleasure of working with in my thirty-five years of research in Mesoamerica.

William T. Sanders
The Pennsylvania State University
University Park, Pennsylvania
June 1987

CHAPTER 7

THE SURFACE SURVEY

by

Joseph D. Marino

TABLE OF CONTENTS

Page

LIST OF TABLES 385

LIST OF FIGURES 386

LIST OF PLATES 387

INTRODUCTION 388
Location and Limits of the Survey Area 388
Methodology 388
Survey Personnel 389
The 1973 Survey 390
Site Typology 392

SITE DESCRIPTIONS: THE LOWER VALLEY 393
Natural and Cultural Geography 393
Zone 1: The Delta 393
Zone 2: Lower Valley, The Irrigated Plain 394
Zone 3: The West Piedmont 395
Zone 4: Lower Valley, East Piedmont 395
Zone 5: Lower Valley, North Piedmont 395
TT-1 (Late Toltec) 396
TT-2 (Early Toltec) — TT-146 (Late Toltec) 396
TT-3 (Early Toltec) — TT-147 (Late Toltec) 397
TT-4 (Early Toltec) — TT-148 (Late Toltec) 398
TT-5 (Early Toltec) — TT-149 (Late Toltec) 399
TT-6 (Early Toltec) — TT-150 (Late Toltec) 400
TT-7 (Late Toltec) 400
TT-8 (Early Toltec) — TT-151 (Late Toltec) 401
TT-9 (Early Toltec) 401
TT-10 (Early Toltec) — TT-152 (Late Toltec) 402
TT-11 (Early Toltec) — TT-153 (Late Toltec) 404
TT-12 (Early Toltec) — TT-154 (Late Toltec) 405
TT-13 (Early Toltec) 405
TT-14 (Late Toltec) 405
TT-15 (Late Toltec) 407
TT-16 (Late Toltec) 408
TT-17 (Early Toltec) — TT-155 (Late Toltec) 408
TT-18 (Early Toltec) — TT-156 (Late Toltec) 409
TT-19 (Early Toltec) — TT-157 (Late Toltec) 410
TT-20 (Early Toltec) — TT-158 (Late Toltec) 411
TT-21 (Early Toltec) — TT-159 (Late Toltec) 413
TT-22 (Early Toltec) — TT-160 (Late Toltec) 414
TT-23 (Early Toltec) — TT-161 (Late Toltec) 415
TT-24 (Early Toltec) — TT-162 (Late Toltec) 416
TT-26 (Late Toltec) — TT-164 (Early Toltec) 417
TT-28 (Early Toltec) — TT-166 (Late Toltec) 418
TT-108 (Late Toltec) — TT-175 (Early Toltec) 419

TT-109 (Late Toltec) 420
TT-110 (Late Toltec) — TT-176 (Early Toltec) 421
TT-132 (Late Toltec) 421
TT-133 (Late Toltec) 421
TT-144 (Early Toltec) — TT-178 (Late Toltec) 422

SITE DESCRIPTIONS: THE NORTH TRIBUTARY VALLEYS 424
TT-29 (Early Toltec) 424
TT-111 (Late Toltec) 425
TT-112 (Late Toltec) 425
TT-113 (Late Toltec) 425
TT-114 (Late Toltec) 426
TT-115 (Late Toltec) 426
TT-116 (Late Toltec) 426
TT-117 (Late Toltec) 427
TT-145 (Early Toltec) — TT-179 (Late Toltec) 427
TT-65 (Early Toltec) — TT-171 (Late Toltec) 427

SITE DESCRIPTIONS: THE MIDDLE VALLEY 431
Natural and Cultural Geography 431
Zone 6: The Archaeological Zone 431
Zone 2: Middle Valley, Floodwater Plain 434
Zone 9: Middle Valley, South Piedmont 435
Zone 10: Middle Valley, North Piedmont 436
TT-25 (Early Toltec) — TT-163 (Late Toltec) 437
TT-27 (Early Toltec) — TT-165 (Late Toltec) 442
TT-30 (Early Toltec) — TT-167 (Late Toltec) 443
TT-123 (Late Toltec) — TT-177 (Late Toltec) 444
TT-72 and TT-78 (Early Toltec) 444
TT-72 (Early Toltec) 445
TT-78 (Late Toltec) 445
TT-122 and TT-125 (Late Toltec) 446
TT-124 (Late Toltec) 447
TT-71 (Early Toltec) — TT-172 (Late Toltec) 448
TT-81 (Early Toltec) 448
TT-84 (Early Toltec) — TT-173 (Late Toltec) 449
TT-39 to TT-45 (Late Toltec) — TT-85 (Early Toltec) 449
TT-46 to TT-58 (Late Toltec) — TT-87 and TT-168 to TT-170 (Early Toltec) 450
TT-59 (Late Toltec) 451
TT-62 (Late Toltec) 452
TT-79 (Early Toltec) 452
TT-86 (Early Toltec) 453
TT-97 (Late Toltec) 453
TT-88 to TT-90 (Late Toltec) 454
TT-93 to TT-95 (Late Toltec) 454
TT-98 to TT-102 (Late Toltec) — TT-82 (Early Toltec) 454
TT-103 to TT-105 (Late Toltec) 456
TT-106 (Late Toltec) 456
TT-118 to TT-121 (Late Toltec) 456

SITE DESCRIPTIONS: THE UPPER VALLEY 457
Natural and Cultural Geography 457
Zone 11: Upper Valley, North Piedmont 458
Zones 12 and 13: Upper Valley, Plain and East Piedmont 458

Zone 14: Upper Valley, South Piedmont and the Southeast Ridges 458
TT-60 and TT-70 (Late Toltec) 459
TT-135 to TT-136 (Late Toltec) 461
TT-61 (Late Toltec) 461
TT-63 and TT-66 to TT-69 (Late Toltec) 462
TT-130 (Late Toltec) 462
TT-131 (Late Toltec) 463
TT-137 to TT-141 (Late Toltec) 463
TT-142 (Late Toltec) 463
TT-107, TT-126, and TT-127 (Late Toltec) 464
TT-129 (Late Toltec) 464
TT-83 (Early Toltec) 464
TT-91 (Early Toltec) — TT-174 (Late Toltec) 465
TT-92 to TT-96 (Late Toltec) 466

SITE DESCRIPTIONS: CERRO GORDO, NORTH SLOPE 466
Zone 15: Cerro Gordo, North Slope, High Piedmont 466
Zone 16: Cerro Gordo, North Slope, Intermediate Piedmont 468
TT-31 to TT-33 (Late Toltec) 468
TT-37 and TT-38 (Late Toltec) 468
TT-34 to TT-36 (Late Toltec) 469
TT-73 to TT-77 (Late Toltec) 470
TT-134 (Late Toltec) 471

BIBLIOGRAPHY 473

APPENDIX A—Survey Schedule 475

LIST OF TABLES

Table		Page
1	Populations of Selected Lower Valley Settlements, Listed According to Ecological Zones	394
2	Mound Descriptions for TT-65	429
3	Populations of Selected Lower and Middle Valley Communities	432
4	Populations of the Middle Valley Settlements	433
5	Populations of Two Neighboring Middle Valley Settlements	434
6	Populations of Middle Valley Settlements of the South Piedmont	436
7	Survey of TT-25	438
8	Populations of the Upper Valley Settlements on the North Piedmont	459
9	Populations of the Upper Valley Settlements of the East Piedmont	460
10	Populations of the Upper Valley Settlements of the South Piedmont	460
11	Populations of Cerro Gordo, North Slope Settlements	467

LIST OF FIGURES

Figure		Page
1	Teotihuacan Region—Ecological Zones	487
2	Teotihuacan Region—Modern Settlements	488
3	Site Map, TT-4 and TT-148—Early Toltec Occupation (TT-4)	489
4	Site Map, TT-4 and TT-148—Late Toltec Occupation (TT-148)	490
5	Site Map, TT-5 and TT-149—Early Toltec Occupation (TT-5)	491
6	Site Map, TT-5 and TT-149—Late Toltec Occupation (TT-149)	492
7	Reconstructed Plan View of Toltec-Aztec Pyramid at TT-5 and TT-149	493
8	Elevation of Stages 3 and 4 of Toltec-Aztec Pyramid at TT-5 and TT-149	494
9	Site Map, TT-6 and TT-150—Early Toltec Occupation (TT-6)	495
10	Site Map, TT-6 and TT-150—Late Toltec Occupation (TT-150)	496
11	Site Map, TT-10 and TT-13—Early Toltec Occupation	497
12	Site Map, TT-153 and TT-154—Late Toltec Occupation	498
13	Site Map, TT-14—Late Toltec Occupation	499
14	Site Map, TT-17 and TT-155—Early Toltec Occupation (TT-17)	500
15	Site Map, TT-17 and TT-155—Late Toltec Occupation (TT-155)	501
16	Site Map, TT-20 and TT-158—Early Toltec Occupation (TT-20)	502
17	Site Map, TT-20 and TT-158—Late Toltec Occupation (TT-158)	503
18	Site Map, TT-21 and TT-159—Early and Late Toltec Occupation	504
19	Site Map, TT-22 and TT-160—Early and Late Toltec Occupation	505
20	Site Map, TT-24 and TT-162—Early Toltec Occupation (TT-24)	506
21	Site Map, TT-24 and TT-162—Late Toltec Occupation (TT-162)	507
22	Site Map, TT-60—Late Toltec Occupation	508
23	Site Map, TT-31 to TT-33—Late Toltec Occupation	509
24	Site Map, TT-134—Late Toltec Occupation	510

LIST OF PLATES

Plate		Page
1	TT-10	511
	a. View of Cerrito de Santa Catarina (Temple/Pyramid)	
	b. Floors Exposed in Looter's Pit in the Pyramid	
	c. View from the Top of the Pyramid	
	d. General View of the Northwestern Portion of the Site, View to the Southwest, Cerro Tlahuilco in the background.	
2	a. A General View of TT-22 to the North-Northwest, Several Mounds Visible in the Photo	512
	b. TT-62 to the South from the Southeastern Corner of the Cemetery, Toltec Occupations on Both Sides of the Road	
	c. TT-26, General View	
	d. TT-20, Plaster Floors Exposed in Front of the Municipal Building	
3	a. View from Cerro de Maravillas, to the South-Southwest, Patlachique Range in the Background	513
	b,c. Areas A and C of TT-14	
	d. TT-24, General View from Cerro Xoconochco to the Southwest, Cerro Chiconauhtla in the Center Background, Tlahuilco to the Left, Town of Xometla in the Middle	
4	General Views of TT-6	514
5	a. General Views of TT-4, Mounds 5a and 5b in the Foreground, Left	515
	b. Panoramic View of Site TT-61 from East to West	
6	Panoramic View to the North of the Cerro Gordo, North Slope Area, from the Lower North Flank of Cerro Gordo; the Village of Maquixco Alto is in the photograph—the Location of TT-37	516

INTRODUCTION

Location and Limits of the Survey Area

The Valley of Teotihuacan is found in the northeastern corner of the Basin or Valley of Mexico. Impressive mountain walls hem in the basin on all sides except for the northern edge which is limited by a range of low hills. The drainage system of the basin was completely interior or land-locked throughout Prehispanic times, and as a result the lower lakes of the spectacular lake system found covering much of the floor of the great basin were saline, as are their remains today.

The Valley of Teotihuacan itself opens onto the northern shoreline of the largest of the saline lakes, that of Texcoco. A subunit of the Valley of Mexico, the Valley of Teotihuacan is delimited on its western flank by Lake Texcoco and Cerros Chiconautla and Tlahuilco. The Lower Valley is limited on the north by the low range extending from Cerro Zacualuca, to Cerro Maravilla, Cerro de la Calavera, and Cerro Malinalco. The Middle Valley is walled off on its north by the great bulk of Cerro Gordo and its attendant ridges and on the northeast by a low range of hills. To the east and south, the Patlachique Range forms a continuous, limiting rampart for the entire valley.

The area of surface reconnaissance explored by the Teotihuacan Valley Project covered not only the 500 km^2 of the Valley of Teotihuacan itself, but included an adjacent area of valley north of the valley proper, including the North Slope of Cerro Gordo, and an area of northern valleys (referred to as the North Tributary Valley zone), which in Aztec times were politically dependent on the Valley of Teotihuacan centers of Tepexpan, Acolman, and Teotihuacan (Gibson 1964:48-49). We calculate this area as embracing an additional 100 km^2, bringing the total area of the survey to 600 km^2.

Methodology

The survey methodology used in this study has been described in detail in the second volume of this series. We will very briefly summarize this information here.

The objective of the survey was 100% coverage—that is, we intended to examine every square meter of the surface of the Teotihuacan Valley. Between 1960 and 1962 a number of field workers, in groups varying from one to three, but usually working alone, conducted general survey. What this involved essentially was systematically walking over the ground of defined units, such units being houselots and agricultural fields, visible on a set of 1:25,000 aerophotos. Sites were roughly located on acetate tracings from the photos, a preliminary assessment of the date of occupation was noted, and a tentative site number assigned. Sites were numbered consecutively (as they were encountered), starting with number one for each of the major chronological periods used in our dating system. For example, the first Formative site discovered was assigned the number TF-1, "T" for the Teotihuacan Valley, "F" for the Formative period; the first Teotihuacan period site was numbered TC-1 ("C" for Classic period), the first Toltec site was numbered TT-1 and the first Aztec site was assigned TA-1.

The second phase of the survey involved intensive examination of the located sites using a survey schedule (Appendix A). The schedule included data on the natural setting, both general and specific; contemporary utilization of the site area; and archaeological data. Amplifications of the original aerophotos to a scale of 1:4500 were used to plot architectural features and variations in the density of the surface artifacts. Many sites were also surface sampled.

On the basis of a detailed examination of the excavated samples, along with the surface samples (see the preceeding chapters and the "Summary of the Chronology" in Part 1), we have divided up the Toltec period into an Early and a Late phase. Each of these phases has been further divided into two subphases; the Early phase has been subdivided into Oxtotipac and Xometla and the Late phase into Mazapan and Atlatongo. Distinctions between the two phases are based on those types and varieties found only in the particular phase and always occurring in relative abundance in any sample. Differences between the Oxtotipac and Xometla subphases, however, are primarily quantitative and difficult to sort out from surface samples that were not collected using a rigorous sampling technique to eliminate bias. Differences between Mazapan and Atlatongo are of a different nature. There are a number of diagnostics found only in Atlatongo, but all the Mazapan types and varieties persist into the Atlatongo phase. This means that we can identify a Late Toltec site that does not have Atlatongo ceramics in it as Mazapan only, but we cannot be sure that a site which has the Atlatongo component lacked the Mazapan component.

A further complication in obtaining a refined date for our survey sites is that we did not surface sample all of the Toltec sites. This was the case because of the great number of sites and lack of time and personnel. Those sites that were located within the borders of the Teotihuacan period city were surface sampled by Millon's mapping project and we will ultimately have better control for this area.

Upon completion of our final analysis of the surface samples, in sites where both phases were present, we retained the original site number for the Early Toltec component and added another site number for the Late Toltec. Our sample also includes those Toltec sites discovered by Parsons in his 1966 survey and Charlton in his 1968 survey of the Upper Valley (see Charlton, this volume).

Survey Personnel

With respect to personnel participating in the survey, in addition to directing the plan of operations of the excavations, the field school, and the survey, William Sanders conducted general locational survey in the delta, the Lower and Middle valleys, and in the Patlachique piedmont. His work resulted in the location of the majority of the Xometla phase sites as well as the largest number of Mazapan phase sites now known for these areas. Sanders also conducted intensive site surveys of both the south and north piedmonts of Cerro Gordo. The author of this present study, together with Charles Fletcher and Gerald Obermeyer, located a number of additional Toltec sites, all of the Mazapan phase, in the Upper Valley, the North Tributary Valleys, and in other areas of the valley during the winter of 1960 to 1961. While on general survey, additional location and site surveys were conducted by Jeffrey Parsons and Thomas Charlton in 1963 and 1964 in the eastern valley.

In 1966, Jeffrey Parsons conducted additional surveys in a number of selected areas not covered by the Teotihuacan Valley Project. Resurveys by Thomas Charlton of the Upper Valley in 1968 to 1969, revealed a number of Toltec sites that were overlooked in the earlier surveys. A very large number of personnel worked on the preparation of the site survey descriptive reports which form the backbone of the present study. The principal investigators and recorders of site data who prepared the site reports utilized in the present analysis were John McCullough (TT-1 through TT-24); William Sanders (TT-25, TT-31 through TT-58; TT-85 through TT-87, TT-97, TT-103); Charles Fletcher (TT-29, TT-30, TT-60 through TT-64, TT-71, TT-79 through TT-81, TT-113 through TT-117); Thomas Charlton (TT-66 through TT-70, TT-73 through TT-117); Gerald Obermeyer (TT-82, TT-98 through TT-102); William Mather, III (TT-89, TT-90, TT-93, TT-94); and Jeffrey Parsons (TT-107, TT-108, TT-126, TT-127, TT-129 through TT-142). The present investigator surveyed the remainder of the sites recorded below.

William Sanders, John McCullough, Gerald Obermeyer, Thomas Koehler, and Jeffrey Parsons conducted the initial phase of the ceramic analysis upon which the determination of site components has been used. At a later date, Susan Evans (see Part 1) restudied all of the surface samples from those sites that were sampled, and Kenneth Good and Deborah Nichols (see Part 1) completed the studies of the excavated samples from Oxtotipac and Xometla.

The 1973 Survey

The discussion of the methods employed in the survey and the preparation of this report of the data collected would be incomplete without a brief account of some of the steps taken to recheck the accuracy of the recording of the field data of the 1960 to 1964 surveys.

In the summer of 1973, Joseph Marino, who planned to use the data for his doctoral dissertation (with a small, selected group of students who were alumni of the California State College summer archaeology field school), returned to the Valley of Teotihuacan with four primary objectives:

1. To check on the ground all those Toltec sites which he did not have personal knowledge. These included, largely, those sites located by Sanders in the Lower Valley in 1960 and 1961 that were then intensively surveyed by John McCullough. Although the records, site drawings, and field notes compiled by McCullough were satisfactory in every way, the investigator wished to see every site that had been recorded before writing the site descriptions.

2. To observe what, if any, changes had occurred in the sites to be described so that the report of these sites would reflect their present condition.

3. To revisit as many other areas of the Toltec occupations within the valley as possible, particularly in the area along the lakeshore, and in the areas where new commercial farming enterprises and other new buildings as well as road construction may have altered or destroyed the sites recorded in 1960 to 1964.

4. To re-familiarize himself with the data on the ground; and to restore a feeling of immediacy to the reporting of the Project survey findings.

The time spent in this survey was limited due to teaching duties in Pennsylvania. Seven weeks were spent in survey from the latter part of July until mid-September. The survey team was most capable. Ronald Zaremba and Robert Stern, both graduates of California State College, were of great assistance in the field. Stern, who also holds a degree in pharmacy from the University of Pittsburgh, could only stay with the survey for four weeks, but in that time took a number of excellent photographs in the field, and also provided expert advice on film, cameras, and medicines. His expertise in the latter area was, unfortunately, required and we were glad to have his help for medical purposes. Zaremba acted as a conscientious field assistant and was also of assistance in the area of vehicle maintenance and repair. He remained with the present investigators throughout the period of the survey.

Gary Richard Wilkins, a graduate student in anthropology at the University of Arkansas, was the most experienced of the crew in the area of surface reconnaissance, field recording, and in ceramic analysis. His assistance in the survey was most valuable, not only because of his greater experience in site survey, but because of his energetic initiatives in the field, and because of the broader theoretical sophistication he was able to bring to the problems posed by site survey. In addition to his work on the survey, he produced an excellent series of photographs of the sites of professional calibre and taken with the eye of an archaeologist. The investigator is most grateful for his participation in the survey.

The surveys undertaken with this small crew included those of TT-1, TT-11 to TT-22, TT-30 to TT-37, TT-40 to TT-58, TT-116 to TT-118, and TT-123. Copies of the site survey forms of the 1962 and 1963 surveys were taken to the field to check the data recorded against that observed; noting from time to time additional material. Observations upon ceramics were made in the field because the survey plan did not include taking any collections to add to the already substantial corpus of materials that had long since been analyzed by Sanders and McCullough. Field notes were dictated into a small tape recorder while at the site locations themselves. Notes were made of any change which had occurred in the use of the land or in the condition of the archaeolgical remains.

In general, the reliability of the 1963 survey was excellent. The only discrepancy discovered in the field related to one site (TT-19) that was found to be somewhat smaller in area than the schedule of the 1963 survey had indicated. A new site was located at the large TC-73 town site due to the alert checking of Gary Wilkins. This is a Mazapan village site which had been undetected in the surveys of 1963 and 1964 because it had then been obscured under thickly growing fields of barley. In the summer of 1973, the area was planted in maize. This site, which has been designated TT-134, was the only new site located during the seven weeks.

It was discovered that nearly total destruction has occurred in the areas of TT-4 and TT-5, which are now within a heavily built-up zone of new housing spreading rapidly along the lakeshore from Venta de Carpio towards Tepexpan. The great majority of the sites, however, look remarkably like they did 10 to 15 years ago. There has been very little potting or other destruction. The only important exception, in addition to the lakeshore sites, is seen in the lower Middle Valley area in the southeastern quadrant of the archaeological zone of Classic Teotihuacan. Here, the large commercial dairying ranchos are continuing a heartbreaking program involving the stripping of large areas of the huge Classic mounds which contain large multi-roomed residential structures, and over them, of

course, the heavy Toltec occupations which had been recorded there in 1962 and 1963. The site destruction is being executed with heavy earth moving machinery. After these enterprising gentlemen have completed their work, tons of materials representing over two thousand years of village, town, and urban occupation will have been completely obliterated. This is all being done to provide level, irrigated fields for the cultivation of alfalfa to feed cows.

Site Typology

In this report we are using a typology of sites that is basically descriptive but involves some functional interpretations as well. Our survey schedule includes data on the size of the site; variations in density of surface artifacts; notes on the kinds of artifacts; architectural features, such as mounds of varying type; and specialized features such as canals, terraces, hearths, burials, and walls.

For his doctoral dissertation, Sanders conducted a study of contemporary settlement patterns, both in terms of settlement typology and regional distribution. The data were combined with new data from the Teotihuacan Valley Project and published as two chapters by Diehl and Charlton in the first volume of this series of final reports.

With respect to contemporary community typology, we made a distinction between rural and urban settlements. By rural, we mean that at least 75% of the population received their living from agricultural or some other extractive activity. Urban refers to communities in which this figure falls below 75%. We also suggested using the term "town" for settlements with populations in the thousands, and "city" for those in the tens of thousands. Towns, today, are always tightly nucleated with minimal population densities of over 50 people per hectare.

Subsequently, rural communities were classified as "villages," "hamlets," or "rancherias." Hamlets are nucleated settlements with populations of below 100 and villages are nucleated settlements with over 100 people. Rancherias are dispersed rural settlements, *i.e.*, where each homeholder has most of his agricultural land between his house and that of his neighbors. We also noted a considerable range in settlement density among the villages and hamlets, ranging from as low as 5 and as high as 60 per hectare. Even in the settlements of lower density, however, where some houselots were planted in crops, the majority of the agricultural land lay outside of the residential area of the village. The villages with the high densities had virtually no crops within the village area and the houselots consisted of earth or paved patios. Village densities vary within these extremes (*i.e.*, 5 to 60 per hectare), forming a continuum. A series of varieties of villages, based on population densities, could be defined as follows: scattered or dispersed villages (5 to 10 persons per hectare), low density compact villages (10 to 25 persons per hectare), and high density compact villages (25 to 60 persons per hectare).

According to Charlton, this variety, on the simplest level of evaluation, relates to family size. This, in turn, relates to land tenure; in villages situated in areas of relatively restricted tracts of high quality land, the family tends not to segment after marriage, thus forming an extended family. In villages situated in areas where there are extensive tracts of marginal land, however, families tend to segment. Since the variation does relate to exploitive systems, it was thought that it would be a useful criterion to classify rural archaeological sites.

In fact, even during our 1960 field season, we noted considerable variation, in those sites where architectural preservation was good, in the density of residential mounds, which seem to parallel the variety in modern villages. A major problem in application of the classification to prehistoric sites lies in the fact that, in many cases, architectural remains were absent or sparse. Here we made the assumption that the density of surface refuse in the form of broken artifacts ought to relate in a general way to density of houses and, inferentially, of populations. This supposition was checked in the 1960 to 1961 season and sites without architecture were compared to those with architecture in terms of density of surface debris; there seemed to be a close correspondence. The correspondence also checks well against the observation of refuse density as light, medium, or heavy in prehistoric sites and these densities can be equated with the three contemporary varieties of villages—*i.e.*, scattered, low density compact, and high density compact.

There are a number of precautions one must take in order to apply this typology to a large regional survey. First, the chronological components must be of equivalent length or some adjustment must be made when one compares settlements of different and variable periods of time. Second, sites found in badly eroded hillsides cannot be directly compared with protected sites in deep alluvium. In this latter case, we have adjusted our evaluation based on excavated sites.

To facilitate our analysis of the Toltec settlement system (to be presented in the final volume of the series) we have grouped our site descriptions by ecological zones (Fig. 1). These include five major divisions: Lower Valley, Middle Valley, Upper Valley, North Tributary Valleys, and Cerro Gordo, North Slope. Our format for each zone includes a brief description of the zone, followed by the site descriptions.

SITE DESCRIPTIONS: THE LOWER VALLEY

Natural and Cultural Geography

The Lower Valley includes the following subzones: (1) the delta, (2) the irrigated plain, (3) the west piedmont, (4) the east piedmont, and (5) the north piedmont. It is essentially all of the Teotihuacan Valley below the San Juan springs. The area includes the fertile deep-soil plain served by the permanent irrigation system and the adjacent piedmont. The plain is the most productive agricultural land in our entire survey region.

Zone 1: The Delta

The delta of the Rio de San Juan is, today, a flat plain. All of the Rio de San Juan that flows through this delta is artificially canalized, flowing between very high banks or levees in order to permit drainage to the lake. Normally, however, little water reaches the lower area. Much of that part of the area falls between 2238 and 2240 m and is salt-indurated. With this section, is a low lying island-like elevation upon which are located the Aztec salt-making villages of Santa Isabel Ixtapan de Sal, the site of a remarkable mammoth and human skeleton find, and San Cristobal Nexquipayac. The Early and Late Toltec phase communities within our survey area utilized the piedmont in the northwest (Tepexpan to Chiconautla), north (Tezoyuca-Cuauhtepec), and northeast (San Lucas), and may have hunted wild waterfowl in the marshes at the lake edge, as did some of these communities as recently as 1910, according to local informants.

Zone 2: Lower Valley, The Irrigated Plain

The irrigated plain of the Lower Valley has the deepest, richest, and most fertile soils to be found within the entire survey area. Within the chinampa area, which heads this zone, is found the highest water table; just 1 m from the surface. The soils are a mixture of true black chernozems and brown chestnuts, together with a number of azonal deposits found in some of the eastern, western, and southern margins. Today, however, the largest part of the fluvial deposits terminate in the high banks of the canals, the result of the annual cleaning of the canal. The most intensive agriculture of the entire survey area is practiced in the irrigated plain. The greatest variety of cultigens are found in the chinampa area, stretching from the Parroquia of San Juan Teotihuacan, west and south of San Juan Evangelista, Puxtla, and Maquixco Bajo (Fig. 2). The central and lower part of the irrigated plain supports nearly continuous, high-growing crops of maize, beans, and squash, interspersed with recently established dairying and chicken and egg-producing *granjas*, or farms. The heaviest populations reported for the overall Toltec period were found along the margins and at the head of this irrigation system.

It can be seen from a glance at Table 1 that the characteristic settlements of the irrigated plain run to densities of 4250 to 4850 per km^2. Following the categories of site classification adopted here (from Sanders 1965:50), these settlements fall within the category of high density compact villages. There is considerable tension in the Lower Valley over water, land, and the harvesting of the fields. Disputes are common (Millon *et*

Table 1. Populations of Selected Lower Valley Settlements Listed According to Ecological Zone (after Diehl 1970:146).[a]

Settlement—Ecological Zone	Population	Density per ha	Type
Cuanalan Zone 2, intercepting Zone 1	1541	23.4	Low density compact village
Atlatongo Zone 2, intercepting Zone 5a	1145	48.5	High density compact village
Calvario Acolman Zone 2	1062	42.06	High density compact village
Santa Catarina Acolman Zone 3, intercepting Zone 2	592	42.5	High density compact village
Zacualuca Zone 5a	261	11.32	Scattered village

[a]All figures given from the 1960 census data.

al., 1962:424-525), and for many there is not enough land here today, and so some commute to nearby labor markets, or to Mexico City.

Zone 3: The West Piedmont

This zone begins at the 2265 m contour and extends as high as the 2450 m contour of Cerro Chiconautla, which reaches an altitude of 2610 m. Nearly all of the broad lower slopes of this volcanic cone are terraced, though in many cases the terrace systems, particularly in their upper reaches, are in disrepair and ruin today. The grey to brown soils are thin and sandy, and erosion is very severe in many areas, particularly in the eastern and northern quadrants of the piedmont of Cerro Chiconautla. Rainfall here also seems to be less than in the Middle Valley, though this is simply a subjective impression because there are no meteorological stations in this zone. Most of the population is found between the margins of the lower west piedmont and the ancient lake shore, along which run two major highways from Mexico City—the settlement stretching from Venta de Carpio to Tepexpan. The maize and frijol cultivation in the terraces above these villages represent an uncertain resource. Many of the inhabitants in these towns commute to the nearby labor markets of the capital, or to Texcoco, for work. Cerro Tlahuilco, which is located within this zone, is an important source for the characteristic building material of this region, *cascajo*, a fine tezontle ash, which is used in masonry walls, floor, roads, and pavements.

Zone 4: Lower Valley, East Piedmont

This very narrow strip, which is only from 1 to 2 km wide, stretches north to south between the alluvial plain and the eastern extension of the Sierra de Patlachique. There is no contemporary habitation here except, again, on the intersecting margins of the lower piedmont, and the plain itself. Most of the villages here cultivate the lower piedmont and also hold ejido and *pequeña propiedad* lands within the irrigrated plain itself. Water control from these very steep slopes is difficult, and has been hardly attempted. No presently utilized terraces are found above 2310 m, though an occasional abandoned terrace has been recorded higher in the range (see below, description of TT-108 at 2620 m). The high piedmont is utilized primarily for grazing, and wood cutting.

Zone 5: Lower Valley, North Piedmont

The north piedmont rises from 2260 m at Calvario Acolman to the 2340 m contour of Cerro Zacualuca, (elevation 2390 m) and to the 2480 m contour of Cerro Malinalco (elevation 2580 m). The first studies of prehistoric irrigation systems within the Valley of Teotihuacan (Millon 1954, 1957), were undertaken in this section of the north piedmont, in the lower part of the drainage of the seasonally dry course, Rio de la Gapila. Within the area are the low density villages of Zacualuca and San Agustin Actipac, and the rancherias of Tlachinolpan ("The Place of the Nopal Harvest"), Ixtlahuaca, Tezompa, and the Colonia Agricola of Progreso. Small temporary check dams are found in many of the arroyos leading into the main drainage system. Some of these water and soil-control features are washed out annually. Others of more solid construction hold back enough soil and moisture for the precarious planting of small milpas. However, the most important plants here are the maguey and nopal. Goat grazing is also an important activity. The soils through most of the upper reaches of the north piedmont are very thin, from 0 to 20 cm. Sheet erosion has completely denuded large areas. Only in the lower sectors are there to be found secure, thriving milpas, in the ejidos lands of Calvario Acolman, Atlatongo, and Maquixco. These ejidos cover most of the lower piedmont area. The dams and bridges, all stone-built that were left behind by the hacienda are all very impressive.

Some of the lands here are left fallow, but for the most part maize, frijol, and squash are secure annual crops. Most of the campesinos utilizing this portion of the north piedmont are from villages on the northern edge of the irrigated plain of the Lower Valley.

TT-1 (Late Toltec)

Natural Setting: This site is located at 2290 m, on a very gentle slope of the piedmont 1 km southwest of Santa Catarina Acolman and the Canal de San Jose. The soils here vary from light brown to black and are uniformly deep enough (50 cm to an average of 1 m and more) to retain moisture well. Continuing southwest from this location for a little less than 1 km, one encounters the quarries of Tlahuilco that are used as sources of coarse tezontle and the finer pumice, or cascajo, both used in construction.

Modern Utilization: The steel towers of the main high-power transmission cable running through the valley are seen just to the north of this site. The larger part of the site area was planted in maize in both 1963 and 1973. Maguey is also planted here in rows 4 m apart; 2 m separate each maguey plant in its row. The rows of maguey are planted behind small, artificially produced rises, or *bancals*. The areas of heaviest mounding are not planted in maize, probably due to the heavy tezontle (wall?) debris of the Aztec and Toltec structures beneath these mounds.

Archaeological Features: The distribution of Late Toltec ceramics over 7.4 ha of this 8.2 ha site is light, whereas, in a core area of 0.8 ha it is very heavy. Within this core area is a large mound 19 x 35 m in basal dimensions, and approximately 1 m in elevation which is heavily overlain with Aztec sherds, mixed with a lighter frequency of Late Toltec pottery. Its size suggests a special function, possibly a ceremonial platform, built in Toltec times and enlarged during the Aztec period. This supposition would have to be tested by excavation.

The site is in relatively good condition. There is little destruction in evidence due to either erosion or pitting activities. In addition to the Late Toltec ceramics, 5 Late Toltec figurine fragments were noted. Obsidian artifacts are rare. Three scrapers were recovered; there were no blades or cores. Also recovered were 3 manos. No stratification was exposed here. One plaster floor fragment, of either Toltec or later origin, was noted. Other components include Aztec (TA-12).

Site Area: 8.2 ha.

Classification: Small, low density compact village.

Date: Surface sample taken—Mazapan-Atlatongo.

TT-2 (Early Toltec) — TT-146 (Late Toltec)

Natural Setting: This site is located at 2390 m, on the southern slope of Cerro Chiconautla, facing the northern shore of the ancient Lake Texcoco. The site is situated on a gentle slope in the middle range of a series of fields rising in steps from the lake plain to the steep slopes of Cerro Chiconautla. The sandy soils are at no place deeper than 50 cm and in most areas range from 5 to 15 cm. The erosion along the barranca to the east of the site is extensive. The barranca averages some 5 m in width, and has a depth of 2.0 to 2.5 m along the site area. The soil over the lower, or southern, section of the site has been eroded away, leaving clumps and small hillocks of earth, which are held by the roots of nopal cactus, pirul trees, and the larger stones.

Modern Utilization: None, except an occasional use of this upper slope for goat pasture. It would appear from the height and massiveness of those sections of the badly ruined stone retaining walls that remain on the southern border of the site as well as from the remains of stone bancal terraces running through the site, on lines contoured in a general fashion to the slope, that there may have been sufficient soil retained on these eroded terraces, as recently as the pre-revolutionary period, for maize and frijol planting.

Archaeological Remains: No mound buildup can be seen here. Much of the ceramic debris is found lying on bare tepetate, where it is seen coming out of erosion-cut profiles. The depth of the deposit runs from 15 to 25 cm, and the soil cover is nowhere deeper than 60 cm. A badly disturbed burial was noted lying on the tepetate with a partial soil cover. It had been largely washed away. The remains included 1 humerus, 2 femora, 2 tibiae, and 1 fibula. Two manos and a spindle-whorl were recovered. Aztec ceramics (TA-3) are also present.

The evidence appears to indicate that, here, the usual sequence of a small Early Toltec or Xometla phase settlement being succeeded by a larger Late Toltec or Mazapan phase occupation, has been reversed. The incomplete burial described above may have belonged to either the Early or Late phase. The deposit here is so thin and cut into by erosion that it is doubtful even excavation could determine that point, although some house floors should come to light. Also seen here are the ceramics and other debris of TA-3.

Site Area: 2.5 ha.

Classification: Compact hamlet.

Date: No surface sample. Early and Late Toltec phases.

TT-3 (Early Toltec) — TT-147 (Late Toltec)

Natural Setting: Located at 2300 m in the lower piedmont of Cerro Chiconautla, 100 m east of the northeast limits of Santa Maria Chiconautla, this site is situated on a gentle slope of badly eroded fields. The soils, where they are still present, are a light brown color found in depths of 0.1 to 1.0 m, with an average range of 10 to 30 cm in the soil-covered area. A barranca-wash area varying from 3 to 7 m in width and 0.5 to 3.5 m in depth is seen directly north of the site.

Modern Utilization: This area is used for grazing; there are also a few maguey and nopal plants. There is no erosion control on the site proper, although to the north of the site a badly ruined stone terrace wall may be seen, while to the east, an earth bank, rising nearly a meter high, borders the road. This formerly cultivated land is used solely as pasture today.

Archaeological Remains: The Toltec pottery here is sparse, localized, and variable with a heavy Aztec overlay from the site TA-8. Traces of wall stubs were noted and localized areas of rock and sherd debris may represent house remains. Several large mounds with a mixture of Early to Late Toltec and Aztec ceramics are present. Few obsidian tools were observed. Among these remains is a large ceremonial mound, rectangular in shape, 2.7 m high and measuring 20 x 25 m. Surface pottery is primarily Aztec with some Late Toltec. Just to the west of this mound and toward a modern cemetery, a somewhat smaller mound is located, overlain with heavy indication of Early Toltec. This mound, and another one to the south, had some Late Toltec occupation. The mound groups found to the south and west of these 2 mounds are exclusively Aztec, from surface indications.

Site Area: 2.1 ha.

Classification: Hamlet.

Date: Not surface sampled. Early and Late Toltec phases.

TT-4 (Early Toltec) — TT-148 (Late Toltec)

Natural Setting: This site is situated at 2260 m, on a gentle slope at the southern base of Cerro Chiconautla, on the northern edge of the dessicated shore lands of former Lake Texcoco, and at the far western edge of the Teotihuacan Valley (Figs. 3 & 4). The soils are thin, a mixture of sand and loam varying from dark brown to black in color, with a little localized erosion. The site is bordered on the east by a dry-wash barranca-like feature which is now used as a road. It may have started as a road or a drainage canal in Prehispanic times. Heavy weed growth occurs on its edges. Fair grass cover is seen over the site area, with pirul trees and an occasional chimoya cactus.

Modern Utilization: The contemporary name for these fields is "Terreno de los Idolos," a reference to the Prehispanic figurines found on the site. The northern and central sections of the site are used as pasture and for a scattering of maguey plantings; the southern section of the site is planted in maize and beans. A house is located in the middle of the site over an old floor which extends beyond the walls of the contemporary house. A maguey bancal is seen bordering the northern edge of the site, and a stone terrace wall is maintained along the southern edge of the site area.

Archaeological Remains: Pottery distribution is localized and variable, running from moderate to heavy frequencies. A square-meter count taken on the largest mound was recorded at 117 per m^2, while another count taken between mounds ran to just 18 per m^2. Obsidian blades and scrapers are abundant. Of the 12 mounds located on this site, three clearly had Early Toltec construction (Mounds 2, 4, and 6). The substantial Early Toltec occupation seems limited to these mounds and adjacent areas. The surface distribution of Late Toltec ceramics seems to cover at least twice the area and includes 10 of the mounds on the site. The 3 mounds, numbers 2, 4, and 6, form the core of one major Late Toltec area. A second heavy concentration is to be seen in the area of Mound 5 (a and b). Here the pottery is largely Late Toltec with very little admixture from the Aztec period. A third area of concentrated Late Toltec focuses on Mound 3, and in the area to the east of that mound. The remaining occupation area has a scattered and somewhat scanty ceramic indication. All of the mounds, however, have heavy Aztec occupation and they could all date from that period. More probably, they represent several chronological components. The archaeological deposit in the mound foci of the site may reach a depth of 1.5 m or more.

Mounds 2, 4, and 6 form a complex which suggests some non-domestic use. Mounds 4 and 6 sit on top of Mound 2, which forms a large platform for this pair. This may be a ceremonial structure. A further distinctive feature of this site is to be seen in the large number of ceramic cones, concentrated in the area of the aforementioned Mounds 2, 4, and 6. Similar ceramic cones have been noted at the TT-5 site, concentrated in the area of the pyramid-temple platform on that site. They have also been noted at the Xometla-type site. Little erosion of the mounds on the site proper, and no excavation or pitting into the mounds was observed, although several of the large Aztec mounds in this vicinity have been severely pitted. Floors, probably of Aztec construction, are exposed to the south and east of the Toltec mounds. There is the possiblity of more Early Toltec phase occupation in this area under the remainder of the 12 mounds mentioned, buried under the heavy Late Toltec and Aztec built-up occupations.

This village was probably oriented toward a political religious focus at TT-5. Also found here are Patlachique phase occupations of TF-5, and the Tzacualli phase site TF-75, together with the Aztec site, TA-9.

Site Area: 18 ha, Late Toltec; 9 ha, Early Toltec.

Classification: Small scattered village.

Date: Surface sample taken is predominately of the Mazapan subphase, but with some Atlatongo. Early Toltec includes Xometla, possibly some Oxtotipac.

TT-5 (Early Toltec) — TT-149 (Late Toltec)

Natural Setting: This site is located at 2276 m, in the ejido lands of Santa Maria Chiconautla, on a gentle slope of the southern, lower piedmont of Cerro Chiconautla (Figs. 5 & 6). It is also located on a series of poorly maintained terraces. There is serious erosion on the edges of the site as well as in wash areas running through it. Brown and dark brown soils of variable depth, where not washed away entirely, of from 10 to 40 cm in depth are present.

Modern Utilization: Some maize and beans are grown on the lower terraces, with nothing but maguey and prickly pear cacti grown on the upper or northern terraces, which are used primarily for grazing.

Archaeological Remains: This is the only Toltec site, among the nine such sites in the Santa Maria Chiconautla area with definite remains of ceremonial architecture (Figs. 7 & 8). The temple mound here is a prominent feature of the upper-middle area of the site. It has been attacked savagely by pothunters, exposing a portion of the eastern side, the southwest corner, and a portion of the interior fill. The crude tunneling into the structure reveals a minimum of 4 building stages. The entire base of the temple mound could not be measured accurately, due to the heavy building debris which covers the base area. It is estimated that the basal dimensions of the last, or Aztec period, addition were 4.5 x 3.5 m attaining a height of 2.8 m. At least one of the earlier temples, the innermost which is visible, is of Toltec construction, containing no Aztec sherds in its fill. The stone facing of the third and fourth stage structures was capped with a heavy, coarse lime mortar layer some 5 to 6 cm thick, and this in turn, was coated with a fine white plaster. Portions of the floor at the top of the temple base were also exposed by pitting into the structure from the top. Two floor levels are clearly visible.

Directly to the north and the south of this temple platform are wide flat terraces which may have been a temple atrium or plaza. Both to the east and west of the southern terrace are large rectangular mounds of Late Toltec construction.

Heavy concentrations of Late Toltec pottery may be seen on the lower mounds in the southern section of the site, mixed with the Aztec materials of TA-8. The Late Toltec sherds are seen in their heaviest concentrations over approximately 2 ha along the southern edge of the site area. An additional 10.2 ha stretching up the slope show localized and variable distributions to a widely-dispersed pattern. There are many areas of tezontle concentration coincident with sherd concentrations which may represent former structures. Pottery of the Early Toltec phase is localized in the outwash of 2 mounds and in a small area that totals 2.9 ha.

This site may have served as a local center for the Toltec settlements at TT-2, TT-5-7, TT-26, TT-109-111, and TT-181. This interpretation is supported by the presence of ceremonial architecture at this site and the proximity of the above-named sites to this hillside temple complex.

Site Area: 12.2 ha, Late Toltec; 2.9 ha, Early Toltec.

Classification: Ceremonial focus or low density compact village in Late Toltec times, hamlet in Early Toltec phase.

Date: Not surface sampled. Early and Late Toltec phase.

TT-6 (Early Toltec) — TT-150 (Late Toltec)

Natural Setting: The site is located 2435 to 2440 m on the southwestern piedmont of Chiconautla facing the shore of Prehispanic Lake Texcoco. The site area has experienced a medium degree of erosion. Loam-like soils of up to 50 cm in depth, which are black in color, are found here. A heavily eroded wash area is seen to the west of the site. Considerable wash and erosion to the tepetate base is found on the lower or southern portion of the site. Vegetation consists of small cactus, nopal, romero, and short grass.

Modern Utilization: Primarily grazing. Also recorded for this area is the collection of the fragrant cooking herb, romero, which is regularly gathered and sold in the markets at Tepexpan, Santa Maria Chiconautla, and at San Cristobal Ecatepec. Some maguey and nopal occurs scattered through the area.

Archaeological Remains: Three small Toltec mounds were recorded (Figs. 9 & 10, Plates 4 & 5). Two other areas of unusual sherd concentration may have been house sites. The pottery concentrations are localized and variable throughout the site in sparse to moderate frequencies of up to 35 per m^2 over an area of 5.8 ha. Obsidian tools, largely blades and knives, are very abundant here. The sherds are badly weathered. No structural remains are visible beyond concentrations of tezontle and sherds. The terraces, long in disuse and in ruin, may date from Prehispanic times. The Aztec occupation of TA-9 is scattered throughout the area. The site is probably closely related to the larger TT-4, immediately south and down slope.

Site Area: Late Toltec, 5.8 ha; Early Toltec, 3.2 ha.

Classification: Dispersed hamlet, both phases.

Date: Several samples were taken on the site but only one sample could be located; it contained Mazapan and Atlatongo subphase sherds but no Early Toltec. The Atlatongo component is well represented.

TT-7 (Late Toltec)

Natural Setting: Located at 2335 m, in the southwestern quadrant of the piedmont of Cerro Chiconautla, this small site is found on a gentle slope north and above Santa Maria Chiconautla, in an area of extensive erosion. The soils are thin in most areas of the site, with an occasional buildup behind old terraces of up to 80 cm. These soils are light, sandy, and friable, and do not seem to retain moisture well. Even though observed during the rainy season, the day after a downpour they were very dry.

Modern Utilization: Some maguey and a little grazing. No sign of cultivation in recent years.

Archaeological Remains: Several moderate to heavy concentrations of Late Toltec ceramics observed in profiles of wash areas cutting though the site from the northeast to the southwest, at depths of 20 to 70 cm. No structures were visible. The Toltec has been buried by the Aztec occupation of TA-8. Numerous obsidian scrapers and blades were noted.

Site Area: 2.4 ha.

Classification: Dispersed hamlet.

Date: Surface sampled. Mazapan subphase.

TT-8 (Early Toltec) — TT-151 (Late Toltec)

Natural Setting: Located at the 2235 to 2340 m contour, and situated in the southwestern quadrant of the piedmont of Cerro Chiconautla, this site is on a gently rising slope, with its higher section found in the north. The site is badly eroded. Tepetate is exposed at the surface in many places. Soils are sandy and light in color. Some loose tezontle boulders of small to medium size, such as are used in building house walls, are found in localized areas.

Modern Utilization: None, except for grazing and the planting of a few maguey.

Archaeological Remains: Pottery concentrations of the Toltec period are localized within 5 areas of this 4.2 ha site, and are found in light frequencies. There is some admixture of Aztec, belonging to the large hillside town of TA-9. No structural remains are visible, though several areas of concentration of loose tezontle on the tepetate, conceivably represent debris from house structures. Many obsidian tools were recovered, all scrapers and blades.

Site Area: 4.2 ha.

Classification: Dispersed hamlet.

Date: Surface sampled. Xometla and Mazapan subphases. No evidence of Oxtotipac or Atlatongo.

TT-9 (Early Toltec)

Natural Setting: This site is located at 2340 m, well above the lake plain, and exactly at the upper edge of the gently sloping lower piedmont of the southwestern quadrant of Cerro Chiconautla. The site area is severely eroded and scoured by wash strips cutting through the site and into the tepetate. Most of the soil has been stripped away.

Modern Utilization: None, except for grazing. A few small magueys are planted, however. Traces of former terrace walls and small check dams are seen on the site, all in an advanced state of disrepair and neglect.

Archaeological Remains: Three mound areas were observed, defined by concentrations of Toltec ceramics in moderate and even distribution throughout these three areas. The archaeological deposit is very thin, as is seen in cuts through one of the mounds, where the deposit is found to be just 10 cm in depth within a total depth of 30 cm. Obsidian scrapers and blades are moderately common here. The Aztec ceramics of TA-9 are found here.

Site Area: 1.0 ha.

Classification: Compact hamlet.

Date: Sample. Xometla and Mazapan subphases, no evidence of Oxtotipac or Atlatongo.

TT-10 (Early Toltec) — TT-152 (Late Toltec)

Natural Setting: Situated at the 2275 to 2280 m contour, the small town of Santa Catarina Acolman is the largest surviving section of the important Aztec period town and secondary regional center of Acolman (Fig. 11, Plate 1). It is located over a prominent shoulder of land which extends into the irrigated plain. The plain in this part of the valley begins to narrow towards an isthmus-like neck just north of Tepexpan and Cuanalan, where the last of the large flood control dams of the viceregal period was constructed. This shoulder of land is rocky, with a thick tufous under-layer of volcanic ash, and has generally thin soils. Immediately at the base of this slope, as it meets the irrigated plain, flows one of the two major canals of the Teotihuacan Valley irrigation system, the Canal de San Jose. Above the shoulder of the land upon which the town sits is an area of bench land of variable poor to good soils. The fields closest to Santa Catarina are fairly level and this level area occurs at the lower edge of a slightly rising, inclined slope, which stretches from just something over a kilometer to the steep slope of Cerro Tlahuica.

Modern Utilization: The contemporary village of Santa Catarina Acolman occupies the central portion of the Toltec site and is a low density compact village. Sections of the site which are found beyond the limits of the modern village site are seen in fields on the northern, western, and southern edges of the present settlement. We have here one of the few cases in the Lower Valley of undoubted continuous occupation of one site from Teotihuacan times through all later periods to the present.

Modern houses of adobe, stone, and even brick, together with their surrounding organ cactus and stone fenced houselots, cover much of the central portion of the Toltec site. Much of the land that Santa Catarina is located on is composed of an extensive deposit of volcanic ash which is called cascajo, and is used for multiple building purposes, primarily as filler in mortar, and in road building. This useful material has been extensively quarried in and around the modern town. Six quarry areas were open in 1963, and 4 were open in 1973, which are still actively used today, apparently largely for building activities within the valley itself. The total amount of quarrying here is difficult to estimate as the abandoned quarries are gradually being reclaimed, as both milpa and houselots for nopal orchards, by capturing and leading floodwater born silts from the high slope to the west into these areas. Due to the extremely porous base of these quarries, the water seeps away, leaving layers of soil, gradually filling the cavities completely. After achieving a meter or so of soil, the drainage is facilitated by the practice of punching drainage "wells" to the bottom of the former quarry floor.

Because of the extensive exploitation of this local resource, large areas of the original site topography here have been altered by this human-directed modeling, which has included both the lowering and raising of earlier contours.

Archaeological Remains: While the general condition of the site has suffered greatly due to the quarrying activities noted above, a great deal of material remains. In many instances the presently occupied houses and houselots have been built over mounds, to judge by local undulations and mounding within these houselots, and by the heavy distributions of surface ceramics from all periods, beginning with Classic Teotihuacan. Three mounds, large enough to have been ceremonial temple platforms have survived. One of these, which has been deeply pitted at its base, shows several building stages, and an abundance of Early Toltec (Xometla) period ceramics, mixed with Late Toltec as well as with Aztec sherds. Manos and metates are abundant on the surface. Figurines are found over the entire area, with Classic Teotihuacan and Aztec types dominating the samples. Pottery remains are found in moderate to heavy counts of up to 119 per m^2, and are localized and variable, due to the disturbed condition of the site. Spindle whorls, pottery discs, and pestles were noted in the surface collections. The site is below average in the amount of obsidian found in Toltec sites, however.

The remains at Santa Catarina show, as noted above, a continuous occupation from Teotihuacan times to the present. The Early Toltec phase site is compact, centered on the hillside above the irrigated plain, and nucleated about a ceremonial focus in the form of the multi-phase temple platform noted above. The Early Toltec sherds found under and above the 3 superimposed mortar and plaster-covered floors paving the forecourt of the temple platform and exposed by the pitting for cascajo, demonstrates the use of this structure in Early Toltec times. The northeast limit of the Early Toltec town is seen at present to be at the bottom of the hill on which the present town of Santa Catarina is located. The western limits of the Early Toltec settlement are vague.

The compact nucleated settlement of Early Toltec times increased in size during the Late Toltec phase, so that by Late Toltec times we see a larger, but more dispersed settlement, with two, possibly three distinct foci, a somewhat larger version of present day Santa Catarina with its two barrios. This development in the Late Toltec phase set the pattern which remained during the Aztec and Posthispanic period.

> The settlement pattern of TT-10...is difficult to evaluate since it underlies the Aztec town. Light-heavy Xometla phase occupation seems to coincide with those portions of the Aztec town that have been labelled as "Definite Nucleated Core," "Possible Nucleated Core," and with at least a portion of the area referred to as "High-Density Compact Settlement." The pyramid and its associated plaza have good Xometla occupation. The fact that more than one level of structures are present in the urban core and the plaza, and the abundant surface evidence of both Toltec and Aztec occupations would seem to indicate that the Aztec pattern (with most of its characteristics) was actually initiated during Xometla times (Sanders 1965:125).

The orientation of the settlement is towards the irrigated plain. Other occupations in this site area include TA-12, traces of an Altica (TF-210), Chiconautla (TF-187), Cuanalan (TF-189), and Patlachique (TF-186) occupation as well as Teotihuacan (TC-4).

Site Area and Classification: Large, high density compact village, over an area of 15 ha during Early Toltec times. The Late Toltec covers 25 ha but is less dense, perhaps a low density compact village.

Date: Surface sampled. Definitely includes Mazapan and Xometla and a trace of Oxtotipac, but no evidence of Atlatongo.

TT-11 (Early Toltec) — TT-153 (Late Toltec)

Natural Setting: Situated at 2270 m, this site is located on a fairly flat, slightly elevated triangular bench that penetrates the irrigated plain to the east, with a steeper gradient of slope demarcating the site on its western edge (Fig. 12). The area of bench-extension into the alluvial plain narrows and tapers off to the north and south where the land has been carved back by erosion. The sandy to loamy soils range from dark brown to black in color. Soils are well preserved in the fields, but wash has exposed the tepetate in the area of the north-south road running through the site. Where not cultivated, short grasses and the pirul tree are found. To the east is the Canal de San Jose, and to the west is the old pedestrian road from Acolman to Teotihuacan, which is 4 to 6 m wide and tremendously worn and eroded. It is a great white-yellow fossil of a road.

Modern Utilization: Called *Tetechal* by the local informants, a term possibly originating in the term for a stunted species of *opuntia* or nopal which grows here and which is regarded as poisonous (also called *chimoso*, see Islas-Escarcega 1971:248), or non-digestible. These fields belong to the ejido of San Marcos Nepantla, of the municipio of Acolman. In both 1963 and 1973 they were planted in barley, beans, and maize. Maguey is also planted here. Modern, and possibly ancient, pedestrian roads border the site. There are several impressive walls running through and on the edges of the site. The retaining wall mentioned in the 1963 report as having been broken at several intervals had been made whole again sometime before the 1973 survey. Several jagueys are also present. Elaborate drainage ditches, soil traps laboriously cut into the tepetate to depths of up to 1.5 m, contour plowing, and maguey bancals are all contemporary agricultural practices found in evidence here.

Archaeological Remains: The eastern edge of the part of the Early Toltec mound indicated as TT-11-x (the "Tetechal" of the 1963 report), has been carved away by erosion all along its eastern side facing the irrigated plain. Conspicuous erosion of the eastern and northern edges of the section designated TT-11-o, ("Techachal" of the 1963 report) is reported in the notes of the 1973 survey, and has taken place as well on the southern edge of TT-11-z. It is possible that the separate occupation areas designated "x", "y", and "z" were all joined at one time, and that erosion has subsequently separated them, in which case both the Early and Late phase of Toltec occupation found here would be somewhat greater than that indicated in this description. The area designated TT-11-o is an impressive mound, the only real mound on the site. Reaching a height of nearly a meter above the natural contour of the bench, the mound is broad and wide. The areas designated "x", "y", and "z" are very badly washed out, eroded remnants of the former village site. In these areas, heavy concentrations of sherds are found littered over the ragged stumps of former house mounds, basalt outcrops, and even on bare tepetate. The eastern part of this site has probably been buried under the silt of the irrigated plain, while the northern and western sections have been partially destroyed by erosion.

Site Area: Early Toltec, 4.2 ha; Late Toltec, 15 ha.

Classification: Small, high density compact village in Early Toltec phase. Small, low density compact in Late Toltec times.

Date: Surface sampled. Major occupations are Xometla and Mazapan with some Oxtotipac; there is no Atlatongo.

TT-12 (Early Toltec) — TT-154 (Late Toltec)

Natural Setting: This site is located at 2270 m, on a very gently sloping stretch of land on the western edge of the central irrigated plain of the Lower Valley (Fig. 12). The soils, a light brown color and from 10 to 40 cm in depth, are sandy. The site is in a small, fallow area set at the intersection of two broad tepetate roads following the western edge of the Lower Valley plain of Teotihuacan. The roads show considerable erosion.

Modern Utilization: Both in 1963 and 1973, this area was left to fallow. Nothing is planted here, apparently the natural short grasses and the pirul trees form the only vegetation. It is used for the pasture of goats and sheep.

Archaeological Remains: Badly eroded remains of two or three residences are found here. There are no traces of structures except for the tezontle concentrations. The depth of the archaeological deposit at this mound area reaches a maximum of about 50 cm, but more commonly is in the range of 20 to 25 cm. Much of the site deposit has been washed away. The sherds which remain are very badly worn. No evidence of structural patterns, walls, floors, etc., remains or is visible at the surface. The site is near Toltec sites TT-13 and TT-11.

Site Area: 2.8 ha.

Classification: Compact hamlet in Early Toltec, possible dispersed hamlet in Late Toltec.

Date: Surface sampled. Entire sample is Coyotlatelco. Survey team recorded some Late Toltec occupation.

TT-13 (Early Toltec)

Natural Setting: This site is located at 2274 m, on the western margin of the irrigated plain of the Lower Valley on gentle sloping cultivated land. The soil layer is thin, never reaching more than 20 cm in depth. There is extensive erosion in this area. Short brittle grass, nopal and pirul trees grow on the mound area.

Modern Utilization: Grazing only.

Archaeological Remains: A solitary Early Toltec mound is something of a rarity. It is conceivable that this remnant was once joined, by a series of occupations, to the site of TT-11 which is to the northeast some 120 m, before being cut off by the great Acolman-Teotihuacan pedestrian roads which come between these two sites.

Site Area: One mound.

Classification: Compact hamlet.

Date: Not surface sampled. Early Toltec.

TT-14 (Late Toltec)

Natural Setting: The site is located at 2265 to 2270 m, along both the west and east banks of the Barranca del Puente Colorado which here flows from the north and its source, beyond the Cerros Aquila and Maravillas, to flow into the Canal San Antonio, directly

north of Atlatongo (Fig. 13, Plate 3). The site location is on a very gently rising stretch of land, on both banks of the barranca, which at the site is cut no more than 2 m into the tepetate, and is nowhere wider than 3 m. While not quite in the main alluvial plain, the loamy soils here are deep (45 to 200 cm), dark, and fertile, to judge by the vigorous stands of maize which for the most part cover the site. The natural vegetation found between the milpa, which is cultivated to within a meter of the barranca border, includes prominently a reblossomed nicotiana, nopal, short grasses, and pirul trees. Although the barranca that dissects this site has not been noted among those in the Valley of Teotihuacan, which are sources for obsidian, great quantities of obsidian in the form of flakes and cores as well as shaped blades, points, and scrapers are found on the site.

Modern Utilization: All sections of the site found west of the barranca were planted in maize both in July of 1963, when this site was first surveyed by the Teotihuacan Valley project survey teams, and again in August 1973, when the site was resurveyed by Marino. The eastern portion of the central section designated as TT-14-B was fallow in 1963, but planted in maize in August of 1973. The southeastern section of the site was planted in frijol in 1963, with the exception of an area in its center which at that time was described as a "lake." This feature had disappeared by 1973, and the whole of this southeastern section was filled with a tall stand of maize, the "lake" having either evaporated, or been drained.

Although these fields are unirrigated, the crops here compare favorably to those in the irrigated plain proper. A consistent effort is put forth by the ejiditarios of Atlatongo to prevent the loss of any cultivable fields to the barranca, during the rainy seasons, by the practice of placing numerous very small brush and and stone check dams along the narrow footpath wash areas running parallel to the lip of the barranca, effectively preventing soil from washing out of the maize furrows. Where the furrows run at right angles to the barranca and in most cases slightly down slope towards the barranca, they are ploughed in such a way that the last meter before the barranca is elevated and thus preventing water from heavy downpours from entering into the barranca. The small temporary dams also check the flow, and hence the force of these seasonal floodwaters.

Archaeological Remains: This village site, straggling along both sides of the stream course, has been in some areas buried by the buildup of the top soil, possibly due to a long-continued usage of the careful soil conservation practices described above, while in other areas the artifact debris is profusely scattered on the surface. As the team-leader of the 1963 survey noted,

> ...the remains of occupation are separated into four discrete areas, which display three distinct types of artifact distribution. Areas A and D display heavy surface cover of ceramic and lithic artifacts, with very little pottery visible in the barranca edge profiles in either area. Area B, however, does have very heavy pottery layers displayed in this barranca-side profile, to depths of 50 to 70 cm, while the surface cover over the large area in the field to the east of this profile shows very sparse indications. In area "C", heavy pottery is seen in the profile, while *no* Toltec pottery is on the surface in this area (McCullough 1963).

It presents an illustration of how deceptive surface survey may be in areas of deep soils, such as those of the alluvial plain.

While this lack of Toltec pottery on the surface is puzzling, this kind of situation is not unknown. A possible explanation might be burial by flood-born silts some time prior to the settling of the Aztec village, during a period of neglect of the practices of flood and

water control in the up-slope area. That these indications are not merely themselves remnants of floodwater transport and dumping, seems to be precluded by the great size of many of the sherds. Six sherds recovered in 1973 from one spot in this profile fit together to form the complete profile of large Red/Buff storage vessel, 22 cm high, surely an *in situ* finding.

It should be also noted that the range of Mazapan ceramic types to be found on this site is more extensive than is usual on the characteristic "rural" Toltec site, including a good number of sherds of Tula Water-Colored, Orange, and Brown wares. These wares are particularly noticeable in areas TT-14-B and TT-14-A. Other occupations in this area include the Aztec hamlet TA-157; a Formative hamlet of the Patlachique phase, TF-188; and, to the south, the small Classic village of TC-6.

This site may have been oriented, for religious and political purposes, towards Toltec Acolman which is close by.

Site Area: 13.5 ha.

Classification: Small, low density compact village.

Date: Surface sampled. Mazapan, Atlatongo—our best Atlatongo subphase sample is from this site.

TT-15 (Late Toltec)

Natural Setting: The site is situated at 2300 m, on a gentle slope of the west piedmont of the Lower Valley, on the southern side of Cerro Aquila, a small prominence located along the watershed running between Cerro Chiconautla and Cerro Malinalco. TT-15 is located in the ejido of Atlatongo. Thin soils are found throughout most of the areas of the site, with patches of soil retained behind maguey lines and bancal ridges of up to 60 cm. There has been extensive erosion and no permanent water sources are present. The natural vegetation includes short grasses: romero, huixcolote, huizache, and pirul.

Modern Utilization: Pasture; no cultigens were noted except for the maguey plantation which appeared to be four to five years old at the time of the survey. The nopal is probably utilized, but whether it has been purposely planted is not evident. The distribution of these plants appears to be random; they are located on a terrace system which has been abandoned for some time, possible since the revolution when these lands pertained to the Hacienda de San Jose. There are no modern structures on this stretch of slope. It is situated north and west of a large modern dam built across the barranca and running between Cerro Aquila and Cerro Maravillas, and the smaller, Prehispanic dam excavated by Millon (1954, 1957).

Archaeological Remains: The erosion is very extensive throughout the area of the site. Very little survives which qualifies as a house mound. Not only have the top soils been carried away, but the tepetate itself is badly eroded. The pottery is scattered over an area estimated by McCullough as approximately 17 ha in 1963, which was reduced by the author of this study upon resurvey in 1973 to an area of 7.0 ha. The discrepancy between the 1963 site report map and the 1973 survey may be a result of: (1) an uncertainty of the boundaries of the site which, as the original report notes, are difficult to locate on the airphotos and (2) a continuation of the erosion of these neglected slopes over the intervening decade at an already high or increased rate.

Other than the Late Toltec occupation there are remains of a Tzacualli site, TF-137, and an Aztec hamlet, TA-24. Directly to the south of the southern edge of the site is the Late Teotihuacan village, TC-7.

Site Area: 7.0 ha.

Classification: Dispersed hamlet.

Date: Surface sampled. Mazapan and Atlatongo phase, with the latter well represented.

TT-16 (Late Toltec)

Natural Setting: The site is located at 2870 m, in an area of thin soils and rocky outcrops, small cactus plants, and grasses, immediately to the west of the large stone dam known as the Presa de la Barranca Colorado. The ground here slopes gradually upward toward the north and east. The edges of the site, particularly on its northeastern limits where it meets flat silted-in areas behind the dam, has been considerably altered by both erosion and redeposition of wash materials. The land is used for pasture and also for somewhat irregular and scanty maguey planting.

Modern Utilization: Grazing and maguey.

Archaeological Remains: The surface artifact accumulation, though found over the relatively large area of 23 ha, is generally seen in only sparse to very light distributions, with a few areas in which it reaches heavier frequencies. Upon resurvey in 1973, it was estimated that the area of undoubted residential occupation could be put at no more than the upper third of this sloping site, or 8 ha. It is judged that the remainder of the pottery found within the southern section of 15 ha circumscribed by the 1963 report represents wash from the house mounds on the northern area of the site.

This hamlet was probably tributary to Toltec Acolman. Other occupations found here include a Tzacualli hamlet, TF-13 and an Aztec village, TA-14.

Site Area: 8 ha.

Classification: Dispersed hamlet.

Date: Surface sampled. Mazapan, possible Atlatongo subphases.

TT-17 (Early Toltec) — TT-155 (Late Toltec)

Natural Setting: Located at 2270 m, on a level shelf of land, slightly elevated above the irrigated plain, directly south of Santa Catarina Acolman, the site lies just 400 m west of the Canal of San Jose, between that canal and the modern Tepexpan-Santa Catarina highway (Figs. 14 & 15). The soils here are a mixture of sand and loam and fairly deep on the edges of the site, thinning out in the area of mounds. The terrain generally is level, the soils are deep, and except in the area of the heaviest mound buildup, this is good agricultural land. The northern area of the site is used as pasture due to somewhat thinner soils and because of the rock outcrops which come to the surface here. Some of the area of heaviest mound buildup during Early and Late Toltec times occurs over rock outcrops.

Modern Utilization: This land belongs to the ejido of Santa Catarina Acolman. Beans, maize, maguey, and nopal are all grown in and around the site area, though over the larger mound nothing but grass for pasturage is possible. Though generally the site area itself would probably be classified as *tierra de temporal* by the local campesinos, some of the areas on the edge of the site might qualify as *tierra de humedad* because of the deep soils there with their moisture-retaining characteristics. Lush stands of maize were observed here in August of 1973. Because of the drainage ditches along the federal highway directly to the west (built exactly over the right-of-way to the old viceregal Mexico City-Veracruz Camino Real at this point, and lined with the tall, stately Eucalyptus introduced by the Spaniards), there has been no effort made to prevent wash waters from entering from the up-slope area to the west. Some bancals were noted along the rows of maguey plantations to the south of the site.

Archaeological Remains: On its western side, the site appears to have suffered somewhat from erosion in the past, while on the eastern side one has the impression that a portion of the site is buried under sediments. We noted an abrupt drop-off in ceramics at the surface in an area that is fairly level and adjacent to the irrigated plain.

The areas of heaviest ceramic concentrations accompanied by other cultural debris are those designated as TT-17-A, TT-17-B, and TT-17-C, which is also an area of Early Toltec settlement. The most clearly discernible mound here is approximately 10 m in diameter with an elevation of from 1.0 m to 1.5 m. While there is an Aztec overlay, the Late Toltec settlement is strikingly different from its Early phase predecessor. The early village had been small, compact, and apparently nucleated, whereas the later settlement was large, sprawling, and probably of lower population density. Its northern limits reach nearly to the southern edge of the modern Santa Catarina Acolman, and may well have continued with no break into the Late Toltec settlement there (TT-10).

Also seen here are the remains of the Aztec town, TA-12.

Site Area: 18 ha.

Classification: Small, low density compact or scattered village, Late Toltec. Early Toltec, small, high density compact village.

Date: Surface sampled. No Early Toltec in sample. Late Toltec is Mazapan and Atlatongo.

TT-18 (Early Toltec) — TT-156 (Late Toltec)

Natural Setting: At 2280 to 2305 m directly north of the lakeshore of Prehispanic Late Texcoco, between Totolcingo and Tepexpan, the site is built on a gentle sloping bench above the lake plain which culminates to the north in Cerro Tlahuilco. This bench is inward-curving with the opposite ends reaching out toward Tepexpan and Totolcingo; its center recessed toward the base of Cerro Tlahuilco, forming an amphitheater effect, the village site looking down on the lake. In the middle of the recessed center a large modern quarry has been excavated for the light red cascajo of the base of Cerro Tlahuilco. The soils, which are deep and dark at the southern edge of the site become progressively thinner on moving up slope.

Modern Utilization: The lower part of the site, near the lake plain, is planted in maize, which grows as tall and as thickly as anywhere in the valley. The upper or northern sections of the site area are planted in beans, some maize, and barley. Little

terracing is used on these slopes, and little erosion control, though some small stone check dams have been built across several of the wash areas. Below the site in the area of high corn milpas, large drainage ditches have been excavated 1.5 m to 2.0 m in width, and to a 1.1 to 1.6 m depth. The lake plain further south is barren of cultivation; here is only short grass, possibly due to salinity.

Archaeological Remains: The Toltec distribution is spotty, variable, and extensive over these slopes. Few areas of buildup are prominent enough to be designated as mounds, and it is probable that much of the Toltec occupation here has been washed into the lake-plain below. Nevertheless, areas of very heavy ceramic concentrations remain together with several locations in which excavation might well reveal house platforms and room patterns. Other than ceramics, the surface collections include a note of abundant mano and metate fragments. Obsidian tools were found to be relatively scarce, although a few scrapers are recorded.

The quarrying practices have resulted here in the dumping of soil over the archaeological deposits in the areas to the north and west of the quarry, accounting for the apparent phase-out of the Late Toltec occupation in the central section of the site.

The upper limits of the site are sharply demarcated by the contour marking the end of the gentle slope and the beginning of the steeper slope of Cerro Tlahuilco. The archaeological deposit of the Late Toltec settlement is, in most areas, light to moderate. No cuts into this deposit were observed. The ceramics come from a layer of very thin soil directly over the tepetate base. The village here was probably tributary to Toltec Acolman, TT-10.

The mounds with Early Toltec occupation are scattered and widely separated from each other, and occur in an arching line following the contour of the upper part of the gentle slope area, just beneath the more steeply rising shoulders of Cerro Tlahuilco. The mound areas are seen as very dark soils which cover the tepetate. The pottery concentrations are localized and varying in density from moderate to heavy. The site is in the area of the Aztec villages, TA-18 (Sanders 1965:208) and TA-13.

Site Area: Early Toltec, 6 ha; Late Toltec, 48 ha.

Classification: Early Toltec, dispersed hamlet; Late Toltec, small scattered village.

Date: Sampled but the sample was not diagnostic. Survey team reported Early and Late Toltec.

TT-19 (Early Toltec) — TT-157 (Late Toltec)

Natural Setting: The site is located at the upper edge of the piedmont area at 2315 m on the lower slopes of Cerro Tlahuilco. The northeast or lower area of the site is on the edge of a deep soil area immediately above the irrigated plain. The southwestern or upper sections of the site are in thin, rocky soil where the piedmont rises sharply to the steep slopes of Cerro Tlahuilco. The piedmont has been covered with a fairly heavy overlay of loose-lying tezontle blocks. Following the northeast to the southwest axis of this site beyond the site limits and an additional 200 m in the southwest direction, an area of abandoned quarry is reached. The quarrying here appears to have been for two materials: the volcanic ash known locally as cascajo and for blocks of dark red-brown basalt, both used for construction.

Modern Utilization: The lower section of the site is planted in maize and beans. The upper section is too rocky for cultivation, except for maguey planted in rows running at right angles across the northeast to southwest axis of the site. These rows of maguey are formed behind 20 to 30 cm wide bancals, and spaced some 8 to 10 m apart.

Archaeological Remains: No distinguishable mounds were observed here during the 1973 survey. The only important discrepancy between the findings of the 1963 and the 1973 surveys was seen upon reexamination of this site. The area of 39 ha defined from the notes of the 1963 survey had to be reduced to no more than 4 to 5 ha for the Toltec site. The reasons for the originally very large over-estimate of site size may lie in the fact that the fields adjacent to and up slope from the site appear to contain 8 to 10 elevations on each of the seven ascending terraces. If not checked out individually, these could readily have been plotted as mounds, by standing on the natural lookout feature of the cliff-shelf in front of the abandoned cascajo quarry, which looks down on these fields. These features are, however, merely the loose-lying surface tezontle, which has then been piled in discrete areas between the bancals.

In the actual site areas, the ceramic concentrations are localized and variable. Mano and metate fragments are abundant.

Site Area: 4 to 5 ha.

Classification: Dispersed hamlet.

Date: Surface sample shows only Mazapan and Atlatongo subphases. Survey team recorded some Early Toltec but it was not present in the surface sample.

TT-20 (Early Toltec) — TT-158 (Late Toltec)

Natural Setting: At 2255 m, on a small, low hill completely surrounded by the flat alluvial plain of the Lower Valley, Calvario Acolman is like a small island sitting in a large lake (Figs. 16 & 17). During the latter part of the sixteenth century it was such an island. This piece of rocky ground rises above the irrigated plain between the Canal de San Antonio to the east and the central canal or Rio Grande de San Juan to the west. The natural state of this hill has been altered by the small contemporary adobe town which completely covers it. The plaza is on bare tepetate with a scattering of small cobbles as paving. A few of the houselot fields show soil deposits of up to a meter in depth. The soil is light brown and loamy in texture. It is possibly partly of livestock and human origin.

Modern Utilization: Town site. Houses, small fields, plazas, and streets.

Archaeological Remains: The Toltec occupation is overlain by the modern village, but is evidenced copiously by outwashes along the side of the small streets winding between adobe walls and organ cactus fences up and down this hilly location, and may be seen in back lots. Erosion of some streets has also exposed sections of old floors associated with Aztec as well as Toltec occupations (Plate 2). The Toltec component is heavier than is the later Aztec. The distribution of the sherds varies from sparse to moderate, and in one test area outside of the plaza was found at a frequency of 47 per m^2. Obsidian blades and scrapers are relatively abundant. Without excavation, the depth of the archaeological deposit cannot be determined, but it is estimated to reach over a meter in some areas, if not twice that. A stratigraphic trench excavated somewhere on the sides of this hill might reveal that at least part of this "hill" is artificial. It would seem to be a natural habitation site for the entire period of human occupancy of the valley, and there may be earlier occupation not noted in the surface sample.

The adobes, of which most of the town's structures are built, were a focus of observation. While those in the southeast section of Calvario are almost completely free of archaeological materials, those in the section northeast of the church are filled with midden materials. Among these thousands of sherds protruding from the walls here, the Early Toltec is particularly prominent. Although on at least one occasion a collection taken from adobe walls has been recorded as a site (Tolstoy 1958), the provenience of these at Acolman cannot be determined with any accuracy, as adobe-making goes on all through the region of the irrigated plain today, and undoubtedly has for centuries. The people of Acolman could purchase their adobe from many locations in the valley, as they have, relationships with compeers in villages east, west, north, and south; although it would seem that an economy of parsimony would tend towards the purchase of adobe from the nearer sources.

The problem of provenience presented by the ceramic-laden adobes of the present village might be simply explained as deriving from an extensive area of excavation for adobe making materials in the fields on the irrigated plain directly south of the present village, and adjacent to it. Here the adobe-makers, or ladrilleros of Calvario (of which there are several families), have an extensive area, stretching towards the Convento, from which they excavate the soil used for their bricks. These fields, encompassing some 17 ha have sandy to clay-like soils which apparently are not productive agriculturally. They may be a result of the silting which occurred in this area behind the first viceregal dam, which was completed in May, 1630.

> *Con motive de las inundaciones que sufriá la cuidad de Mexico, una junta general, efectuada el 26 de diciembre de 1629, determinó construir una presa para contener y desviar el caudal de los rios de la region que engrosaban el lago de Texcoco. Fué concluida en los cinco primeros meses de 1630 con un costo de veintitres mil quinientos pesos. Se cree sin embargo, que fué una reconstrucción, pues se le señala fechas muy anteriores para su origen. Mas tarde se le hizo una rotura de cien varas al lado de la compuerta. . . En los autos de 1748 se ordena la reconstrucción de esa parte rota. . . Efectivamente: en los planos viejos del Valle de Mexico, inclusivo el aparece como una laguna, dividida en dos, por la presa y en el centro, como isla, aunque comunicado por ambos lados esta obra fué funesto para el monasterio, pues quedó hundido en case dos metros* (INAH: Acolman Guia Official 1958:8-9).

As the convent-monastery is south of the present day Calvario, the extension of the "island" Acolman of which Calvario is a remnant of the Franciscan monastery-church-school. Since the description has this earlier settlement joined to the land by causeways over the top of the dam, extending east and west however, one must conclude that either another dam was placed athwart the valley at possibly the location of that later built or reconstructed during the administration of the Viceroy Revillagigedo, or that between the convento and Cuanalan, Lake Texcoco itself invaded this portion of the valley during the period of inundations.

The dam, or dams, might explain the origin of the clayey deposits between the convento and Calvario. A hypothesis which excavation here might test, is that at 2 to 3 m beneath the present level of the plain, between the knob of present-day Calvario and the colonial convento, the remains of a portion of Prehispanic Acolman dating from at least Early Toltec times may be buried, including a large section of the Aztec settlement, TA-165-164. It is also possible that much of the Early Toltec materials found in these clay fields has come from wash from earlier adobe structures, presenting a picture of continuous re-cycling of the building materials and deposits contained therein.

Late Toltec pottery washes out of the sides of houselots, and is seen in cuts eroded in the packed earth and partially cobbled street of the town. It even washes from the adobe walls. There is admixture with Early Toltec as well as Aztec materials throughout. The Aztec remains are not as heavy as the underlying Toltec, an unusual occurrence. Other occupations represented here are those from the late Preclassic, Tzacualli (TF-3; Marino 1965:130, 133), and Aztec (TA-164 and TA-165).

Site Area: 34 to 37 ha.

Classification: Provisionally, only on the basis of the survey area above the plains surrounding Calvario today, a town during the Early Toltec, declining to a small, low density compact village in Late Toltec times. This site may, however, have had an extension beneath the silts of the plain to the south encompassing an area approximately three times that of the present-day limits, in which case the settlement in question was probably a part of the large site at Santa Catarina Acolman (TT-10, TT-144).

Date: The surface sample was primarily Xometla, a hint of Oxtotipac, very little Mazapan.

TT-21 (Early Toltec) — TT-159 (Late Toltec)

Natural Setting: The site is located at 2282 to 2290 m, on a gently rising, narrow strip of piedmont directly east and above the Canal de San Antonio and the alluvial plain, and just west of the sharply rising knob of Cerro Xoconosco (Figs. 18 & 19). The soils here are variably thin to more than a meter in depth and from light brown to dark brown in color. There has been erosion to tepetate at both the northern and southern edges of the site, where westward-cutting barranca-wash areas are encountered, but the site area itself displays little erosion, and on the lower, or westernmost terraces, deep soils preserved behind carefully tended bancals and terraces and walls are seen. The maguey which forms lines behind many of these bancals does very well here, and the pirul tree, so often a stunted dwarf when found in piedmont areas of the valley, here grows to its maximum size. Grouped cacti are also found scattered through the site.

Modern Utilization: Mostly agricultural. The crops include maize, beans, and on the lower terraces, squash as well as both maguey and nopal. In the past, the cut made through the upper, eastern edge of the site for the road bed of the Mexico City-Vera Cruz railroad, which passes on a sinuous southwest to northeast line through the eastern edge of the site, has been widened even farther by quarrying activities in the vicinity of the large temple mound-pyramid in the southeastern section of the site. During the 1973 re-survey it was noted that 2 small stone houses had been built in the southwestern section of the site, which now have families living in them, where formerly (1963), there were only open fields. The entire site is covered with maguey bancals averaging 8 to 10 m in width.

Archaeological Remains: The terraces of the site conform to the natural contours of the hillside but are nevertheless undulating affairs, due to the presence of at least 86 clearly distinguishable mounds scattered over the 64 ha of the site. On a little less than two-thirds of this area, or 40.6 ha, the Early Toltec occupation may be seen primarily in the eastern section of the site, descending to the western or lower terraces in the central portion on a line drawn east to west from a point approximately midway from the northern and southern edges of the site. In addition to the aforementioned 86 mounds, an additional 22 areas have been recorded which show concentrations of tezontle escombro which may represent former dwellings, bringing the maximum possible total of house mounds to 108. Nearly all of the mounds have some Early Toltec phase materials on

them, but in the northwestern and southwestern section of the site Early Toltec is sparse in comparison to the Mazapan and Aztec debris. There we judged the materials to represent possible wash from the uper terrace Early Toltec occupations.

Sanders has provided a clear description of these mounds, and those architectural features of the site which have been exposed.

> The site consists of over 100 mounds and light to heavy concentrations of rock debris and sherds dispersed over the piedmont in a band 1200 m long by 400 m wide, or a total area of 50 ha.
>
> TT-21 is one of the few Toltec sites with ceremonial architecture. At the upper edge of the site near the center of its long dimension, is a large pyramid 12 to 15 m in diameter and three to four meters high that has been dissected by the construction of the railroad. Immediately west and south of it are two large plazas. The west plaza is bordered along its northern side by a large, low, rambling mound that looks like a large multi-roomed structure. The other mounds are comparable in size and elevation to Aztec domestic mounds. Most of the sherds from the pyramid pertain to the Xometla Phase, and nearly all of the mounds have Xometla occupation on them. Estimating their former number is difficult, but the abundance of rock debris and sherds in areas where no mounds occur today demonstrates that the number of structures intentionally or accidentally destroyed by modern terrace construction was considerable. The settlement pattern was certainly not as compact as in the Teotihuacan Period villages or city, but it was probably at least as densely nucleated as modern Xometla. This would yield a total population of 1250 to 2500. TT-21, unlike Aztec towns, did not, however, possess an urban core (Sanders 1965).

The Late Toltec phase occupation covered a larger area (64 ha) than the already large area covered by the Early Toltec town site of 40 to 50 ha, but the occupation appears to be less nucleated than in the early period Toltec town. It is inferred that while the area of occupation expanded in this later period, the occupational density may have dropped, and that the population level may have remained constant.

The Aztec village site here was probably that identified in the *Relacion de Tecciztlan* for the 1570 to 1580 time period as San Antonio Huixtonco (TA-87-14). On the northern edge of the site near the irrigated plains, a small Cuanalan phase hamlet has been recorded, TF-214 (Marino 1965:125).

Site Area: Early Toltec, 40 to 50 ha; Late Toltec, 64 ha.

Classification: Medium density compact village or town in Early Toltec times; large, scattered village in the Late Toltec phase.

Date: Surface sampled. Major components are Mazapan and Xometla, with traces of Atlatongo and Oxtotipac.

TT-22 (Early Toltec) — TT-160 (Late Toltec)

Natural Setting: The site is located at 2292 to 2296 m, on a hillside rising abruptly from the irrigated plain, just east of the Granjas of San Miguel Xometla (Plate 2). This is a rocky, barren slope today. In several areas, however, a wetness and sponginess of the soil indicates that springs may have formerly surfaced within the site area. Erosion has been extensive. The soils are very thin where present. To the south of the site runs a

barranca which is about a meter deep, where it comes into the plain, but reaches a depth of approximately 24 m at the southeastern, or upper edge of the site. The site is located on a hilly slope to the south of the large Xometla type site (TT-21) and to the south of Cerro Tetzoncalli. The hills continue to rise father east from the site, providing a source of floodwater for this area. McCullough has suggested that the piedmont area around the site may formerly have been cultivated. The canal of San Antonio and the irrigated plain are directly to the west of the site area.

Modern Utilization: This land pertains to the ejido of San Pedro Tepetitlan. No agricultural utilization, except for the maguey and nopal and some scanty grazing. No modern structures. A wall of the Granja rests on a mound at the extreme western edge of the site. An abandoned, ruined dam is found just to the south of the site, in the barranca.

Archaeological Remains: On the site are at least 33 mounds, not all attributable to the Toltec occupation. The majority of these mounds are in good condition, except for those near the Granja, and those near the top of the hill, which have been seriously pitted and pothunted. The pottery distribution is localized and variable in frequency from sparse to heavy. Pottery counts taken between Mounds 1 and 2 show 3 per m^2, while a count taken on Mound 3 reached 76 per m^2. The Early Toltec occupation is confined to the western and lower part of the site, in approximately the same area as the earlier Classic village, TC-131. Lithic material, including mano and metate fragments and obsidian blades and scrapers are abundant.

Erosion has exposed wall stubs and house floors in a number of areas of the site. In the process of exposing one of these, a burial with associated Toltec pottery was encountered. The Late Toltec covers an area of 12 ha, which is somewhat less than that of the Aztec occupations of TA-27 and TA-166-13, but nearly four times as great as that of the Early Toltec occupation. Again, this increase in area was accompanied by a drop in population density per unit of area. The mounds here are in good condition for observation because of the lack of cultivation, erosion, and ironically, the pitting or pothunting activities. Numerous wall stubs are observable. The Mazapan occupation spreads up slope, from the original Classic and Early Toltec hamlet. Other occupations at TT-22 include a Patlachique phase hamlet, TF-124; a Cuanalan phase hamlet, TF-34; a Classic hamlet, TC-131; and the Aztec sites TA-27 and TA-166-12.

Site Area: 12 ha in Late Toltec times; 3.2 ha in Early Toltec times.

Classification: Small, dispersed village in Late Toltec times, hamlet in Early Toltec phase.

Date: Surface sampled. Mazapan, Atlatongo, and Xometla subphases are well represented.

TT-23 (Early Toltec) — TT-161 (Late Toltec)

Natural Setting: The site is located at 2270 m, on and at the edge of the irrigated plain, west of the broad piedmont of Cerro Patlachique, extending to the lower range of that piedmont. The upper part of the site in the east has, in the past, been part of a broad wash area, but careful practices of bancal and terrace construction by the Hacienda Santa Catarina have preserved the soils here. The western portion of the site is partially buried in the alluvium of the irrigated plain.

Modern Utilization: Agriculture is practiced throughout the site area. In addition, numerous structures, roads, and fences belong to the Hacienda Santa Catarina and the Petroleos Mexicanos installation on the western edge of the site are built on, runs through and over the area of the mounds.

Archaeological Remains: Three mounds, widely separated from each other in a north-south line, presenting a barely perceptible rise in the topography, are the most conspicuous feature of the site. Field by field examination reveals a nearly continuous occupation running along the irrigated plain in the area between these mounds and extending east to the foot of the Patlachique piedmont. Sherd concentrations are visible on the edges of the deeply ploughed fields all along the irrigated plain here as well as along the right of way of the high power line leading from the southeast to the northeast through the site. Other possible mounds may be in the areas of rubble and pottery concentrations seen in the eastern or upper section of the site. The ceramics are localized and variable and found in sparse to moderate frequencies. While obsidian tools and mano and metate fragments are relatively rare, spindle whorls were abundant in the collections, suggesting local specialization in twine or cordage. Also common were figurine fragments. The area of Late Toltec cultural debris is nearly three times (28.0 ha) that of the Early Toltec (9.5 ha) settlement. Other occupations in this area are TA-169-17, TA-197-40, TC-13, and the small Tzacualli occupation of TF-140.

This site may be the location of the former Santa Ana Atenpa, mentioned in the *Relacion of Tecciztlan* for the 1570 to 1580 period.

Site Area: Late Toltec, 28 ha; Early Toltec, 9 to 10 ha.

Classification: Late Toltec, small to large, low density compact village; Early Toltec, small, low density compact village.

Date: Surface sampled. Xometla, Mazapan, Atlatongo.

TT-24 (Early Toltec) — TT-162 (Late Toltec)

Natural Setting: Located at 2320 to 2330 m on a gently sloping hill and adjacent piedmont of Cerro Xoconosco, a foothill of Cerro Patlachique, the site is oriented toward the eastern edge of the Lower Valley alluvial plain in the area just north of San Miguel Xometla. Little erosion on the gentle slope of the site itself, but a great deal of erosion in the barranca on the southern edge which here reaches a depth of 15 m. TT-21 is directly across the barranca. Sandy to brown dark soils and basalt outcrops are found throughout the site area. A deposit of quartzite is found east and up slope from the site, but the quality is judged to be inadequate for much use in tool making. The slope west and beneath the site grades gently into the alluvial plain. The soils on the site proper are up to a meter in depth, as revealed by erosion cuts on the lower western extremity of the site.

Modern Utilization: None, except for grazing. A low, well-made stone wall is found at a contour some 10 m above the eastern or upper limit of the site, but this does not seem to function as an erosion control, but rather as a boundary marker.

Archaeological Remains: There are 13 and possibly 16 mounds depending on whether the very large mound area labelled Mound 6 on the maps (Figs. 20 & 21) represents one mound, or four which have joined together through silting. The mounds in the central and southern portion of the site are well-preserved. Their elevation above the natural contour of the slope varies from between 75 cm to almost 2 m. These are all

house mounds, with the possible exception of Mound 6, and the construction here was probably entirely in stone, which would account for the height of these mounds. There has been little erosion of the mounds and no pitting or excavation was observed.

The sherd distribution is localized and variable, running from light to moderate frequencies. Sherd counts taken on Mounds 1 and 6 showed 14 per m^2 and 21 per m^2, respectively, while a count taken in the bean field below and to the west of the site area itself showed a count of 11 per m^2, in an area of redeposition. The area to the west is downslope and the sherds found here are not taken to represent occupation, but rather outwash and redeposition from the actual mound area of the site itself (Plate 3). The washing-out found there may account for the relatively light frequencies in sherds seen on the mounds themselves. Obsidian blades and scrapers are strikingly abundant. Of the 13 mounds recorded for this site, 9 have Late Toltec occupations. These are impressive stone structures. There is no pitting. The Late Toltec is somewhat smaller than the Early Toltec occupation area. Sanders (1965:120) has referred to the small Teotihuacan period occupation on this site as TC-102. The light to moderate ceramic indication of the Aztec site TA-175 is also seen here.

Site Area: Early Toltec, 5 ha; Late Toltec, 6 ha.

Classification: Dispersed hamlet.

Date: Surface sampled. Mazapan, Atlatongo, and Xometla.

TT-26 (Early Toltec) — TT-164 (Late Toltec)

Natural Setting: The site is located at 2255 m, north of the northern shoreline of Prehispanic Lake Texcoco, in the modern village of Totolcingo. The land is on the south piedmont of Cerro Chiconautla, and rises very gently toward the north. The terraces of these fields are well-tended and kept in repair. There is little erosion. The soil ranges up to 1.9 m in depth as evidenced by the east to west road cut through the area. These soils are dark brown to black in color. No stones are seen in the fields because all loose tezontle debris has been picked clean and piled on the terrace walls.

Modern Utilization: Some squash, together with vigorous crops of maize and beans are planted here. A new road has been cut east to west through the site area. Well-kept terrace walls run parallel to the east-west axis of this road and the site, both to the north and south of the site.

Archaeological Remains: Late Toltec pottery is seen coming out of the profile of the highway cut here, nearly continuously, for a little over 1200 m; the highway cut runs from west to east and is parallel to the the old lakeshore (Plate 2). The pottery is seen in a layer beginning at 40 cm beneath the present surface and extending some 25 to 30 cm to a depth of 65 to 70 cm. The minimal northwest dimension of this settlement, granting that it was a linear settlement, stretching along the lakeshore and very shallow in depth, is 40 to 50 m, yielding an estimated area of 6 ha. The sherds are found under a thin (5 to 8 cm) layer of light, highly compacted soil, overlain by a top layer (16 to 20 cm) of much darker loamy to clayey soil. Few stones are seen in the archaeological deposit. The structures here were probably of adobe, which had been "re-cycled." Few sherds could be seen in the fields on either side of the road, probably due to the raising of the terraces and field levels.

Site Area: 6.0 ha.

Classification: Small, high density compact village.

Date: Surface sampled. Mazapan and Atlatongo with a trace of Early Toltec—possibly Oxtotipac subphase.

TT-28 (Early Toltec) — TT-166 (Late Toltec)

Natural Setting: The site is situated at 2260 m, at the point where the irrigation canals of the Teotihuacan Valley rejoin the San Juan River and at the head of the delta of the Rio San Juan, just north of the areas formerly covered by the waters of Prehispanic Lake Texcoco. The site area is nearly completely covered by the modern adobe village of Cuanalan which overlaps the earlier Aztec, Toltec, Classic, and Formative occupations. The terrain is flat and topographically featureless, except for the pitting produced by quarrying in the southeastern quadrant of the site area and the relief given by the high, man-made, levee-like banks of the Canal de San Antonio to the north of the site and those of the Rio San Juan to the west of the site. These high (2.0 to 2.5 m) banks are created by the accumulation of the sediments thrown up on the banks during centuries of canal clearing and clearing by cooperative work teams of the campesinos who till the adjacent irrigated lands.

To the north of the site and the present village, about 275 m distant, are the remains of the last of the great colonial dams built as part of a new flood control program under the viceroy Revillagigedo. To the south of the site, some 800 m, begins the rise of Cerro Cuahtepec.

All along the southern perimeter a heavy deposit of sand partially overlays as well as underlies the site. Approximately 2.5 km to the west rise the foot hills of the Patlachique Range. This area has been on the receiving end of the erosion cycles which have periodically stripped soils from the piedmont of the valley's margins and so the ground surface here has steadily risen since at least Late Formative times.

Modern Utilization: The modern adobe buildings and adjacent patios of the contemporary village of Cuanalan cover most of the site area. Parts of both the eastern and western extension of the site are planted in maize. Sand quarrying is also taking place in both the southwestern and southeastern sections of the site.

Archaeological Remains: The indications of Early Toltec occupation are evident throughout the area covered by modern Cuanalan and extend beyond the modern limits on both the eastern (by 800 m) and western (by 500 m) edges.

The Early Toltec occupation through this area is heavier and greater in areal extension by nearly 10 ha over that of the Late Toltec site area. Sanders provides an explicit and detailed description of the Early Toltec remains here.

> TT-28 (Cuanalan) was another large site comparable to an Aztec town. The Toltec occupation was coterminous with the Aztec. At the eastern edge of the village...is a 200 meter square area of relatively large houselots with heavy prehistoric occupation of the Aztec and Toltec periods. The heaviest Toltec component pertains to the Xometla phase with some concentration of rock, marking the location of former stone buildings. One large, low mound may be a temple base. In this area, recent sand quarrying has cut through, partially destroyed, and uncovered plaster floors of a multi-roomed residential structure. The entire surface of this area had been levelled for use as a village plaza and the walls of the building obliterated. Nowhere is there

more than 25 cm of debris over the floor. An area of 120 m^2 was cleaned down to this floor level. Traces of the lime plaster floors and the scars of walls, apparently constructed of stone and earth and covered by lime plaster, were found in this area. Apparently the few rooms cleared were parts of a multi-roomed structure similar to the Xolalpan houses at TC-8. Superimposed over this were traces of an earth floor and rectangular adobe walls of an Aztec house or house group. The walls had stone-earth bases similar to those of modern adobe houses in the village.

The plaster floor dates from the Xometla Phase, and its presence, plus the possible pyramid and general density of remains in this section of the village, suggest an urban core similar to that found in Aztec towns. Obviously excavation is needed to establish this point. The area of this postulated core is four hectares. The Xometla phase remains as a whole occur over a total area of 20-25 hectares (1965:125, see also Part 2, this volume).

The Late Toltec settlement contracts towards the ceremonial focus in the eastern half of the site area. The western section of the Early Toltec phase settlement does not appear to have much Mazapan subphase occupation, nor do the two hectares of Early Toltec settlement. Furthermore, in the area in which both Early and Late Toltec occupations are coincident, the late occupation is somewhat lighter than the earlier occupation. This is another of the settlements of the irrigated plain that, like Santa Catarina and Maquixco Bajo, have had permanent settlement from Formative times down to the present. Earlier occupations here include the type site of the Late Formative, TF-38; the Aztec settlement, TA-162; and the Classic site, TC-16.

Site Area: Early Toltec, 22 ha; Late Toltec, 14 ha.

Classification: Large, high density compact village in Early Toltec time; small, low density compact village in Late Toltec phase.

Date: Not surface sampled, but visual examination and excavated samples suggest Xometla and Mazapan but probably no Oxtotipac or Atlatongo.

TT-108 (Early Toltec) — TT-175 (Late Toltec)

Natural Setting: The site is located at 2608 to 2624 m, at the very top terrace of Cerro Azteca, the southernmost spur of the Patlachique range. Rather steep slope gradients are encountered on all sides of this site. The soil over the rock is thin, but supports several thickly-growing hardy grasses and flowers of varieties which are moisture-loving, and can take the chilled winds. The tops of the mountains in the Patlachique range receive more moisture in the form of cloud condensations than do the lands beneath them, and are surprisingly damp places even during the dry season, from November through April.

This location has a rather sentinel-like position with respect to the northeastern area of the Valley of Mexico, and has an unobstructed view of the Middle and Lower Teotihuacan Valleys, the entire Texcoco basin, and to the farthest south, the Chalco district.

Numerous rocky outcrops are seen surrounding the slopes leading up to the summit, and at the top of Cerro Azteca itself.

Modern Utilization: Herders bring their flocks of goats here. There is also a small twentieth-century chapel erected over the Toltec-Aztec pyramidal platform; the chapel is dedicated to the cult of the Virgin of Fatima, a small madonna in yellow robes. On the western edge of the hilltop there is a stone quarrying area that may have been opened for the stone used in the building of the chapel or may have been opened earlier, for the building of the pyramid mound itself.

Archaeological Remains: As Parsons (1971:79) has pointed out in his description of this location, the sole site of the Texcoco survey which overlaps the Teotihuacan Valley surveys of 1960-1963, "no structural remains can be assigned to the early Toltec times, but the large Aztec pyramid which dominates the site may contain earlier constructions within its core."

The large Aztec temple platform is approximately 20 x 35 m and has a plaza abutting its western face (55 x 25 m). North and downslope from the plaza by some 16 m is an artificially carved-out terrace in the mountainside, which is measured at 10 x 40 m. Though the temple mound itself shows no evidence on its exterior of anything other than Aztec ceramics, excavation would possibly reveal interior constructions from the Toltec periods. The plaza and terrace themselves would seem, from the ceramic indications, to date to at least Early Toltec times.

Localized and variable concentrations of Early Toltec ceramics are found over the area of approximately 1 ha of the site in sparse to light frequencies. Other occupations that are found here include those of the Late Formative (Parsons: Tx-TF-3, 1971:37-38) and the Aztec (Parsons: TA-35-Tx-A-20, 1971:98). Parsons has provided a map which shows the relationship of this site to others in the northern Texcoco plain (1971:70, Fig. 8) as well as a site plan showing the elevation of the pyramid mound, the plaza, and the artificial terrace below (1971:99, Fig. 14).

Classification: Hilltop ceremonial precinct.

TT-109 (Late Toltec)

Natural Setting The site is located at 2470 m, high on the western flank of Cerro Chiconautla. There are steep slopes beneath and above the site area, which itself is on a gently inclined bench "La Mesa." The thin soils overlay basalt and a fine tezontle ash base. Soil thickness ranges from 10 to 30 cm, where present. Good cover of high grasses and wild herbs is found here, however. Pirul is found here as well as *nopal amarillo*, or *techalote*, which is the bitter nopal whose fruit is not eaten, but whose penca is quartered and put into stews.

Modern Utilization: Grazing for goats and sheep as well as a collection area for the pot herb romerito and the penca of the *Opuntia stretacantha*. Tlachiqueros tap the scattered small maguey that are found here.

Archaeological Remains: Scattered and variable, light to thin ceramic scatter of the Late Toltec phase is found here. There are 7 localized areas of stone and sherds mixed with basalt as well as obsidian tools. Mano fragments are present. Aztec remains are also seen here, but they are not as prominent as are the Mazapan materials.

Site Area: 5 ha.

Classification: Dispersed hamlet.

Date: Not sampled, Late Toltec.

TT-110 (Late Toltec) — TT-176 (Early Toltec)

Natural Setting: The site is situated at 2510 m, at the top of Cerro Chiconautla on a rock ridge. Basalt is weathered here to produce thin, sandy soils in the flat area of the site. The slope falls away sharply on the south and west of the summit area, somewhat less sharply on the eastern side, and most gently on the northern side.

Modern Utilization: Grazing only.

Archaeological Remains: Low, small rock mound 70 m east of the highest point of the summit of Cerro Chiconautla. It measures 3.2 x 4.0 m at the base and is 80 to 120 cm in height. The area around the mound is littered with Late Toltec and Aztec sherds. Several large fragments of Aztec ceremonial censers of the hollow, tubular handle variety are found here. The handles end in very realistic-looking serpent heads.

Classification: Isolated pyramid precinct, mountain-top ceremonial site for Tlaloc.

TT-132 (Late Toltec)

Natural Setting: This site is situated on the northern slope of Cerro Cuahtepec, a gentle incline of surprisingly deep soils. No erosion. This spot is like a promontory at the head of the delta, looking out toward the shore of Lake Texcoco. The soils have been retained by well-constructed bancals.

Modern Utilization: Planted in maize, beans, and squash. Maguey bancals. Eastern area left fallow, except for maguey bancals, in years 1963 and 1973.

Archaeological Remains: Moderate to light areas of Late Toltec ceramics found throughout the area of gentle slope from near the top of Cerro Cuahtepec, which is the location of TF-40 (the Tezoyuca type site), and south towards Cuanalan. Some of the Aztec occupations of TA-162 are found here also. There is a large mound on the western edge of the site, which measures 20 m in diameter. Both Late Toltec and Aztec ceramics are found on the top and sides of this mound.

Site Area: 21 ha.

Classification: Small, low density compact village.

Date: Not surface sampled. Late Toltec.

TT-133 (Late Toltec)

Natural Setting: This site is located on the southern flank of the Loma de las Calaveras at 2305 m in the north piedmont of the Lower Valley. Soil cover is variable, but generally thin throughout the area of the site. Heavy concentrations of stone and tezontle are found throughout the area. There has been wash erosion on the eastern edge of the site area. Two springs are near the top of the hill.

Modern Utilization: Pasture and maguey plantation.

Archaeological Remains: This site has been somewhat neglected due to the important Teotihuacan village (TC-8) located in the upper-central portion of the site area and due to the heavy Aztec occupation throughout the site area—TA-219-21, the Tres Reyes Izquitlan of Postconquest times. The residential patterns of the Teotihuacan village are characterized by large multi-room complexes situated around plazas, represented by large mounds which are often found in groups of three or four. These are all found together in a very compact pattern. The Aztec and Late Toltec occupations are seen in much smaller, much more dispersed residential mounds. The Late Toltec residential foci are even more dispersed, if that is possible, than the Aztec.

Classification: Small, low density compact village covering 2 to 3 ha.

Date: No surface sample, Late Toltec.

TT-144 (Early Toltec) — TT-178 (Late Toltec)

Natural Setting: The site is located at 2249.5 m, some 2.5 m beneath the present level of the alluvial plain surrounding the temple-monastery precinct of the Agustinian Convento of Acolman, which is the most remarkable colonial monument in the Valley of Teotihuacan. The postulated site area is within the deep-soil irrigated plain, devoted, here entirely to maize and squash. Part of the site is below the Convento of Acolman in an area extensively silted over during the past four centuries. At least 2.5 m of silt overlays the Toltec site.

Modern Utilization: The site area is overlain by the huge constructions of the later Aztec and Postconquest periods of the sixteenth and seventeenth centuries. Over it lays the foundations and temple precinct of the great temple of Huitzilopochtli of Acolman, and over that, and partly built from the rubble of that temple, the massive Fortress-Church-Monastery built in the somber grim style of the early Postconquest period. This precinct, inundated by the creation of the flood control dams of the late seventeenth century, was freed from its bed of silts of nearly 2 m only in the late 1920s, and today is a popular attraction for tourists and students of early Hispanic Colonial architecture. The precinct is government-owned and under the administration of the Department of Colonial Monuments, within the National Instutute of Anthropology and History (INAH).

Archaeological Remains: During the winter months of 1962, the INAH officio of Colonial Monuments enlarged a moat-like drain or ditch, created in the earlier period of restorations, on the outer perimeter of the Convento and its Atrium wall, on the north and eastern faces of that perimeter, exposing to view the lower section of the outer foundations of the formidable pile of ecclesiastical masonry represented in the monument itself. The profile of this excavation, which opened a space some 2 m wide at the muddy bottom of the trench and extended over 5 m wide from the foundation wall to the top of the back-fill of the trench which formed a levee or dike facing the irrigated plain beyond, was examined along its entire length. The excavation cleared the top 4.2 m of the foundation, which continued down into the mud and water of the trench at the level (estimated at 2246.5 m) at which the deepening of the trench was discontinued. The freed upper portions of this massive foundation along these western and northern faces revealed a sharply-inclined wall which looks not unlike the pyramid faces of the temple platforms seen at Tlatelolco and Tenayuca. Whether this foundation represents a structure erected by the Spanish architects of the Fortress-Convent or, as may be readily suspected, is actually a portion of the lower body of the Acolman Temple of Huitzilipochtli, itself utilized as foundation for the Franciscan monument, only excavation by an archaeologist interested in examining the problem of the relation of the Convento to Prehispanic remains could tell.

Examination of the profiles of the outer banks of the enlarged ditch revealed Aztec sherds mixed with some Late Toltec at about 2.5 m beneath the present level of the irrigated plain. Heavy Late Toltec remains, with some Aztec and Early Toltec phase materials, were noted in a stratum some 20 cm thick located from 2.9 to 3.2 m beneath the level of the irrigated plain at the bottom of the trench coming from the muddy bank. The INAH work crew could not proceed deeper with the trench because water seepage increased, during the three-week period during which the present investigator visited the site, so that the trench became filled with water. This level is evidently under the water table. Eventually the trench area silted in from collapse of the outer banks along its length.

No constructions were visible in the outer profile. The area of sherd deposit was spotty and variable from very light frequencies, one or two sherds every meter of length, to heavy, almost midden-like, concentrations. A few Late Teotihuacan sherds were also recovered, including several sherds of Thin Orange, or the Thick variety used in ceremonial vessels.

Subesquently, the lower section of the trench was flooded and by the summer of 1963 was beginning to silt in. This site was revisited in August of 1973. In the period intervening between 1963 and 1973, INAH has poured a cap of concrete over the bottom of the trench area, and added a concrete banquette to the stone platform-foundation, apparently to prevent cave-in.

The other data from the Convento site that strongly suggest a Toltec ceremonial focus at this location are represented by the large (1.4 x 0.75 m basal measurement, 1.1 m elevation) twin pair of Chac Mool sculptures found in the foundation of the Convento excavations of the late 1920s.

These two monumental sculptures are done in the same style as those seen at Tula itself. They were still stored in the Instituto laboratory off the small garden patio of the Convento in 1963, together with several smaller fragments of stone sculpture, which also appeared to have been pieces of Chac Mools. These sculptures are one of the most characteristic and diagnostic expressions of Toltec ceremonial.

It is hypothesized here that the convento rests over at least one and possibly two or three earlier Prehispanic structures dating to Toltec and possibly to Teotihuacan times. Only further excavations can reveal the true picture of these possible Prehispanic structures. It is suggested that a program of excavations be initiated in order to test the area on a line north-northeast of the Convento and parallel to the old Mexico City-Teotihuacan highway, along the angle of the north-south grid of Teotihuacan (this would correspond to the grid line dividing W9 from W10 on an extension of the Teotihuacan Map, Millon *et al.* 1973) to the area of Calvario Acolman. Tests should also be excavated into the area of the outer foundations and beneath the floor of the Convento itself.

Classification: Ceremonial Center? Based upon the suppositions expressed above, a Ceremonial complex extends over some 3 ha. The complex could also be the center of large town sites buried by sediment which would include TT-20 and TT-10 on the piedmont.

Date: No surface sample, dating based on surface survey observations.

SITE DESCRIPTIONS: THE NORTH TRIBUTARY VALLEYS

North of the north piedmont stretches an area which drains into the Xaltocan-Zumpango drainage, but which for marketing and administrative purposes, was in Aztec times as well as in colonial times oriented towards Tepexpan, Acolman, and Teotihuacan (Gibson 1964:48-49). Later, this area became subject to Acolman and Teotihuacan (Gibson 1964:88-89) and finally, after the 1560s, it became entirely subject to the Corregidor of Teotihuacan (Gibson 1964:108-109).

This area has never recovered from the depopulation which it experienced during the first 75 to 90 years of the Postconquest era.

Located here is the nineteenth-century hacienda of San Miguel Tenopala, the rancherias of Cerro Las Palmas, Cerro Temeyuca, and Cerro Tonalan as well as the scattered villages of San Jeronimo, Xonacahuacan, and San Miguel Atlamajac. Soils are thin and there are no permanent water sources. Maize and frijol are found scattered over approximately 25% of the area. Some barley is also grown in this zone. The largest part of the area is devoted entirely to maguey, with some nopal, and grazing.

The largest part of this zone is the poorest of any within the Teotihuacan Valley Project survey area for the cultivation of anything but nopal or maguey, with the possible exception of the eastern-most zone of the Upper Valley. Population densities are low. The 11.32 per hectare, recorded for Zacualuca, is characteristic of density within settlements here. The overall zonal density would be much lower, of course.

TT-29 (Early Toltec)

Natural Setting: The site is located at 2415 m, on the eastern slopes of Cerro Santa Paula in the upper limits of the lower piedmont, 2.5 km northwest of San Miguel Atlamajac and 4.5 km southwest of San Juan Teacalco. Thin soils, varying from 20 to 30 cm cover the area. Little erosion occurs on the site area, but an extensive wash borders the pedestrian road area to the west. The location is outside of the Teotihuacan Valley, and is west and below the area of the northern slopes of Cerro Gordo. Its drainage is into the Xaltocan plain.

Modern Utilization: The fields located between the maguey bancals are planted in wheat in the lower portion of the site, and in maize and habas in the upper area.

Archaeological Remains: Variable, moderate to heavy, Early Toltec ceramics are found in the site area in localized concentrations coming from the plough furrows in the lower area, and visible at the edges of the wheat field lines. No mounds are reported.

Site Area: 1.5 ha.

Classification: Small, scattered village.

Date: Not surface sampled. Early Toltec.

TT-111 (Late Toltec)

Natural Setting: The site is located at 2420 m, west-southwest of San Marcos Nepantla, by 2.7 km. The soils are thin, sandy, and are as deep as 20 cm. Some areas of wash-erosion are found through the site area. Pirul, maguey, and prickly pear grow here.

Modern Utilization: Both maize and beans are planted in this arid section of *tierra temporal*. There was a crop failure in the year of the survey, 1962.

Archaeological Remains: Three small, 4 x 4 m, areas of light Toltec ceramics. Some loose tezontle, obsidian blades, and scrapers are found here.

Site Area: 2 ha.

Classification: Dispersed hamlet.

Date: Not surface sampled. Late Toltec.

TT-112 (Late Toltec)

Natural Setting: The site is situated at 2360 m, in a small basin, northwest of Cerro Malinalco, on terraces just below Tlachinolpan, the "place of the nopal harvest." Thin soils to bare tepetate. Small cacti, maguey, and the nopal xoconoxtle, are found here.

Modern Utilization: Maguey plantings and grazing.

Archaeological Remains: Scattered and localized obsidian, stone, and ceramic indications in at least 5 areas which are separated by 50 m.

Site Area: 2.3 ha.

Classification: Dispersed hamlet.

Date: Not surface sampled. Late Toltec.

TT-113 (Late Toltec)

Natural Setting: The site is located at 2390 m, in a small valley between San Augustin Actipac and the small hill named Cerro Tonalan, on the southern flanks of that hill. Heavily eroded wash areas run east to west along the southern edge of the site, along and in an old pedestrian road from San Augustin to the Barranca del Muerto. Vegetation consists of small cacti, short grass, moradilla maguey, and small green nopal, *Opuntia ficus indica*.

Modern Utilization: Maguey plantation and grazing.

Archaeological Remains: Five scattered and localized small (4 x 4 m) stone house mounds are visible here. Some areas on these residential mounds show exposed wall stubs, which are from 18 to 24 cm thick. There is a heavy obsidian concentration, and Late Toltec ceramics are found here. Indications of Aztec occupation are also found here.

Site Area: 3 ha.

Classification: Dispersed hamlet.

Date: Not surface sampled. Late Toltec.

TT-114 (Late Toltec)

Natural Setting: The site is located at 2410 m, on the south slope of Cerro Tlaltepec, just north of the northern slope of Cerro Tonalan. The area is rocky with thin soils and there has been some erosion. Wash areas on the southern portion of the site lead from east to west and contribute to the Barranca del Muerto which flows from east to west towards the Zumpango-Xaltocan basin.

Modern Utilization: Grazing and maguey plantation.

Archaeological Remains: Again, as at TT-113, house mounds are visible here, some of which are probably Toltec. Wall stubs are also visible. Eleven mounds were located; they have variable diameters of from 3 to 4 m and are from 40 to 90 cm in height. Other occupations include TA-133.

Site Area: 18 ha.

Classification: Scattered village.

Date: Not surface sampled. Late Toltec.

TT-115 (Late Toltec)

Natural Setting: Located at 2390 m, the site is found on the northern, and lower piedmont of Cerro Santa Paula, in the northeastern quadrant of that volcanic cone, 5 km north of San Miguel Atlamajac and 3.2 km west of San Juan Bautista Teacalco. The terrain is gently sloping with good soil cover throughout the site area, 30 to 60 cm in depth. Erosion is found at the western limit of the site area along the pedestrian road.

Modern Utilization: Milpa and maguey plantation.

Archaeological Remains: Maximally, medium density sherds over an area of 12 ha. Localized areas of heavier occupation where Toltec coincides with Classic (TC-20) and Aztec (TA-129-6) occupations.

Site Area: 12 ha.

Classification: Small, dispersed village or hamlet.

Date: Not surface sampled. Late Toltec.

TT-116 (Late Toltec)

Natural Setting: This site is located high on the pass between Cerro Gordo on the east and Cerro Tecomaxochitl on the west at 2450 m. The ancient pedestrian road runs along the western side of the site, which is on the Cerro Gordo side of the pass. The soils are rocky and very thin, eroded to tepetate in lower area.

Modern Utilization: Grazing.

Archaeological Remains: The 7 stone and sherd concentrations found are probably house sites. Several 80 cm thick wall stubs are exposed.

Site Area: 5.2 ha.

Classification: Dispersed hamlet.

Date: Not surface sampled. Late Toltec.

TT-117 (Late Toltec)

Natural Setting: The site is perched at 2440 m, above the San Juan Teotihuacan-San Juan Bautista Teacalco pedestrian road, mentioned above, near the top of the pass of Tecomaxochitl. The barren area has a steeply rising slope on the eastern side of the site, which sits on a small bench above the road.

Modern Utilization: The 4 areas of stone and sherd concentration are probably house sites. Two wall stubs, 60 and 80 cm thick, are visible in these localities.

Site Area: 4.5 ha.

Classification: Dispersed hamlet.

Date: Not surfaced sampled. Late Toltec.

TT-145 (Early Toltec) — TT-179 (Late Toltec)

Natural Setting: The site is located at 2290 m, on the hilltop of Cerro Colorado of San Geronimo, in the piedmont area on the divide between the Teotihuacan Valley and the Xaltocan-Zumpango drainages. Rocky outcrops and thin soils with considerable erosion are found here. There are also wild flowers and grasses.

Modern Utilization: Grazing.

Archaeological Remains: This site is represented by a ceremonial temple platform which is apparently entirely of Toltec construction, as very few Aztec sherds were seen anywhere in its vicinity, and none from the fill exposed by deep pitting within the core of the pyramid itself. The pyramid measures 25 x 15 m at its base and has a present elevation of 2.5 m. A large pit excavated in the floor of the temple at the top of the platform has exposed at least 2 strata of floor. Without careful reexcavation, it is impossible to determine if there were more constructions, as the debris and back fill from the pitting has obscured the profiles of the pit. The floors were constructed over tezontle fill, which was levelled and covered with a cap of coarse cascajo-lime mortar, and further finished with a fine layer of lime plaster. All of the pottery from this mound-cut is Toltec, most of it from the Xometla or Early Toltec phase. The mound served as the ceremonial focus for TT-65 and probably, in the Late Toltec, for TT-113 and TT-114.

Classification: Hilltop ceremonial focus.

TT-65 (Early Toltec) — TT-171 (Late Toltec)

Natural Setting: This site is located at the bottom of the steep slopes of the Cerro Colorado de Tenopala in the far west piedmont of the Lower Valley. The area has suffered

conspicuously from erosion. The soils of the upper site area are a very pale brown color and sandy to powdery in texture, while those of the downslope, lower portion of the site are deeper and darker brown in color. The upper portions of the site are rocky, and have very thin soil covers of no more than 20 cm, which support little more than short, sere grass clumps, short stunted opuntia of the bitter tuna variety, chimoco cactus, and some scattered agave. The site is situated on a drainage divide, or watershed, separating the Teotihuacan Valley drainage area from that of the lake Xaltocan-Zumpango basin.

Modern Utilization: Beans and maize are grown on the lower slopes and fields of the site. Agave rows are found throughout. A pedestrian road-track, much worn down through the tepetate and 2 m wide on an average threads its way through the central portion of the Early Toltec line village. This is the pedestrian road from San Juan Bautista Teacalco to Temascalapa, and is possibly Prehispanic in origin. San Juan Teacalco is 14 km to the northeast.

Archaeological Remains: In at least 31 cases distinct intact mounds were defined (Plate 2). There are many more instances than these 31, however, of localized sherd concentrations lying in loose tezontle rubble, which may be from former stone house construction. The mounds and ceramic-tezontle concentrations are widely separated throughout the area. Sherds are very localized and variable in density, from sparse (4 to 8 per m^2) to medium (28 to 31 per m^2) in the objective counts of surface indications.

Some of the former house structures could have been destroyed by erosion. The mounds here are unusually large and imposing, possibly because they represent buildings which were entirely constructed of stone, and so very nearly all of the original building materials remain on the site. This is not the case with the Xometla constructions of the valley floor and lower piedmont near the valley, where much of the construction was probably of the adobe type so characteristic of villages and hamlets in that area today. An additional explanation for the almost excessive size of the house mounds here, is that the labor force of the former Hacienda de Tenopala, situated downslope from the the site area some 1.5 km may have partially cleared the lower site area of tezontle to facilitate plough agriculture, increasing the dimensions of the Toltec house mounds. This recorder would not believe that these remains could be of domestic Early Toltec origin, were it not for the very clear ceramic indications coming from the mounds. This observation has been independently reached by the recorder of the site, Richard Diehl.

Mound 1 is about 2.2 m high and 65 m in diameter. Diehl notes that it has not been pitted, but has been ploughed on its top, and is planted in maize and beans. The pottery concentrations on this mound and in its immediate vicinity are heavy. There is not, in this case, very much rock rubble. The mound may have been ceremonial in nature. All of the pottery is Toltec, of both the Early and Late phases. Other mounds in the series of Mounds 1 through 31, which have been described in the field notes of the survey of this site that were probably of special function are Mounds 20 and 28. Mound 20 is 24 m in diameter and 1 m in elevation. It is formed of a large mound of stone rubble, with light frequencies of Toltec ceramics coming from its sides and distributed around its basal area. Mound 28 sits atop the Cerro Colorado de Tenopala above the large village-town site here, and clearly represents a temple platform of Early Toltec, if not of Classic origin (see description of the hilltop ceremonial center TT-145). The remaining mounds in the series of Mounds 1 through 31 are probably all representative of domestic residences. See Table 2 for a complete description of the mound dimensions and ceramic components.

Classification: Low density line village.

Table 2. Mound descriptions for TT-65[a]

Mound	Description
1	About 2 m high and 62 m in diameter. No pits in the mound, but it is partially plowed, planted in maize and beans. Pottery concentrations on the mound and in the surrounding area are heavy. Not much rubble. The mound was probably ceremonial. Pottery is Toltec, and a collection was taken.
2	Smaller than Mound 1. Has quite a bit of rock rubble. Has 2 pits in it: one is 55 cm deep, the other is 1.75 m deep. Traces of floors can be seen in these pits. The fill beneath the floor is of tezontle gravel, possibly from the nearby hill, where quarries are found. The mound has not been touched for agricultural purposes but there are crops in the surrounding fields.
3	Low, flat mound about 9 m in diameter. A fair amount of rock rubble. Toltec pottery.
4	About 16 m in diameter and 1 m high. Not pitted. Covered by heavy rock rubble. Pottery is Toltec.
5	About 16 m in diameter and 1 m high. Not pitted. Heavy rock rubble. Primarily Aztec sherd cover. Collection taken.
6	Large mound, approximately 2 m in height. Has been pitted in several places. All of the pottery is Aztec. It was probably ceremonial.
7	About 12 m in diameter and 1 m high. There is very little rock rubble and no pitting. A ceramic collection was taken. It is primarily Toltec.
8	A large pitted mound. No walls or floors are visible. Toltec pottery.
9	Approximately 23 m in diameter and 1 m high. Not pitted. Rock rubble is from moderate to heavy. The pottery is predominantly Toltec, although Aztec is present.
10	Small mound about 6.5 m in diameter and less than 1 m high. Heavy rock rubble. No pitting.
11	A "probable mound." Much rock and pottery, no elevation.
12	Also a "probable mound." It is an area of concentrated rock and Toltec pottery.
13	A definite mound. Low and flat with quite a bit of rock rubble and Toltec pottery.
14	A "probable mound." It has been badly damaged by ploughing. It is presently in maize and beans. Much rock rubble. Although Aztec is present, the Toltec predominates.

Table 2. Continued.

Mound	Description
15	A definite mound. A small mound, with both Aztec and Toltec pottery. The field is presently fallow.
16	About 1 m high and 6.5 m in diameter. There is a lot of rock rubble and Toltec pottery. Not pitted.
17	About 1.5 to 1.75 m high and 20 m in diameter. Much rock rubble and Toltec pottery. Not pitted.
18	About 5 m in diameter and 1 m high. Much rock rubble and little pottery. Aztec and Toltec.
19	A "probable mound." It is an area of rock rubble about 9 m in diameter. Very little pottery.
20	About 22 m in diameter and 1 m high. Much rock and rubble and some Toltec pottery. Surrounding fields are sparse.
21	About 6.5 m in diameter. Has a pit in it about 70 cm deep showing rock fill all the way down. The mound and surrounding fields contain both Aztec and Toltec, but Aztec seems to dominate. The pit profile shows pottery of both periods.
22	A high mound which has been plowed up. There is quite a bit of rock. The pottery is both Aztec and Toltec. Toltec dominates. Collection was taken.
23	About 20 m in diameter and about 1 m high. There is a lot of rock rubble. No pitting or walls or floors exposed. Aztec is light and Toltec is heavy.
24	A "probable mound." Much rock concentrated in the area. Toltec pottery. Not a definite mound.
25	A "probable mound." Much rock in the area.
26	About 17 m in diameter. There is pottery and rock rubble concentrated in the area. It has been plowed, but is in fallow at present. Although Toltec is present, the largest part of the pottery is Aztec. Collection taken.
27	About 18 m in diameter. Light Toltec, heavy Aztec.
28	A Toltec ceremonial mound on the top of Cerro Colorado. It has a huge pit in which floors may be seen. They are made of a tezontle fill, with a stucco finish with lime plaster. All of the pottery is Toltec. The mound is about 3 m high, and very impressive. See TT-145 for Xometla and Mazapan subphase indications.

Table 2. Continued.

Mound	Description
29	About 16.5 m in diameter. Low about 30 cm. Pottery primarily Aztec with some Toltec.
30	About 11 m in diameter. Slightly pitted. The pottery is Aztec and Toltec. Aztec dominates the sample. A great deal of rock rubble.
31	A large ceremonial temple platform mound which is badly pitted. Much rock rubble. About 24 m in diameter. The ceramic indicators are all Toltec.

[a]Taken from field notes of Richard Diehl 1963.

SITE DESCRIPTIONS: THE MIDDLE VALLEY

Natural and Cultural Geography

Within, and bordering the area designated as the Middle Valley (Fig. 1), are zones 6, 7, 8, 9, and 10. Zone 6 covers the north piedmont of the Lower Valley from the Barranca de Malinalco on the west to the Avenue of the Dead, or *via sacra* of Classic Teotihuacan. Zone 7 covers the eastern half of the Archaeological Zone. Zone 8 is in the floodwater plain of the upper course of the Rio de San Juan. Zone 9 consists of the south piedmont, which rises rapidly to the Sierra de Patlachique; and Zone 10, the north piedmont of the Middle Valley, rises to the steep flanks of Cerro Gordo, and its foothills.

Zone 6: The Archaeological Zone

The teams of the Teotihuacan Valley Project did not intensively survey within this area which fell to the labors of the Urban Mapping Project (see Millon 1973, Millon *et al.* 1973). The zone has been completely altered by human action over the past 2500 years, so it is difficult to speak of the "natural" in connection with its present aspect. Stone, solid and loose, underlies much of the area. The soils which are found here are normally little more than 40 cm in profile, more frequently in the 20 to 30 cm range. The ancient city covers and impinges on a series of zones. The area is actually the lower piedmont of Cerro Malinalco and Cerro Gordo, and is on the edge of the deep soils of the Middle Valley floodplain of the Rio de San Juan as well as at the head of the deep-soil irrigated alluvial plain of the Lower Valley.

The zone is bounded on the north by the Barranca de Piedras Negras, on the east by the canalized Rio de San Juan, on the south (generally speaking) by the Rio de San Lorenzo, and on the west by the great Barranca de Malinalco. The broad shelf tilts upward from the south at approximately 2270 m and to the north at 2334 m. Much of the

Table 3. Populations of Selected Lower Valley-Middle Valley Communities.

Shown according to ecological zone and interzonal positions, *i.e.*, Zone 2, the alluvial plain of the Lower Valley; and Zone 5b, the north piedmont of the Lower Valley: Cerro Zacualuca to Cerro Malinalco (from Diehl 1970:132). All population data from the 1960 census.

Settlement-Ecological Zone	Population	Density per ha	Type
Maquixco-Bajo Zone 5b, intercepts Zone 2	673	42.06	High density compact village
San Juan Teotihuacan Zone 5b (all barrios), intercepts Zone 2	4537	25.63	High density compact village
La Villa de San Juan	2294	57.35	High density town
Barrio: San Juan Evangelista	665	—	High density compact village
Barrio: Puxtla	205	—	Low density compact village
Barrio: Purificacion	1373	—	High density compact village

present vegetation occurs over nearly continuous *tlatel*, or archaeological deposit, which reaches to great depths, and in some areas has been excavated, revealing profiles of up to 7 m in thickness, but is more commonly in the range of 2 to 3 m. Most of the cultural deposits, where exposed, appear to be placed directly over either tepetate or stone. The tlatel deposit is overgrown in most cases, outside of the zones of reconstruction and current excavation, and has a sufficient soil cover to support maize, frijol, and squash cultivation, together with maguey and the white, green, and red varieties of tunas. Some *Nopalea cochenillifera* has been grown here in the past. The tlatel layer here must have water-retaining properties (probably the plaster floors are the factor), because even in drought years the house gardens and village huertas manage somewhat better than those found anywhere else in the piedmont.

Along the southwestern margin of this remarkable zone, appear the famous *ameyales*, springs or *manantiales*, of Teotihuacan. Here grow the huge, ancient, and majestic Ahuehuetes, the pinacea *Taxodium mucronatum*, a giant bald cypress. Humbolt, who saw these identical trees during his visit to the pyramids at the beginning of the last century, opined that they might be 4000 years old, but a mere 1500 years would be enough to explain why these hoary giants are aligned along the Teotihuacan north-south axis. Their aged appearance comes not only from their great size, but also from the fact that they bear so many of the scars of the ages, from fire, cutting, etc., and have the

branches of their upper regions festooned with the parasitic plant known here as *paxtle*, which is also called *heno*, and so look like great grey beards.

Floating on the clear water of the spring ponds and their dependent rivulets into the chinampas, are the water flowers, *Huejote* and *Axochil*.

The population living in the settlements built over the continuous tlatel area, and surrounding the administrative-commercial-ceremonial core of the ancient city, is composed of communities which may be classified as quasi-urban to rural. As an examination of Tables 3 and 4 will show, their densities range from over 5700 per km^2 down to 2000 per km^2, or from high density compact towns, as is the case of the Villa of San Juan Teotihuacan and San Martin Teacal, to the low densities which are seen in San Francisco Mazapan. San Francisco, Santa Maria Coatlan, and San Sebastian are essentially rural settlements. This is true for much of the population living in the barrios of Puxtla, San Juan Evangelista, and Purificacion. The largest number of foreigners living in the valley are to found in La Villa of San Juan Teotihuacan. Some of these are transients, students and tourists, others are retirees. The markets of both San Juan and San Martin are crowded on their respective weekly days with campesinos from the Lower Valley, the lower Middle Valley, and the north and south piedmont zones of each. In all these respects, the contemporary settlement pattern of this zone may be similar to the pre-Columbian one, albeit on a reduced scale.

Thousands of Mexican nationals, and tourists from all over the globe, visit the zone daily. It must be one of the most visited of all the archaeological zones in the Republic of Mexico, if not in the entire western hemisphere. The sale of a great variety of mementos to these tourists, crafted locally or mass-produced elsewhere, of obsidian, onyx, silver, and ceramic as well as the sale of fraudulent antiquities is a thriving business for many of the villagers of San Martin, Santa Maria Coatlan, and San Sebastian.

Table 4. Populations of Middle Valley Settlements.[a]

Settlement-Ecological Zone	Population.	Density per ha	Type
San Francisco Mazapan Zone 7, intercepting Zone 8, the floodplain	1143	20.2	Low density compact village
San Martin Teacal Zone 7, intercepting Zone 8; Zone 10	3197	40.0	High density compact village
Santa Maria Palapa Zone 10, intercepts steep slope, Cerro Gordo	388	4.2	Scattered village

[a]After Diehl 1970:146, 1960 census data.

Zone 2: Middle Valley Floodwater Plain

The Rio de San Juan is today a dry course for the larger part of the year. The great system of barrancas that feed it from the southern and southeastern slopes of Cerro Gordo and its foothills, Cerro Cuatio and the Cerro de Techuca, discharge their water with great violence and rapidity during the rainy season, in part due to the abandonment of the terrace systems of the upper slopes. It is due also to the partial denudation of these slopes by excessive cutting of the pine trees and by overgrazing by sheep and goats. The other major tributary of the Rio de San Juan system, the Barranca del Muerto, no longer directly enters the Rio de San Juan as it did in former times, though it will sometimes burst through to is old course in times of cloudbursts, but has carved itself a new course south of its former place of union with the waters of the Cerro Gordo barranca, near San Pablo Izquitlan, and now winds southwest. Its waters reach as far as the Rio de San Juan at San Francisco Mazapan only during periods of excessive rain when flooding occurs in the Izquitlan area.

The floodwaters are utilized along the northern strip of the plain, from below Cholpa, past San Pablo Izquitlan, to the fields just east of San Martin Teacal. During heavy rains these fields are alive with men and boys working rapidly at the tasks of diversion, damming, and managing of these waters. It is an extraordinary sight. At Cholpa, and just above it, however, the flooding inundates the depression here, and sometimes reaches as far as San Pablo, largely caused by the enormous floodwater discharges of the Arroyo de Soapayuca, together with the already great volumes coming from the barrancas of Tolman; this floodwater frequently washes out and rots the cultivated milpa in this area.

Table 5. Population of Two Neighboring Middle Valley Settlements.

Shown according to zonal and interzonal position for Zone 8, the floodplain of the Rio de San Juan; and Zone 10a, Middle Valley, north piedmont; and Zone 10b, sierra of the north piedmont (after Diehl 1970:146, 1960 census data).

Settlement-Ecological Zone	Population	Density per ha	Type
San Pablo Izquitlan Zone 8, intercepts Zone 10a	476	50.0	High density compact village
Santiago Tolman Zone 10a, intercepts Zone 10b; Zone 8	561	15.6	Low density compact village

A large portion of the central floodplain is able to make no use whatever of the floodwaters. This is true as far south as the Barranca de Huixcoloco and the Rio de San Lorenzo, which border the plain on the south. Several commercial dairying granjas and ranchos have been pumping from deep wells in this western part of the plain. Complaints from ejiditarios from Cuahutlazingo and Oxtotipac, who have found their shallower wells in the eastern section of the plain dry up due to the falling water table, have caused the

Department of Recursos Hidraulicos to issue orders forbidding the drilling of more wells, though apparently there is no restriction on the private pumping stations now in operation, whose water is used for the flooding of alfalfa fields for commercial dairying operations. Predictably, the water table will continue to drop. In the eastern plain, the wells have been drilled to depths of more than 85 m.

The ejiditarios of Santa Maria Coatlan and San Sebastian, who exploit part of the eastern section of the plain, have not been able to compete very successfully in their disputes over water and grazing rights with the legally and politically well-backed Hacienda Metepec and its associated ranchos, including the Ranco Huixololco and the Hacienda Tlacatepan.

The only farming village found actually within the irrigated plain of the Middle Valley, San Pablo Izquitlan, has the high density (over 5000 per km^2) characteristic of the settlements found within deep well-watered alluvial soils.

Zone 9: Middle Valley, South Piedmont

The western section of the south piedmont, which is bordered on the north by the Rio de San Lorenzo, has its principal settlement area in the sprawling scattered village of Santiago Tepetitlan (Table 6), which has a density of 5.3 per ha. This is a zone of carefully tended terraces for agriculture in the lower piedmont area, and of sheep and goat grazing on the higher slopes. The rancherias whose scattered clustering makes up the dispersed village of Tepetitlan, grow *tecojote*, a small orchard tree which produces a tiny, astringent crabapple-like fruit. The large white, small green, and red tuna prickly pear cacti are also grown around the stone and adobe houses. The giant "manso" variety of maguey grows along the lower terraces, while smaller varieties are grown farther up the slope from the village. There is one running spring near the chapel of Santiago at Tepetitlan, but the maize and frijol plantings of the lower terraces are dependent on rainfall, which though somewhat heavier here than in the Middle Valley plain and north piedmonts of the valley, fails in some years, ruining these crops.

The central section of the south piedmont of the Middle Valley is formed by a low, dissected, and scoured bench land upon which are located the scattered villages of Cuahutlazingo, Oxtotipac, and Tlaltica. Mixed farming is practiced here. It is an area of very thin soils and much sheet erosion. The southern and eastern section of the south piedmont contains the upper basin of the Rio de San Lorenzo, which has a small but regular flow in the upper part throughout the rainy season, derived from the drainage of the lower slopes of the small valley and ranges which connect the Sierra Patlachique with the rain-soaked Sierra Madre itself. The stream at the high falls of Salto de Aguilarco in the central part of the Basin runs for approximately six months of the year, from May through October. There is, besides agricultural activities, more hunting and gathering activity in this section than any other part of the Valley of Teotihuacan. Many of the Early and Late Formative sites recorded for the survey area as a whole, have been recorded for this section.

Maguey does well here, growing to great size. Some of the maguey of this section, particularly in the plateau running to the eastern edge of the San Lorenzo Basin, are known to give aguamiel for as much as two years, following the tapping.

The low density compact village of Belen, situated above the western egress of the upper basin of the Rio de San Lorenzo, is the only settlement of any size in the area of the upper basin. A few small ranchos represent all of the rest of the occupation of the basin.

Table 6. Populations of Middle Valley Settlements of the South Piedmont.

Zone 8, the floodwater plain of the Middle Valley; Zone 9a, south piedmont of the Middle Valley; Zone 9b, steep slope of the Sierra de Patlachique (after Diehl 1970:146); and Zone 9c, Upper San Lorenzo Basin (1960 census data).

Settlement-Ecological Zone	Population	Density per ha	Type
Cuahutlazingo Zone 9, intercepts Zone 8	931	5.8	Scattered village
Oxtotipac Zone 9, intercepts Zone 8	684	9.8	Scattered village
Santiago Tepetitlan Zone 9, intercepts Zone 9b, tie to Zone 8	2036	5.3	Scattered village
Belen Zone 9a, intercepts Zone 9b, Zone 9c	988	22.3	Low density compact village

These ranchos are found very widely separated from each other in an extremely dispersed pattern that is unusual for the valley as a whole.

Zone 10: Middle Valley, North Piedmont

This zone, covering the lower piedmont of the southwestern slopes of Cerro Gordo and its foothills, the Cerro Cuatio and the Cerro de Techuca, is the narrowest of the piedmonts, less than 1 km in depth on the western edge of its east-west extension, and at its broadest, some 3 km on the western side. Numerous terraces are found in the eastern section of the zone; except for the lowest of these, which face the floodwater plain of the Middle Valley, most of this area is used for the grazing of goats and sheep. The data of the survey show that the upper part of the terrace system was intensively utilized and occupied only during the times of most dispersed settlement, *i.e.*, during the Tzacualli, Late Toltec, and Late Aztec phases. The western section of this piedmont contains the low density compact village (15.6 per ha) of Santiago Tolman and, farther west at the base of an elaborate and solidly constructed series of modern or nineteenth-century terraces, the Hacienda Hueyapan. Tolman has several wells that provide pure, potable water, but the villagers are able to do little to use the mountain runoff itself, which rushes by their lands on both the west and east in deeply scoured (5 to 60 m deep) barrancas. The soils found here are very thin and poor. The attempts to reclaim the slopes of the piedmont in this area have been sporadic. Sheet erosion has claimed a great deal of the middle piedmont area around the village itself. Within Tolman, organ cactus fences enclose gardens and huertas of nopal in which goats, sheep, pigs, and turkey are tended.

TT-25 (Early Toltec) — TT-163 (Late Toltec)

Natural Setting: Located at 2275 to 2310 m and extending from the chinampa and spring area of Puxtla, at the head of the canal-irrigation system of the Teotihuacan Valley, north and up the piedmont of Cerro Colorado and Cerro Malinalco, this Toltec site is bounded on the west by the Barranca de Cerro Malinalco. The canal Maquixco-Cadena runs along the southern edge. This gentle slope presents an area extensively altered by long-continuing occupation. The soils, where retained in houselots and huertas, are up to 1.5 m in depth, dark brown and loamy in texture. The lower or southern section of the site area has been extensively silted. Frequent flooding of this area occurs annually from May through August. During this period, a cloudburst can bring great volumes of water and silt into the area from the Barranquilla de Cerro Colorado and its sister, Barranca de Malinalco. The manantiales or the springs of Teotihuacan are found in the area of the southeastern border of the site. The scattered clusters of house foci in this sprawling site are found over an area which, in its lower reaches, has retained heavy soil cover behind the terraces and walls of houselots. The southern section abuts directly on the chinampa gardens where there is a perpetual water flow. The upper sections of the site have somewhat thinner soils. The areas along the northern and upper sections of the Barranquilla de Cerro Colorado (the barranquilla is an artifical, canalized drainage course), and along the west band of the Barranca de Malinalco (along which the site extends in its northward range, in scattered clusters) have suffered moderately from erosion. The last named barranca, Malinalco, is joined by the Barranquilla de Cerro Colorado in the south-central section of the site. During the rainy season, the enormous volumes of water disgorged regularly flood the area of the highway just south of the site.

Modern Utilization: Part of the site is covered by the modern western barrio of San Juan Teotihuacan, San Juan Evangelista. The barrio church was constructed over a Prehispanic temple platform in the center of the Toltec town. In the southeastern section of the site, the chinampa area of market vegetable production begins. Along the southern edge of the site, to the southwest, alfalfa is grown. The houselots and huertas of the barrio are thickly planted with prickly-pear and giant maguey. There is also some squash and maize planted within the barrio. The northern and far western poritons of the site, outside of the barrio limits are planted in maize, beans, and maguey.

The range of soils and dependability of the water supply are variable over the site. The house fields and milpas of the upper portion of the site are in tierra de temporal which are at the mercy of the vagaries of temperature and rainfall. The crops here are good in some years, while in other years very small yields are produced from the maize plantings.

Archaeological Remains: The pottery found in the houselots of San Juan Evangelista presents a kaleidoscopic mixture of phases from Late Formative times continuously through all phases down to the present, except for, as far as the data at hand seem to indicate, Oxtotipac. The Xometla subphase ceramics are particularly heavy through the area of the barrio itself, extending also, however, west to the Barranquilla de Cerro Colorado, which follows the north-south alignment of the Classic Teotihuacan city. This occupation extends in a more scattered pattern farther west to cross the Barranca de Malinalco.

The ceramic frequencies of the Early Toltec, registered in the houselots of San Juan Evangelista, run from sparse, in a few areas, to medium and heavy. Plaster-coated, cascajo-mortar floors are seen exposed in pits in houselots and along the streets of the present barrio. Some of these, of course, may be from the Classic construction which

underlies all of the main site area. This is the western section of greater Classic Teotihuacan, as recorded for the northern sections of the grids S2W8, S2W7, all of grids S1W7 and S1W6, and the southern edges of N1W7 and N1W6 (Millon *et al.*, 1973:69-70, 86-87, 100-101).

The data recorded for the areal units of the survey of this complex site, units which were based on modern cultural features, such as houselots, house fields, streets, plazas, cemeteries, and chapels are summarized in Table 7.

The Early Toltec town site, extending throughout the barrio of San Juan Evangelista, south to the western edge of the barrio of Puxtla, and west across the Barranquilla de Cerro Colorado, presents a picture of a more compact, higher density population than does its successor, the large Late Toltec dispersed village of this same area. The center of buildup of the Early Toltec town is in the area of the barrio church of San Juan Evangelista (which also houses the refugee saint, San Jose, who had to come here when the revolutionaries burned his chapel at the Hacienda San Jose) and downslope (in S1W7) some 450 m south of the center of the Oaxaca Barrio of the Classic city (Millon 1973).

This impressive Early Toltec settlement probably served as the ceremonial and political center for the Early Toltec villages of TT-14, TT-16, and TT-112.

The large Late Toltec village here is found over a much larger area than its predecessor, the Early Toltec town. The sherd and mounded areas, however, are found more widely spaced. Altogether, it gives the impression of lower population density. The nucleated center in the district of the Spanish church of San Juan Evangelista has as heavy a buildup as does its Early Toltec counterpart, but north and west of that area, the Late Toltec settlement foci are widely spaced. The survey unit descriptions of the Late occupations through this site are given in Table 7.

Table 7. Field Survey Recordings for TT-25.

Taken from a map prepared by William T. Sanders, which was found in the site records file for TT-25, San Juan Evangelista. Recordings refer to the upslope section of the settlement.

Survey Field No.	Xometla Ceramic Frequencies	Other Features	Other Ceramic Indications
46	Medium to heavy	Heavy tezontle rubble	Classic Teotihuacan, Aztec
47	Medium in north	Heavy in southeast	Teotihuacan, Aztec
48	Sparse to medium	Floor fragments on east edge	Aztec, Modern
49	Light	All mound area	Aztec

Table 7. Continued.

Survey Field No.	Xometla Ceramic Frequencies	Other Features	Other Ceramic Indications
50	Light	All mound area	Teotihuacan, Aztec
51	Light	All mound area	——
52	Medium to heavy	Heavy mound buildup	Tzacualli, Teotihuacan, Mazapan, Aztec
53	Heavy	Heavy mound buildup, floor showing in profile on east edge	Tzacualli, Teotihuacan, Mazapan, Aztec, Modern
54	Heavy in Panteon	Floor fragments, heavy cultural debris thrown up by digging of modern graves	Classic Teotihuacan, Mazapan
55	Light to medium	Tezontle debris	Tzacualli, Teotihuacan, Mazapan, Aztec
56	Medium	Large mound at southern edge	Teotihuacan, Mazapan, Aztec
57	Medium to heavy	Tezontle debris	Teotihuacan, Mazapan, Aztec
58	Medium to heavy	Tezontle debris, Large mound 90 x 90 m, in upper northwest corner	Teotihuacan Mazapan Aztec
59	Medium to heavy	Houselots here, exposed floors in profiles of lane on southeast edge, 20 to 30 cm beneath present surface	Tzacualli, Teotihuacan, Mazapan, Aztec

Table 7. Continued.

Survey Field No.	Xometla Ceramic Frequencies	Other Features	Other Ceramic Indications
60	Medium, where visible	Much of surface under modern houses, school, floors exposed in profile made by street along northern edge	Teotihuacan Mazapan Aztec
61	Heavy	Heavy mound buildup	Teotihuacan, Mazapan, Aztec
62	Sparse	Area levelled for horse pasture	Teotihuacan, Aztec
63	Sparse to medium	Maize field	Teotihuacan, Aztec
64	Medium	Houselots, heavy mound debris	Aztec
65	Medium	Heavy mound debris	Teotihuacan, Aztec
66	Medium	Houselot	Teotihuacan, Mazapan, Aztec
67	Medium to heavy	——	Teotihuacan, Mazapan
68	Medium	Pasture	Teotihuacan, Aztec
69	Heavy	Large mound, 120 x 70 m	Tzacualli, Teotihuacan, Late Mazapan, Aztec
70	Medium	Houselot	Tzacualli, Teotihuacan, Aztec
71	Medium	Exposed floor on eastern edge	Tzacualli, Aztec
72	Medium	Exposed floor on northern edge	Tzacualli, Teotihuacan, Aztec

Table 7. Continued.

Survey Field No.	Xometla Ceramic Frequencies	Other Features	Other Ceramic Indications
73	Sparse	Chinampa and houselots	Aztec
74	Sparse	Chinampas and houselots	Teotihuacan, Aztec
75	Sparse	Levelled for alfalfa field	Aztec
76	Medium	Terraces running east to west, maize and beans	Teotihuacan Mazapan, Aztec
115	Medium to heavy	Heavy mound buildup and stone debris	Tzacualli, Teotihuacan, heavy Mazapan
116	Sparse	Partially levelled by plowing	Aztec
118A	Medium to heavy	Mound buildup	Mazapan, Aztec
118B	Sparse to medium	Mound buildup	Mazapan, Aztec
118C	Medium to heavy	Mound buildup	Mazapan, Aztec

The Late Toltec site is found over the area of the westernmost extension of Classic Teotihuacan in the grid sections designated N2W8, S1W8, N1W7, S2W7, and S1W6 (Millon *et al.*. 1973:51, 68-69, 85-87, 100-101). After Early Toltec times, the population here spread out from the Xometla town to the west and north, producing a rambling, dispersed settlement. It probably functioned as the marketing and religious center for the Late Toltec settlements of TT-14, TT-18, and TT-112. Other occupations here include the Formative Patlachique and Tzacualli occupations of TF-25, TF-26, and TF-191, the Classic suburb of TC-12, and the Aztec town of TA-12.

Site Area: Late Toltec, 82 ha; Early Toltec 31.4 ha.

Classification: Late Toltec, large, low density, compact village; Early Toltec, large, high density town, or town ward.

Date: Surface sampled, Mazapan, Atlatongo, Xometla.

TT-27 (Early Toltec) — TT-165 (Late Toltec)

Natural Setting: The site is locatated at 2275 to 2280 m, at the lower or southern edge of the Malinalco piedmont where it abuts on the alluvial plain near the head of the area of irrigated zone based on the springs of Teotihucan. The upper part of the site area has thin soils and in some cases the bare tepetate has been exposed. The area toward the springs and the Rio de los Manantiales is one of very deep, humid soils. The water table in the area of the chinampas, stretching west from the church of the Parroquia of San Juan, to the chapel of the barrio of Puxtla, is less than a meter from the surface. Wells dug in the northern part of the site, however, are frequently close to 4 m of open shaft before reaching the water level. The barrancas that descend from Cerro Malinalco regularly bring heavy floodwaters and silts into this area, necessitating frequent cleaning of the drainage canal that carries these waters and silts from their termini near the army artillery barracks on the northern edge of the site. It is difficult to determine just what the terrain looked like before Formative times, when the Patlachique antecedent of the Classic City of Teotihuacan was being built. The continuous heavy occupation since that time, together with possible changes in drainage patterning and land forms and the filling with alluvium of the plain beyond the springs, has left very little about this vicinity which is entirely "natural."

Modern Utilization: The modern town of San Juan Teotihuacan covers most of the site area, with its market, business, federal offices, churches, houses, walled houselots, gardens, and plazas.

The southern section of the site area, near the chinampas of the Parroquia and Puxtla is today covered with alfalfa fields and year-round gardens. It is difficult to survey for this reason. Several small dairy ranches are operating in the southeastern edge of the site area and they have been engaged in continuous leveling operations of the former mounded areas over the decade from 1963 to 1973. On the eastern edge of the site area, the villagers of the barrio of Purificacion have viewed with increasing suspicion, the extension of the restoration works within the old archaeological zone. Many villagers have become convinced that the government will eventually want to add their lands that are over the heavy buildup area to the archaeological zone, and hence, they have become most uncooperative, and even hostile, to survey efforts in this district. In the north are the installations of the fifth artillery battalion of the Mexican army. On the east of the army post ground, and on the northeastern section of the site area, there are open fields of maguey, maize, and beans. In the area to the west of the army post, there are again open fields of thinner, less fertile soils given over largely to maguey plantation, together with pasture. Here, additional Late Toltec mounds mixed in with the Aztec occupation may be seen.

Archaeological Remains: The indications of the Prehispanic settlement, recorded from the data observed in houselots, along the drainage canals, and in the areas of new constructions and excavations, and from the field directly north of the modern town, can only be seen in these areas. Large parts of the putative site area are obscured by the modern occupation which is quasi-urban in nature. The indications recorded include that of the mound over which is constructed the eastern wall of the church of the Parroquia, San Juan Bautista, the smaller mound upon which sits the chapel of Our Lord of the Column at Puxtla, and a series of large mounds, which are free of buildings, lying just north of the houselots on the northern edge of San Juan, extending from its western boundary with San Juan Evangelista to the area of the army barracks. Also noticeable is the mounding under the buildings and commercial edifices bordering the open drainage running from the terminus of Barranca de Cosotlan, near the barracks through the town. The Early Toltec materials are variable, from light to medium in frequency in these areas.

Much of the Toltec site may have been destroyed, buried by silt, or obscured by the present occupation. The area of Late Toltec indications is somewhat larger than that of the Early Toltec. No structural remains that can be definitely ascribed to the Toltec period were observed.

Other occupations which are found here include the Cuanalan phase of the Formative, TF-91; a Tzacualli hamlet, TF-91; the Classic occupations, TC-12 and TC-11 as well as the Aztec town, TA-12. The entire site area is within the urban grid of Classic Teotihuacan, in sections S1W6, S2W5, and S2W6 (Millon *et al.* 1973:71-72, 87-88, 101-102).

Classification: High density compact village or small village of unknown density (extension of TT-25).

Site Area: 27 ha.

Date: Not surface sampled; surface survey suggests Late and Early Toltec.

TT-30 (Early Toltec) — TT-167 (Late Toltec)

Natural Setting: The site is located at 2315 to 2320 m, on gently rolling land charactristic of the terrain in the Middle and Upper alluvial valley, lying to the north of the Rio de San Lorenzo and south of the Barranca Huixcoloco. Generally deep soils; sandy, brown, and light to dark brown in color. Little serious erosion in the area.

Modern Uitilization: The western portion of these lands pertain to the ejido of Santa Maria Coatlan, while the western section is under the control of Hacienda Metepec. The fields used by the ejido and the hacienda are planted in maize, beans, squash, barley, and maguey; some wheat is grown on the hacienda lands.

Archaeological Remains: The central portion of the site area presents a nearly unbroken band stretching east to west for some 800 m and north to south, varying from some 250 to 400 m, of large, low-lying mounds which have been greatly deggraded from plowing activities. Their surfaces are covered with medium to heavy concentrations of pottery of all phases from the Early Classic through Late Toltec. Little Aztec is seen here however. The Early Toltec phase ceramics are light to moderate but found consistently throughout the area. No structures were observed which could be assigned definitely to the Early Toltec phase, although the large Classic pyramid directly northwest of the hacienda's casa grande, in the open fields beyond the cattle compound, have both Early and Late Toltec ceramic components coming from the fill on its sides, and was probably renovated and used as a temple center for the Early Toltec village here. Toltec occupation through the area is as great as that of San Juan Evangelista (TT-25) and easier to plot, since there are few modern structures over the site area. Other occupations in the area include the Classic suburbs of greater Teotihuacan, TC-119 and TC-120. The entire area is within the grid area of Classic Teotihuacan: N2E7, N1E6 thorugh N1E9, and S1E6 to S1E8 (Millon *et al.* 1973:64-67, 71-84).

Site Area: 51 ha.

Classification: Large, high density compact village, town, or barrio, Early Toltec; large, dispersed village or barrio, Late Toltec.

Date: No surface sample; surface survey recorded substantial Early Toltec, traces of Late Toltec.

TT-123 (Late Toltec) — TT-177 (Early Toltec)

Natural Setting: The site is located at 2320 m on the gently rolling plain at the lower or western end of the Middle Valley, and over the eastern extension of Classic Teotihuacan. The soils here are generally deep and richly fertile. There has been very little unchecked erosion. Though these lands lie between the Barranca Huixcoloco and the Rio San Juan, they are tierra temporal, although of the best kind.

Modern Utilization: Maize and barley dominate, together with the large or "manso" variety of maguey, although black beans, habas, squash, and maize are also cultivated on the lands of the Hacienda Metepec.

Archaeological Remains: The Late Toltec occupation is found over a very small area west, some 600 m from the walls of the casa grande of the Hacienda Metepec. There is some mound debris, but no structural remains. The site area is within the grid area of greater Classic Teotihuacan, as mapped by Millon *et al.* (1973:66-67, 83-84).

Site Area: 2 ha, dispersed.

Classification: hamlet.

Date: Not surface sampled; surface survey recorded Late Toltec.

TT-72 and TT-78 (Early Toltec)

A major problem in this study of Toltec settlement in the Teotihuacan Valley is the nature of settlement within the Teotihucan period city. Prior to Millon's definition of the border of the city we had completed surveys within and near the periphery of the city and defined a number of Toltec sites (TT-23, TT-25, TT-27, and TT-30). Our survey contract did not include what was then understood as the area of the Teotihuacan period city since Millon was engaged in an extensive survey of that city. We had, of course, examined much of the city in casual survey and noted areas of Toltec period occupation. Marino, in his resurvey of Toltec sites, examined in more detail the patterning of Toltec settlement within the city. The conclusions presented below must be understood as highly tentative and when Millon's much more intensive survey is published his conclusions should result in some, possibly substantial, revisions.

We have rather arbitrarily defined sites and, in fact, our site designation TT-72-~~77~~-78-122-124-125-26-27 could easily be collapsed into one larger site with two chronological components: Early and Late Toltec. What is clear is that this gigantic site complex was the population center of the valley during both Toltec phases.

We have arbitrarily defined the Early Toltec occupation as three sites: TT-78, TT-72, and TT-124. TT-78 is the area in the heart of the Teotihuacan city, along both sides of the Street of the Dead, TT-72 is the occupation within San Francisco Mazapan, TT-124 is scattered traces of Early Toltec in the predominately Late Toltec site TT-77, just south of the Ciudadela.

TT-72 (Early Toltec)

Natural Setting: This site is located at 2295 to 2300 m on the lower piedmont of Cerro Gordo. There is variable soil cover which is found in pockets between and over the heavy buildup of archaeological debris. Houselots have nopal orchards and maguey. Some cultivation of beans, squash, and maize in the larger house fields or *solars*. Most of these lots are enclosed by high, shade-giving walls. Little erosion, except at the eastern and southern section of the site where the canalized Rio de San Juan has been deeply down-cut to depths of more than 12 m.

Modern Utilization: Buildings of the village of San Francisco Mazapan. The site is also the location for two modern tourist restaurants, which are found in the southeastern quadrant (Millon 1973:46). The school for the children of campesinos, the first such in the Valley of Teotihuacan, was established through the initiatives of Manuel Gamio, ands is also located here (see Millon 1973:32).

Archaeological Remians: Excavations have included that of Xolalpan located, together with Tepantitla, in quadrant N4E2 of the Teotihuacan Urban Map as well as the excavations of Tlamimilolpa in quadrant N4E4 (Millon *et al.* 1973:34). Early Toltec ceramics are found in the houselots and huertas where ceramic collections can be taken throughout San Francisco Mazapan. Their frequency relative to the heavier Teotihuacan debris is light, and the occupation in some areas tended to be confused also by the Late Toltec and Aztec. This site is within the Urban Zone of Classic Teotihuacan (Millon 1973 *et al.* 1973: Maps 20-22, 32-34, and 60-62), and has over it the more extensive occupations of the Late Toltec town site of TT-122.

Site Area: 425 ha.

Classification: Together with TT-78 to the west which may or may not be seen as a separate site, this may have been the regional center or central town of the Teotihuacan Valley in Toltec times.

Date: No surface samples; surface survey recorded Early Toltec mixed with Late Toltec.

TT-78 (Early Toltec)

Natural Setting: Situated between 2300 and 2310 m on the lower south-central piedmont of Cerro Gordo (Cerro Tenan or Tonatiuhatepetl), this gently sloping basaltic bench, upon which sits the massive ruins of Classic Teotihuacan together with successive Postclassic and Postconquest occupations, has been extensively remodelled by cultural activities. Several large areas of quarrying have been opened up in the past. Architectural elevations have obscured the natural contours of the slope. There has been complete canalization, along the southern section of the site area, of the Rio de San Juan. Where the ruins are undisturbed by human activities, the present cover is of pirul, short grass, and small cactus. The only cultigens found within the site area are nopal and maguey (Millon *et al.* 1973:Maps 30-31,44-45, and 58-59).

Modern Utilization: The entire site area is within the archaeological zone of Classic Teitihuacan and is administered by the federal government under the direction of Prehispanic Monuments, a department of INAH.

Archaeological Remains: The Early Toltec ceramics are recorded as being found in scattered locations throughout the area of the central avenue, the Avenue of the Dead, in sparse to moderate quantities. The ceramics tend to be undercounted in subjective estimates of the sherd cover in the fields directly in back of the restored structures east and west of the Avenue of the Dead and north of the Rio de San Juan, because of their admixture with heavy quantities of Teotihuacan, Late Toltec, Aztec, and Postconquest pottery. Without excavations, structures specifically pertaining to the Early Toltec period cannot be identified. Even with excavation, they can be lost because they undoubtedly were destroyed during the large-scale campaigns of restoration of the Classic street in the early 1960s when the materials lying over and in front of the sealed, inner Classic structures were all excised from the zone. After hundreds of tons of structural remains were thus removed, some could say without fear of contradiction, "There is no Toltec here!" That, of course, is correct now for the avenue itself. It is not correct for the area west of the avenue along its entire length from Plaza Luna to the Rio de San Juan, or is it correct for the area including the Viking group, which extends from the Sun Precinct, south to the Rio de San Juan on the eastern side of the Avenue of the Dead.

Site Area: 350 ha.

Classification: Western barrio of a large town site; the adjoining Early Toltec occupations of TT-72 east forming the eastern barrio.

Date: Not surface sampled; surface survey recorded Xometla subphase, Millon's survey teams also recorded Oxtotipac subphase.

TT-122 and TT-125 (Late Toltec)

These two conjoined sites, TT-122 on the east and TT-125 on the west, are situated at 2290 to 2305 m in the lower piedmont of Cerro Gordo, on a gently rising incline above the plain of Teotihuacan to the south. The Barranca Piedras Negras, draining the slopes between Cerro Malinalco, Cerro Tompiatle, and Cerro Gordo, cuts through the site area. The canalized Rio de San Juan delimits the western and southern edges of the site. Extensive deposits of cascajo underlay sections of the site area. Several caves which burrow beneath this deposit have been recorded. The soils of the house fields are fertile and support thick orchards of the green tuna, as well as that of the large white tuna blanca, tecolote, capulin cherry, chiles, and squash. Some of the larger fields within the villages of San Martin and San Francisco are also used for maize, bean, and barley cultivation.

The survey shows heavy Late Toltec indications throughout the area of the Early Toltec phase TT-72 and TT-78, from the Pyramid of the Sun precinct west to the Rio de San Juan. Without excavation it is impossible, in this heavily built-up area, to assign particular temple mounds or large mounds, exclusively to the Late Toltec center. Generally and subjectively, it is our impression that the Late Toltec locations include smaller structures which have been built over the much larger Teotihuacan structures, and, in some cases, Early Toltec residential mounds. The heavy amounts of debris and the extraordinarily heavy surface blankets of both Classic and Aztec pottery daze the recorder. It is clear, however, that the Late Toltec occupation here was extensive and heavy. There has been some indication in the excavations of the INAH crews in 1961 and in 1962 which point to a Late Toltec use of the Sun Pyramid Temple Precinct as a civic-ceremonial center, including the building of a wall that blocked the former Teotihuacan period entrances to the Sun Precinct on the Avenue of the Dead, on its western side.

Further indications of the Late Toltec use of this area were discovered in the incorporation of ceramics of that phase within the body of the low banquette structure extending along the northern base of the Temple of the Sun itself, which was excavated under the direction of Ponciano Salazar in 1962. Marino, over a period of several weeks in 1973, reexamined respectively these excavations into the northern banquette, which was added to the Teotihuacan structure during Toltec times, and noted both Teotihuacan and Mazapan ceramics in the fill used in the construction of this peculiar feature.

Late Toltec ceramics were seen over the temples on both sides of the Avenue of the Dead, north to Plaza Luna and south to the Rio San Juan, before the extensive haulaway, and excisions of the data by the architectural restorations of the period from 1962 to 1964. Late Toltec ceramics are still, as recently as August of 1973, to be seen in the areas of the northern Avenue of the Dead, beginning with "Los Subterraneos" group.

Other occupations found here, beyond the underlying and overwhelming Classic presence, are those of TA-151 (Sanders 1965:209), TA-148-46, and TT-78. The area of this large Late Toltec center is entirely within the urban grid of Classic Teotihuacan, and is circumscribed within the area shown in the maps by Millon *et al.* (1973) in Map sheets 18-20, 30-32, 44-46, and 58-60.

Classification: Large town site.

Site Area: 169 ha (117 ha, eastern section; 52 ha, western section).

Date: Not surface sampled; surface survey recorded Late Toltec.

TT-124 (Late Toltec)

Natural Setting: The site is located at 2295 m, south of the Ciudadela, in an area which has been extensively altered. The area has been artificially flattened and levelled in recent years. Heavy stone debris surrounds the former mound areas. Deep wells pump water into alfalfa fields.

Modern Utilization: The northern section of the site area bordered a restaurant in 1963, a building which has since been razed. Extensive alteration of the mounded area south of this zone, on both sides of the continuation of the Avenue of the Dead, or Via Sacra of the Classic City, by modern commercial farming operations has occurred.

Archaeological Remains: Scattered and localized indications of Late Toltec occupation over the mounds of the Early Toltec (TT-72) and Teotihuacan residential area were seen here during various visits between 1960 and 1963. Our impression is one of a scattered village settlement.

Site Area: Late Toltec, 42 ha.

Classification: Late Toltec, large, scattered village extending east from the Avenue of the Dead into the villages of Santa Maria Coatlan and San Sebastian. Early Toltec, part of the regional center.

Date: Not surface sampled; surface survey recorded Late Toltec.

TT-71 (Early Toltec) — TT-172 (Late Toltec)

Natural Setting: This cave is located at 2305 m between the edge of a rocky outcrop and a field planted in maize. A large number of caves are found throughout the northwestern quadrant of the Urban Zone of Teotihuacan. Several of these are reputed to be interconnected. Water can be heard running at a greater depth than that of the floor in some of these caves. The campesinos living in this vicinity believe that some of the water for the springs of the Parroquia-Puxtla district of Teotihuacan comes from an underground river which is passing beneath these caves. The entire extent of TT-71 is not known, since the investigator did not venture beyond the first small chamber.

Modern Utilization: None.

Archaeological Remains: Pottery from the cave floor of both the Oxtotipac and the Xometla subphases, according to surface investigations. Parts of a smoke-blackened brazier of Toltec affinity were found. Excavation would be required in the powdery dust of the cave floor to determine whether or not any hearth, altars, or other structures are here. The entrance of the cave is within the Urban Zone of Classic Teotihuacan, northwest corner of N6E1 (Millon 1973:10).

Classification: Cave, ceremonial.

Date: Surface sampled. Definitely Early Toltec, probably both Xometla and Oxtotipac, trace of Late Toltec.

TT-81 (Early Toltec)

Natural Setting: This site is located 2303 m in the lower south piedmont of Cerro Gordo, west of the Archaeological Zone in quadrant N3W3 of the Teotihuacan Map (Millon 1973:42). This is an area of massive rock outcrops. The irregularity of the terrain has been accented by quarrying activities. There is some scrub grass. The cave entrance here is said by the local informants to be just another entrance of the same large cave system repeatedly encountered in the region extending from the Barranca de Piedras Negras to the east-west axis leading from the Sun Precinct. Near the entrance tunnel, which is only 40 cm high for nearly 3.5 m, the narrow opening widens, and the tunnel floor inclines sharply downward into a small circular room-like chamber approximately 4 m in diameter. Informants pointed to several small holes leading off of the edge of other cave chambers. The caves are known to pothunters and have apparently been rummaged in for some period of time. Several large pits had been excavated in the floor of the first, or entrance chamber, and numerous potsherds had been thrown up and were retrieved from the back fill. Four large pieces of what was discovered back in the field laboratory to be a fire-blackened censer basin were recovered. This, together with other potsherds from the pile, was identified as belonging to the Early Toltec phase.

Modern Utilization: For the area immediately surrounding the cave entrance, none, except for grazing.

Archaeological Remains: Early Toltec ceramics found in collections taken from the cave, called locally the Pozo de las Calaveras due to the spectacular find of the skull cache in a well inside of the chambers of the cave reported by Bastien in 1946.

Classification: Cave ceremonial or cascajo quarry or both.

Date: A very small surface sample, all Early Toltec.

TT-84 (Early Toltec) — TT-173 (Late Toltec)

Natural Setting: The site is located at 2298 to 2305 m in the lower north piedmont of Cerro Patlachique and south of the Rio San Lorenzo, within the urban grid of Classic Teotihuacan recorded in the Millon maps (1973:110-111, 119-120). The soils here are sandy and light brown. Little erosion was noted. Pirul trees are found throughout this area of tierra temporal. The Rio San Lorenzo borders the site on its northern edge. Soils here are mixed from sandy to loamy and light to dark brown in color.

Modern Utilization: Cultivation throughout the site area except over several of the heavier, rock-strewn mound areas where the tezontle debris precludes plowing or planting. Maize and barley are both planted here, together with beans. Maguey bancals carefully follow the contours of the gentle, rolling slope.

Pasture is afforded by the short grasses that grow over the ruins in areas of the site where mound debris prevents plough cultivation.

The large dam, or presa, built by the owners of the Hacienda Metepec is directly to the north of the site area.

Archaeological Remains: This is an area of extensive mound buildup. From 42 to 46 mounds were recorded, the number depending on whether adjacent mounds with wash areas cutting between the high areas of these mounds should be counted separately or are judged to have originally been one large compound house structure. There had been some pitting activity in these mounds, particularly in the group in the northeastern section of the site. The Early Toltec occupation is found over an impressive series of Teotihuacan structures in a compact pattern of localized light to medium distribution in the strip of the bench immediately adjacent to and south of the Rio de San Lorenzo, stretching from mid-point in quadrant S2E5 to a little over 600 m to the west through the southern section of quadrant S2E6 and the northern section of S3E6 (Millon *et al.* 1973:110-11, 119-120).

Mazapan ceramics are found scattered over the site area in localized and variable distributions in a pattern less compact than that of the Early Toltec occupation, though over a slightly larger area than that of the earlier settlement.

Area: 44.6 ha, Early Toltec; 57.4 ha, Late Toltec.

Classification: Early Toltec, large, high density compact village. Late Toltec, scattered village, Other occupations here include the Teotihuacan suburban TC-116, Tzacualli hamlet, TF-195, and the Aztec and Early Postconquest settlement, Tenango, TA-153-42.

Date: Not surface sampled; surface survey recorded Early and Late Toltec.

TT-39 to TT-45 (Late Toltec) — TT-85 (Early Toltec)

Natural Setting: The site is located from 2330 m to 2348 m in the middle range of the narrow, north piedmont of the Middle Valley, west of Santiago Tolman. This area has been partially abandoned for agricultural purposes, although at one time most of the site area had been terraced. The site was occupied by a dispersed line village in Late Toltec and Aztec times. Heavy growth of huizache is found in the upper part of the site area, where the slope of Tenan, or Cerro Gordo, increases. The site intercepts both the alluvial plain and the steep slopes of the mountain. Heavy erosion is found at the lower, southern edge of the site area.

Modern Utilization: Maize, frijol, and squash are grown at the lower, western edge of the site area (TT-29). Maize is grown on the terraces of TT-40, TT-41, and TT-43. The terraces are abandoned to grazing high up the slope at TT-42 and TT-45.

Archaeological Remains: Sherd and stone concentrations indicative of residential mounds are found in 21 places, in clusters of from one to eight spaced widely from each other: 8 clusters at TT-39; 2 in TT-40; 1 in TT-41; 3 in TT-42; 2 in TT-43; 2 in TT-44; and 3 in TT-45. In two of these locations, TT-43 and TT-46, a small collection of sherds that appeared to belong to either the Oxtotipac subphase or of some phase intermediate between Metepec and Oxtotipac was taken. Aztec occupation is found throughout the strip of settlement. The residential clusters are spaced from 200 to 350 m apart. This piedmont line village stretches 2.2 km east to west from Santiago Tolman, which is on its eastern boundary.

Site Area: 19.4 ha, Late Toltec; 1.1 to 2.2 ha, Oxtotipac subphase.

Classification: Late Toltec, small scattered village. Oxtotipac subphase occupation, 2 separate hamlets.

Date: Not surface sampled; surface survey recorded Late Toltec and Oxtotipac.

TT-46 to TT-58 (Late Toltec) — TT-87 and TT-168 to TT-170 (Early Toltec)

Natural Setting: The sites are located from 2343 m to 2390 m in the narrow strip of north piedmont of the Middle Valley, reaching from the steep slope of Cerro Techuca (one of the "children" of Cerro Tenan, the "mother mountain" in the original Nahuatl designation of Cerro Gordo) to the edge of the floodplain some 450 m north to south and from Santiago Tolman on the west to a point 700 m west of San Esteban Axapusco, a distance of 350 m. The central and western portion of the site area have thin soils, of from 10 to 30 cm in depth that are sandy and light brown in color. In the eastern section of the site, erosion has stripped soils away to tepetate in many areas. The lower site intercepts the floodplain, while the upper site area intercepts the steep slope of the mountain.

Modern Utilization: There is cultivation of barley, maize, and frijol over one-third of the site area. The remainder is, today, a neglected wasteland; however, where a sparse grass cover survives, the area is used for grazing. Houselots of the western part of Santiago Tolman are found in the central portion of the site. Stone and adobe houses are located here. There are orchards of nopal, capulin cherry, and tecojote.

Archaeological Remains: Again, similar to the series of residential foci clustered along the piedmont west of Tolman, this area presents a series of clusters (13 in all) of concentrations of Late Toltec materials denoting residential foci. The size of the individual mounds appears smallest in the western and northern sections of the site area, in locations TT-48, TT-49, and TT-50. There is an impression of greater size of house mounds in the locations TT-51 through TT-58. These areas may have had multi-roomed residences. TT-51 has the remains of heaviest building indications and includes a mound measuring 5.5 x 7.0 m at its base and about 60 cm in height. From its size, it may be argued that this is a ceremonial platform. Because of the heavier mound concentration here in TT-51 and because of the presence of this structure, it appears probable that TT-51 was the "cabecera" of this site area, as Sanders (1965:130) has suggested. Other occupations at the location include TT-46 and TT-47, the Aztec occupation of TA-67; TT-48, TT-49, and TT-51, an Oxtotipac component; a Tzacualli component, TF-120 and TF-70 at TT-41; and TA-69 at TT-53. TA-68 covers the site area of TT-65, TT-56, TT-57, and TT-58.

Site Area: At TT-48-49-51 the survey team reported scattered light concentrations of Oxtotipac subphase sherds. These components were designated TT-169, TT-170, and TT-171. The rest of the sites were recorded as Late Toltec. TT-46-50, 15.3 ha; TT-51, 9.1 ha; TT-52-58, 18.2 ha; 42.6 ha in all.

Classification: Early Toltec, 3 isolated dispersed hamlets; Late Toltec, small, scattered line village.

TT-59 (Late Toltec)

Natural Setting: This site is located at about 3015 m or 11,850 ft, near the top of Cerro Tenan or Gordo, some 600 m south of the highest point at a small subpeak called Cerro Soledad by the campesinos of Santa Maria Maquixco, and on the edge of a small meadow overlooking the central plain of the Teotihuacan Valley. Between the site and the peak stands a thick grove of stunted roble, or oak, mixed with some pine. The site is covered with a thick carpet of lushly growing tall grasses, wild flowers and herbs, including romerito and perejil. The entire Valley of Teotihuacan is visible from here as well as most of the western half of the Basin of Mexico. Popocatepetl and Ixtaccihuatl are also visible on clear days.

Modern Utilization: Today, the area is used for annual religious observances, grazing, and the collection of herbs. This meadow does not seem to be grazed very regularly, perhaps because of its altitude. Wood cutting activities in the past may be responsible for the lack of trees in the meadow area. Of the religious observances which are held here, Thomas Charlton (1970:203) has reported:

> On October 29, the day of Cristo Rey, a mass is celebrated by the priest on the summit of Cerro Gordo. People come to this ceremony from Colhuacan, Maquixco, Temascalapa, Teacalco, San Bartolo and Santo Domingo. The mass is held at a place named "el mogote." It is located within one hundred feet of a Toltec-Aztec pyramid that overlooks the Valley of Teotihuacan to the south.

The priest is from Temascalapa. All of the communities named are from the north slope of Cerro Gordo. It is pertinent to note that this mountaintop ceremony has a long history in the Basin of Mexico, being particularly prominent in Classic, Late Toltec, and Aztec times, so that its practice here, as in the case of the modern chapel on the top of Cerro Azteca (TT-108), is but another evidence of the well-worn adage to the effect that the more things change, the more they stay the same.

Archaeological Remains: The word "mogotes" is used in the north slope area for mounds, as at the Cuecillos site of Cerro Bueno Vista. It may also refer to a stack of hay or pasto. Two large mounds are seen here, both of which have been extensively pitted. The largest appears to be the remains of a temple mound, constructed of two or three terraces, about 2.3 m high and 3.5 x 4.5 m at the base. The temple mound-pyramid appears, from the pitting activities, to have been constructed entirely of stone and covered with a heavy coat of lime mortar, 7 to 10 cm thick. To the west of the pyramid, by some 10 m, is a low, long pile of rubble measuring about 4 x 6 m and approximately 80 cm high. The ceramics in the mound area show Classic, Late Toltec, and Aztec sherds. This is the highest ancient construction of the Teotihuacan Valley. The Aztec site has been designated TA-158.

Classification: Mountain top ceremonial precinct. The large low mound may indicate a priesthood which remianed in residence, perhaps on a part-time basis.

Date: Not sampled; surface surface noted Late Toltec occupation.

TT-62 (Late Toltec)

Natural Setting: The site is located at 2350 to 2365 m on the western border of San Esteban Axapusco, and the northern edge of the lands of the Hacienda Hueyapan, along the eastern edges of a broad wash-like feature (12 to 15 m across) which has been labelled a "barranca," but is clearly an artificial feature. It is not very deep (about 80 to 120 cm), and it frequently overflows during heavy rainfalls, bringing silts into the site area. The soils covering the site are fine sand to loam and run from 0 to 1.5 m in depth. Pirul grows over the site area and along the wash area together with huixcolote, nopal, and abrojo cactus.

Modern Utilization: There is a silted-in dam at the northern edge of the site. A stone bridge spans the wash at the southern edge of the site and there is water storage in the jaguey northwest of the site. The two jagueys west of the site are completely silted in and used for milpa. Maize and barley are planted over most of the site area. A well-built masonry dam is seen south of the site, probably constructed by the Hacienda Hueyapan. Diversion canals angle off of the dam; they were built across the wash area to carry water to the fields below located on both sides of the dam.

Archaeological Remains: The "barranca" itself may be a Prehispanic cultural feature, a pedestrian road. It runs along a nearly straight course for 9.5 km from its crossing point on the San Martin-Otumba highway, past TT-62, and on to the north, northeast, and at least another 4.5 km south of that crossing point to reach the very end of the line of the great east-west road leading to the east from the Ciudadela compound, to a point 1.2 km east of the Hacienda Tlacatepan, on the Barranca Huixoloco. On the maps of the Teotihuacan Valley, 14 km of this route are visible. The road has approximately the same north-south angle orientation as that of the Teotihuacan north-south alignment. It passes through Cuahutlazingo on the south and through the small Classic site of TC-126, which is also situated on an extension of a grid line of Teotihuacan, directly east of the Plaza Luna. A possible conclusion is that this pedestrian road is of Classic origin. The entire subject of Prehispanic roads in the Basin of Mexico has for too long been neglected and should be seriously investigated, it is hoped in the near future.

The site, TT-62, which sits on the western edge of this remarkable feature, presents no certain evidence of mounding. The Late Toltec sherds are found in light to moderate frequencies throughout the site area, appearing in heavier frequencies along the road or "barranca," and in the pantheon area of San Esteban. Other occupations here include TA-139 (Sanders 1965:209).

Site Area: 21.0 ha.

Classification: Small, low density compact village.

Date: No surface sample; surface survey recorded Late Toltec.

TT-79 (Early Toltec)

Natural Setting: At 2337 m north of the Barranca de Piedras Negras, some 600 m north of N7W1 in the Teotihuacan Map (Millon *et al.* 1973:4) is a cave entrance beneath the base of a large stone outcrop. The field in which the rock outcrop is found is not cultivated due to a lack of soil. It is a field of cascajo, with only the thinnest of grass cover. It will hold neither soil nor water because of the porosity of its bed.

Modern Utilization: None.

Archaeological Remains: Ceramics collected here by Charles Fletcher and Pedro Baños of Oxtotipac types.

Classification: Cave ceremonial or cult?

Date: Surface sampled; Oxtotipac subphase.

TT-86 (Early Toltec)

Natural Setting: This site is located at 2330 m on the right, or western, bank of the Barranca de Enmedio of Tolman on the southern edge of the north piedmont of the Middle Valley, or northern edge of the alluvial plain of the valley 0.8 km north of the old San Martin-Otumba highway. The area is partially eroded to tepetate and, where retained, the soils are very thin, nowhere being more than about 10 to 15 cm.

Modern Utilization: A few tiny patches of beans were growing here in small islands of soil in 1962. Much of the area is unused and is periodically flooded during the growing season by the overflow of the Barranca de Enmedio.

Archaeological Remains: Potsherds are light to moderate. No definite mounds are reported here. Oxtotipac indications are very sparse. There is a possibility of wash from small Oxtotipac subphase village of TT-48 which is north and up slope of the TT-86 site only 700 m.

Site Area: 2.0 ha.

Classification: Dispersed hamlet.

Date: Not surface sampled; survey recorded Oxtotipac subphase.

TT-97 (Late Toltec)

Natural Setting: The site is located at 2330 m on south bank of the Rio de San Lorenzo, 500 m east of the eastern limits of Classic Teotihuacan. The fields here are gently sloping. Soils range from 30 to 150 cm deep and are loamy and dark brown. Erosion is seen only on northern barranca edge of the site.

Modern Utilization: Milpa is planted between closely spaced rows of the maguey of the Hacienda Metepec.

Archaeological Remains: Moderate to heavy sherd cover seen in gradually rising and falling frequencies, perhaps because of the deep plowing of the area. There are 8 areas of heavy sherd and stone concentrations in small 2 to 3 m diameter foci. Other occupations here include Tzacualli (TF-196) and Aztec (TA-80-57).

Site Area: 6.2 ha.

Classification: Dispersed hamlet.

Date: Not surface sampled; surface survey noted Late Toltec.

TT-88 to TT-90 (Late Toltec)

Natural Setting: The site is located at 2360 to 2365 m on the slope of the small "eagle" or "sun" hill of Cuahutlacingo. From Plaza Luna, the sun, which is also conceived of as an eagle in Nahuatl terms, would be seen rising over this hill in the early morning. The slope and bench are rocky, and overgrown with huizache and prickly pear. The top is divided into large houselots planted in maguey, capulin cherry, and nopal.

Modern Utilization: The modern low density scattered village of Cuahutlacingo covers the site area. Maguey is grown and in the small houselot fields, maize is also found.

Archaeological Remains: Three clusters of mounds were noted in the survey: 2 in the location TT-88, 3 in the location TT-89, and 5 in the location TT-90. Aztec indications are heavy throughout the entire site area. The multiple component occupations here include that of TC-126 and TA-90-56 in location TT-89 and the Tzacualli TF-166 in location TT-90.

Site Area: 7 ha.

Classification: Dispersed hamlet.

Date: No surface sample; surface survey recorded Late Toltec.

TT-93 to TT-95 (Late Toltec)

Natural Setting: The site is located at 2360 to 2385 m on the southern edge of the bench of Cuahutlacingo, facing the hill of Oxtotipac. It is a badly eroded bench with soils that are nowhere deeper than 20 cm over the tepetate. Some maize and barley are planted in patches through the area that still retains soil. There are also maguey bancals. The southern slope of the site area is rocky and overgrown in huizache.

Modern Utilization: There are scattered houselots of outlying settlements of Cuahutlacingo in the western area of the site TT-93. Grazing land and maguey are found only in the areas of TT-94 and TT-95.

Archaeological Remains: Three areas of occupational indications including stone and sherd concentrations are seen at location TT-93; 11 residential foci are found in location TT-94; and 2 areas of sherd and stone concentration are seen at TT-95. Other occupations here include Patlachique TF-181 at location TT-94; TC-128; TF-167 (Tzacualli); TC-127; and the Aztec hamlets, TA-90 and TA-91.

Site Area: 17.1 ha.

Classification: Dispersed hamlet or scattered village.

Date: No surface sample; surface survey recorded Late Toltec.

TT-98 to TT-102 (Late Toltec) — TT-82 (Early Toltec)

Natural Setting: The site is located at 2370 to 2380 m on the promontory bench of Oxtotipac and projects into the floodplain of the Middle Valley. It is a gentle slope with rocky outcrops. Huizache is growing in the steeper areas of the slope. Soil cover is

variable, from areas stripped to tepetate and caliche to 10 to 30 cm in depth. Basalt outcrops and cascajo deposits are found on northern area of the slope. The entire elevation is composed of volcanic ash, pebbles, and gravel and is honeycombed by caves, apparently ancient quarries for construction material.

At 2375 m is a cave located at the base of a cliff of fine tezontle ash or cascajo deposit. The cave site here, on the basis of our excavation, was found to be of artificial origin. Above and below the cave is located the present-day village of Oxtotipac. There are several deep wells at the foot of this slope from which water is drawn by gasoline pump. The rocky cap over the cave slopes gently upward to ultimately level off. The major east-west ancient Aztec pedestrian road from Teotihuacan to the lands east of the valley passes directly south of this site and through Oxtotipac. It apparently functioned as a road in Classic Teotihuacan.

Modern Utiliztion: The present-day village of San Nicolás Oxtotipac occupies the site. Maguey is the most important plant. Some maize is grown and there is much nopal and tecojote.

Archaeological Remains: The cave at Oxtotipac was excavated by Obermeyer in 1961 with an initial objective of obtaining pollen samples that might extend as far back as the phase of incipient agriculture, called the Chalco complex by DeTerra (see this volume, Part 1). It was hoped that data could be recovered that would aid in reconstructing an important segment of the climatic history of the valley. The excavations found here passed successively through Aztec and Toltec period levels, reaching the bottom in occupations of the Late Teotihuacan phase. It was eventually determined that most, if not all, of the cave area was a result of Prehispanic excavations undoubtedly for recovery of the volcanic ash material that, since Classic times down to the present, has been a material used in building masonry walls as well as floor, or pavements.

Large amounts of ceramics as well as lithic and faunal remains were recovered, including ceramics of a kind not previously noted for the Valley of Teotihuacan. These were the materials that became known as the Oxtotipac complex because of their discovery at this cave, the type site of that subphase.

The fields beneath, above, and to the sides of the area of the cave itself were all carefully surveyed. Besides the Toltec peirod materials, a large number of occupations from other phases were recorded. These occupations included TF-166 and TF-168, Terminal Formative sites of Tzacualli phase; TF-37, which has a Middle Formative or Chiconautla component; the Classic Teotihuacan sites of TC-112 and TC-113; and Aztec site TA-103, and the Postconquest town San Nicolás Oxtotipac.

The total area covered by these various occupations is approximately 33 ha. The Oxtotipac subphase occupation occurs as a continuous compact area of approximately 15 ha, the most substantial Oxtotipac occupation site of the valley other than that in the city itself.

Late Toltec occupation occurs in the form of scattered and localized stone and sherd foci, in widely spaced locations over the 33 ha of this site (TT-98 to TT-102).

Classification: Early Toltec, small low density compact village; Late Toltec, small, dispersed village.

Date: Oxtotipac and Mazapan subphases in the excavated cave sample. Numerous surface samples were taken but were analyzed before the Early Toltec period was subdivided. They were not kept for later analysis.

TT-103 to TT-105 (Late Toltec)

Natural Setting: These sites are located from 2430 to 2545 m on the east and west sides of the Tepetlaoxtoc pass leading south out of the Valley of Teotihuacan on the eastern flank of Cerro Patlachique. The pass is a well-travelled pedestrian road, deeply etched into the tepetate. The hillside is barren today, with little soil remaining. Small cacti, *Yucca spp.*, small maguey moradillo, and xoconoxtle are found here. Short grasses grow in small clumps.

Modern Utilization: None, except for grazing.

Archaeological Remains: Due to severe erosion, the house mounds here, in some cases, have been "excavated, " and at TT-103, stone wall stubs, wall corners, and room dimensions may be seen for 6 of the 15 mounds. Walls measure from 14 to 16 cm wide. Rooms are rather small, measuring 1.8 x 2.1 m, 2.2 x 2.8 m, 2.3 x 2.7 m, and 2.4 x 3.9 m. Other occupations here include Patlachique, TF-97, TA-189, and TA-191.

Site Area: 12.6 ha.

Classification: Small, scattered line village guarding pass to Tepetlaoxtoc.

Date: Not surface sampled; surface survey recorded Late Toltec.

TT-106 (Late Toltec)

Natural Setting: The site is located at 2835 m in the upper basin of the Rio de San Lorenzo on the steep banks of the barranca which flows from the southeast to the northwest toward Oxtotipac. The terrain is rough and the soils are thin and rocky. Thick huizache monte grows here.

Modern Utilization: None, except for herb collection.

Archaeological Remains: There is one mound area of stone and Late Toltec sherds on a small level bench above the foot path running along the barranca. Other occupations here include those of TC-105 and TA-71-69 (Marino 1965:155).

Site Area: 0.5 ha.

Classification: Probably single house site.

Date: Surface sampled; surface survey recorded Late Toltec.

TT-118 to TT-121 (Late Toltec)

Natural Setting: The site is located from 2340 to 2360 m in the north piedmont of the Middle Valley north of the Urban Zone of Classic Teotihuacan. The lower portion of this site area is severely eroded, leaving sherds lying on bare tepetate, but maguey and stone bancal terraces have preserved the soils of the upper portion of the site in depths of up to 80 cm. Small cactus of the brittle sort which break off in segments in the wind,

locally called *abrojo*, roll about loose on the lower slope of the site. Loose tezontle litters the lower site area. The site intercepts both the gentle slope of the lower piedmont, upon which is built Classic Teotihuacan, and the steep slopes of Cerro Gordo to its north.

Modern Utilization: Barley and maize are planted on the terraces of the upper portion of the site. Some fields have been left for pasture for a herd of dairy cattle, which was seen on the site in 1973. Maguey is planted in rows spaced 4 m apart beginning around the central range of the site at about 2346 m, up the slope to about 2355 m.

Archaeological Remains: The Late Toltec residential foci are represented by mound buildup, mano and metate fragments, and sparse to moderate sherd indications, the last are seen in widely scattered locations on the upper terraces and, in few instances, directly over and among the large mounds of the Techechal Classic site, TC-30, and are found both to the west and south of the Classic site. Gary R. Wilkins, the graduate assistant who surveyed this site in August 1973, noted an unusually heavy frequency of obsidian artifacts here, and recorded eight projectile points, all finely worked. Obsidian artifacts, usually blades and scrapers, are, of course, commonplace in the Valley of Teotihuacan; however, it is rare that such a large number of projectile points may be seen in one location on the surface.

The Late Toltec remains over the lower part of the site are badly washed out. Washing of sherds continues for another 400 m downslope beyond the area indicated as the site.

Other occupations seen here are at TT-118 the TA-144-50 site; at TT-119 the Tzacualli TF-124 site; and at TT-121, the TA-148-46 site. During the resurvey of August 1973, Wilkins noted serious destruction and pitting, that continues thorugh the Late Toltec house, or residential, mounds and down into the multiple floors of the Classic multi-roomed mounds beneath, in the area of TC-30. Wilkins' observations of TT-118, TT-119, TT-120, and TT-121 report much the same picture as was recorded in the 1962 to 1963 season.

Site Area: 15 ha.

Classification: Scattered village.

Date: Not surface sampled; surface survey recorded Late Toltec.

SITE DESCRIPTIONS: THE UPPER VALLEY

Natural and Cultural Geography

The Upper Valley, which includes the historically fateful plain of Otumba, is divided into three distinguishable ecological zones: Zone 11, the north piedmont that stretches north and east to the low, nearly featureless watershed that marks the division between the inward-draining Basins of Mexico and Apam; Zone 12, the plain and east piedmont, formed by the undulating eastern plain that starts at Otumba and rises gently to the east piedmont and sierra of the valley; and Zone 12, the south piedmont and southeast ridges of the Upper Valley, which is bordered on the south by the Barranca del Muerto.

Zone 11: Upper Valley, North Piedmont

The slopes of the north piedmont have very thin soils that are relatively unproductive. The lower section of the very gently inclined piedmont has some deep soils and regularly traps enough water, during good years, to raise good maize crops; the remaining two-thirds of the middle and upper range of the area, however, has very thin soil, is badly eroded, and suffers from a lack of attention to flooding and soil conservation controls. Much of the productive agricultural activity of the campesinos is carried out within the limits of the sprawling, low density (20.2 per ha) village of San Esteban Axapusco with its houselot gardens, all of which are enclosed by either stone, adobe, nopal, or organ cactus.

Turkeys and chickens are kept in these gardens and the goats are corralled in them at night. The red xoconoxtle, or *cardenche* tunas, and the large *tapón* tuna, or *tuna blanco*, are also grown here. The most productive milpas of this piedmont zone are found within, and adjacent to, the village.

Zones 12 and 13: Upper Valley, Plain and East Piedmont

The plain of the Upper Valley is the most unproductive portion of the entire plain of the Valley of Teotihuacan today, and to judge by the minimal nature of its human occupations through all the ceramic phases of the past 3000 years, it has been unproductive far into the past. It is not so much an alluvial plain, as a coming together of the piedmonts in a jumble on the floor of the Upper Valley. The soils that are found here, even in the deeper pockets, are very thin, none more than 100 cm. The region generally has a rough and undulated surface. Rock outcrops and domes of bared, scoured tepetate are frequently exposed at the surface. The only settlements are at the edge of the plain, at the point of the interception of the plain and the piedmont, and again at the edge of gentle piedmont and its interception with the steep slopes of the sierra, where the line villages of San Marcos, Ahuatepec, and Jaltepec are found. Jaltepec completely girdles its small hill, forming a circular, wheel-like rim at the base. The production of aguamiel is important in all of these communities, both for internal consumption and as their chief cash crop, or product.

Zone 14: Upper Valley, South Piedmont and Southeast Ridges

The south piedmont is formed by a heavily scoured series of long, gently rising ridges or benches, which culminate at the upper or extreme eastern edge in a low range of hills. Sheet erosion is common and xerophytic plants are the rule in this eastern range. The lower or northwestern areas of these benches have retained some soils due to the industry of the campesinos of Tlamimilolpa, Xolco, and Taltica, and here barley, maize, some squash, and frijol as well as the ubiquitous maguey are grown. The upper reaches are largely planted in maguey with some wheat and barley. Very little maize is grown in the upper range of the bench land. The bulky ruins of the great walls of the seventeenth-century colonial foundation of the Hacienda Cuahtenco are in the upper bench land. A few poor families make do here in small adobe and stone houses, which are put up within the broken, crumbling walls of the ruined Casa Grande of the hacienda. Hunting by the *tlachiqueros* and herders is part of the daily occupation of the sparse population that lives in this desolate region. Great stands of *Yucca spp.* are found in the northeast corner of the region, covering approximately 90 ha of an area called, characteristically, "Las Palmas."

The settlements of Santa Maria Tlamimilolpa, San Miguel Xolco, and San Franciso Tlatica are of the dispersed low density (1.06 to 2.90 persons per ha) rancheria type. The

only impressive occupations which ever occurred here were during the Late Aztec phases and in the immediately following early Postconquest period.

Table 8. Populations of the Upper Valley Settlement of the North Piedmont.

Listed according to zonal and interzonal settings for: Zone 11a, Upper Valley, north piedmont; Zone 11b, Upper Valley, north sierra; and Zone 12, Upper Valley, plain (after Diehl 1970:146).

Settlement-Ecological Zone	Population	Density per ha	Type
San Esteban Axapusco Zone 11a, intercepts 11b, and Zone 12	1,010	20.2	Low density compact village
Tecuatitla Zone 11a	281	14.9	Low density compact village
Santa María Cholpa Zone 12	227	9.1	Scattered village
Otumba Zone 12, intercepts Zone 9, Zone 8	1,919	32.04	High density compact town

TT-60 and TT-70 (Late Toltec)

Natural Setting: The site is located at 2380 to 2390 m at the edge of the floodplain of the Upper Valley, intercepting the gentle slope of the east piedmont, directly east of Otumba, about 2.75 km (Fig. 22). The soils here are light brown and sandy, from 20 to 100 cm deep. Short grasses and small cacti were found over fallow areas of the site in 1963. There is little erosion, except at the northwestern edge of the site area, TT-60. Pirul and xoconoxtle as well as small herbs grow here. The area is tierra de temporal.

Modern Utilization: A large jaguey is seen west of TT-60. It has stone walls and was probably constructed by the Hacienda Soapayuca. There is no cultivation over the mounds but maize is planted between them in location TT-60. A drainage ditch runs east-southeast to north-northwest, cutting through Mound 2 of TT-60, leading to the stone-walled jaguey. There is plow cultivation here, when planted. One small house is located at the eastern edge of location TT-70, near the highway. Maize, frijol, and barley are cultivated at location TT-70. A drainage ditch catches runoff from the hill to the northeast of location TT-70, the Cerro de la Calera.

Arhcaeological Remains: There is moderate erosion on the mounds of the site. One wash cuts through between Mound 3A and 3B of location TT-70, which is 40 cm wide and 50 cm deep. There has been no excavation or pitting of the mounds. Mounds vary from

Table 9. Populations of the Upper Valley Settlements of the East Piedmont.

Listed according to zonal and interzonal setting for Zone 13a, Upper Valley, east piedmont and Zone 13b, Upper Valley, eastern sierra (after Charlton 1970:233, 1960 cenus data).

Settlement-Ecological Zone	Population	Density per ha	Type
Jaltepec Zone 13a, intercepting Zone 13b	1,406	20.4	Low density compact village
San Marcos Zone 13a, intercepting Zone 13b	851	8.5	Scattered line village
San Martin Aguatepec Zone 13a, intercepting Zone 13b	569	5.1	Scattered line village
Santa Maria Buenavista Zone 13a, intercepting Zone 13b	369	4.9	Low density compact village

Table 10. Populations of the Upper Valley Settlements of the South Piedmont.

Zone 7, Upper Valley, plain; Zone 14a, south piedmont; Zone 14b, south ridges and sierra (after Charlton 1970:233, all figures from the 1960 census).

Settlement-Ecological Zone	Population	Density per ha	Type
Poyoxco Zone 14a, interzonal with Zone 8, Zone 14b	8	0.12	Rancheria
Santa Maria Tlamimilolpa Zone 14a, interzonal with Zone 8	40	1.06	Rancheria
Tocuila Zone 14a	79	1.58	Rancheria
San Miguel Xolco Zone 14a	124	1.24	Rancheria
San Francisco Tlatica Zone 14a, interzonal with Zone 8	544	2.90	Rancheria

50 to 100 cm in height. Eleven distinct mound buildups are seen here. Other occupations here are, to the west, TC-34; in location TT-60, the site TA-106; in location TT-70, the site TA-102. See Sanders (1965) for reference to TT-60 and TT-70. Though originally recorded as separate sites, TT-60 appears to be merely the "upper barrio" of TT-70, from which it is separated by less than 300 m of wash area.

Site Area: 17.4 ha.

Classification: Small scattered village.

Date: Not surface sampled; surface survey recorded Late Toltec.

TT-135 to TT-136 (Late Toltec)

Natural Setting: These sites are located from 2365 to 2370 m on the road from Oxtotipac to Otumba, at the edge of the floodplain intercepting the south piedmont of the Upper Valley.

Modern Utilization: Maguey, barley, and maize are planted in location TT-135, except on the mounds. TT-136 was in pasture in 1963.

Archaeological Remains: Occupational debris is scattered and localized. The Late Toltec indications are overlain by TA-204 in location TT-135. Also here is the Patlachique focus, TF-182 and the Tzacualli rancheria, TF-59. At location TT-136 is the Tzacualli focus of TF-123 and the Classic hamlet, TC-114.

Site Area: 19 ha; two areas of concentration cover a much smaller area.

Classification: Dispersed hamlet.

Date: Not surface sampled; surface survey recorded Late Toltec.

TT-61 (Late Toltec)

Natural Setting: The site is located at 2400 m at the edge of gently sloping alluvial plain intercepting floodplain of the Upper Valley, directly northwest of San Marcos (Plate 5). Soils are sandy and fairly deep here, over 100 cm. The site is bounded by a barranca on the north which varies from 1 to 4 m in width and 1 to 3 m in depth. The only natural vegetation seen along the edge of the barranca is pirul, prickly pear, huizache, huizcolote, and palo. The barranca, running from the east piedmont to the west and the plain of Otumba, has a great litter of large chunks of water-worn obsidian. Some of this water-worn obsidian has apparently been washed onto the site area also. Very little worked obsidian is seen on the site area, however.

Modern Utilization: Maize and barley planted in the fields here. North of the site runs a surviving section of the famous seventeenth-century Zempoala-Otumba aqueduct.

Site Area: 21 ha.

Classification: Dispersed hamlet.

Date: Not surface sampled; surface survey recorded Late Toltec.

TT-63, TT-64, and TT-66 to TT-69 (Late Toltec)

Natural Setting: These sites are located from 2405 to 2425 m on a gentle slope at the foot of and intercepting a steep slope of the east piedmont. There is a shallow barranca north of TT-63.

Modern Utilization: Barley is grown here. Construction of stone culverts under bancals is seen in location TT-64. Old terracing with check dams to control wash is seen in TT-67; this area is used for pasture. There is some maguey and barley. Location TT-69 has both old and new terraces and includes both intensive and marginal land use. Maguey, maize, and beans are grown in TT-69.

Archaeological Remains: A number of large, isolated house mounds, which are probably multi-roomed, are found here. Both TT-63 and TT-64 are at the base of the steep slope of Cerro San Lucas and have the large mounds. The ceramic and other occupational debris is very heavy on these mounds. The archaeological deposit is over 50 cm in depth in these two locations. Two large mounds, over 100 cm high are seen at location TT-66 with moderate to heavy ceramic cover. Obsidian blades and cores are present. Heavy Aztec is here also. TT-67 is represented by one large Toltec mound, 50 cm in height with sparse to heavy Mazapan.

Obsidian blades and cores were seen at TT-67. The location TT-68, again represented by one large mound of 30 to 50 cm in height and some 8 m in diameter, also has some 8 smaller areas of residential foci indicated. The cluster of TT-69 is seen stretching along the lower slope of Cerro de la Calera and Cerro San Lucas with over two dozen mounds. Other occupations noted here are, for TT-63, Tzacualli TF-203, and TA-103; for TT-64, TA-81-63 (Sanders 1965:209); at the location TT-66, TA-103 and TC-123; at TT-67, the Aztec site TA-104; and at TT-68 and TT-69, the Aztec site of TA-101. The Aztec occupations in these locations are commonly over the Toltec residential foci, indicating a continuity in the population between Mazapan and Aztec.

Site Area: 79.3 ha.

Classification: Large, scattered line village.

Date: Not surface sampled; surface survey recorded Late Toltec.

TT-130 (Late Toltec)

Natural Setting: The site is located at 2430 m, on the road midway between San Martin Ahuatepec and the ruined Hacienda Cuahtenco. Gentle slopes, with sandy, thin soils, little erosion.

Modern Utilization: Primarily maguey cultivation. Maguey are closely spaced at not more than 2 m apart. Some barley, grazing, and hunting also.

Archaeological Remains: Small area of moderate to heavy Late Toltec sherds and rock concentration suggesting two or three large house mounds. Other occupations here include the Chiconautla hamlet of TF-209, TC-130, and TA-73.

Site Area: 9.0 ha.

Classification: Dispersed hamlet.

Date: Not surface sampled; surface survey recorded Late Toltec.

TT-131 (Late Toltec)

Natural Setting: The site is located at 2610 m, high in the east piedmont. This is barren and badly eroded bench land. Sparse grasses and small cacti are seen here.

Modern Utilization: None, except for grazing and agave.

Archaeological Remains: Three localized and small (2.5 m in diameter) areas of Late Toltec ceramics, stone, and obsidian. The scattered Aztec village TA-205 is found over the site area.

Site Area: 4 ha.

Classification: Dispersed hamlet.

Date: Not surface sampled; surface survey recorded Late Toltec.

TT-137 to TT-141 (Late Toltec)

Natural Setting: The sites are located from 2420 to 2450 m, in the south piedmont of the Upper Valley. This is rolling bench land. The soils are thin and scanty and there is some erosion to the tepetate layer.

Modern Utilization: None, except for maguey bancals and grazing.

Arhcaeological Remains: Very light and sparse indications are found in five locations. The Aztec site of TA-57, and TA-80, San Luis Chichihuiluca, cover the Late Toltec occuaptions. Also found here is the Patlachique focus of TF-218 in location TT-138 and in location TT-141, the Tzacualli hamlet of TF-170.

Site Area: 5.0 ha.

Classification: Dispersed hamlet.

Date: Not surface sampled; surface survey recorded Late Toltec.

TT-142 (Late Toltec)

Natural Setting: The site is located at 2550 m high in the south piedmont of the Upper Valley. Thin soils. The soils are thin and erosion to tepetate occurs over much of the area. There are xerophytic plants.

Modern Utilization: None, except for maguey.

Archaeological Remains: One large Late Toltec mound that is possibly multi-roomed. The Tzacualli hamlet of TF-219 is immediately to the south of this mound and the scattered Aztec village of TA-58 is found over the area.

Site Area: 1 ha.

Classification: One family hamlet.

Date: Not surface sampled; surface survey recorded Late Toltec.

TT-107, TT-126, and TT-127 (Late Toltec)

Natural Setting: The sites are located from 2460 to 2485 m high in the east piedmont of the Upper Valley. The soils are thin, up to 20 cm in depth. The landscape is very arid and there are xerophytic plants and rocky outcrops.

Modern Utilization: None except for maguey and grazing.

Archaeological Remains: Very sparse and localized remains of Late Toltec ceramics, obsidian scrapers, and blades in small residential foci, each not more than 3 m in diameter. There is heavy Aztec over the area of the sites TA-77 and TA-82. Also noted is the Cuanalan phase TF-204.

Site Area: 29 ha.

Classification: Small, scattered village.

Date: Not surface sampled; surface survey recorded Late Toltec.

TT-129 (Late Toltec)

Natural Setting: The site is located at 2420 m, at the eastern edge of the upper floodplain, intercepting the steep piedmont. Prickly pear, tecojote, maguey, and pirul grow through the area in houselots. There is little erosion of the brown to dark brown soils here.

Modern Utilization: Modern village and houselots of the village San Marcos Ahuatepec.

Archaeological Remains: Aztec and Late Toltec ceramic indications are found in the fields surrounding San Marcos as well as in the houselots. Mounding is visible against the sides of several of the small residential foci. Other occupations include TF-18 (Patlachique) and TC-95.

Site Area: 39 ha.

Classification: Small, scattered village.

Date: Not surface sampled; surface survey recorded Late Toltec.

TT-83 (Early Toltec)

Natural Setting: The site is located at 2365 m, on the lower, or northern edges, of the south piedmont of the Upper Valley. There are deep soils here of up to 50 cm. Erosion is found in the center of the site where the ancient pedestrian road from Otumba to Oxtotipac crosses through the area, which is 4.4 to 4.6 km south-southwest of the plaza of Otumba. The road is impassable for all except very high-axle vehicles. The Barranca de Huixcololco has its beginning on the western sides of the site.

Modern Utilization: The site is found on the eastern and western sides of the much travelled pedestrian road. The villagers of San Nicolas Oxtotipac pass here frequently on

their way to the market at Otumba. The maguey-lined fields on both sides of the road that contain the site area were planted in barley and maize in 1962-1963.

Arhaeological Remains: The ceramic distributions are variably light to moderate and localized in 5 small areas, 3 on the western side of the road in the fields adjacent to the incipient Barranca de Huixcololco, and 2 of these areas on the eastern side of the road. No definite mounds were recorded, though it is noted that the areas of sherd concentrations in the western half of the site occur coincidently with light tezontle concentrations. This site was probably connected as a dependency or satellite of the larger village site of TT-82, directly to the south on the hill of Oxtotipac.

Site Area: 2.2 ha.

Classification: Dispersed hamlet.

Date: Not surface sampled; surface survey recorded Oxtotipac subphase.

TT-91 (Early Toltec) — TT-174 (Late Toltec)

Natural Setting: Located at 2335 m, on the northern alluvial plain between 400 and 480 m on the road to Cholpa from the San Martin-Otumba highway, this site lies in that part of the plain of Otumba where the famous battle was fought in July, 1520, between the men of the retreating Spanish expedition under Cortez and the large host of the Aztec-Texcocan States. The plain here is flat and the soils are deep, but often water-logged, as the drainage here is poor, because the area sits in a sump, or low depression, in the plain of Otumba. The Arroyo de Estetes, which flows north of the site from east to southwest towards San Pablo Izquitlan, is badly silted and often overflows its waters and silt in the area of the site.

Modern Utilization: The house fields and ejido of Cholpa occupy the site area. Attempts are made to plant maize here, often with little success because of an excess of water. It is a blighted area, 900 m to the east of the site area stands an old weather-beaten stone cross upon an undistinguished crumbling stone cairn, which is supposed to mark the site of the chapel Hernan Cortez directed to be built there, after his return to the Basin of Mexico and the conquest of Tenochtitlan in 1521, to commemmorate what he believed had been his miraculous salvation from the near-fatal encounter here on the plain of Otumba. All traces of the chapel have long since disappeared, possibly the work of patriots.

Arhcaeological Remains: Sparse indications of Oxtotipac ceramics found in these fields. Several small rises in the depression may contain structures beneath them. Excavation would be required to determine this point. The ceramic remains of the Early Postconquest San Lorenzo and its Aztec predecessor, Cholpa TA-208, are substantial here.

Site Area: 1.5 ha.

Classification: Hamlet.

Date: Not surface sampled; surface survey recorded Oxtotipac subphase.

TT-92 and TT-96 (Late Toltec)

Natural Setting: The sites are located at 2370 m, in the center of the plain of Otumba, at Otumba. The plain is flat here at the southwestern edge of the site area, rising at TT-96 to a small hill which may be partly natural, and is undoubtedly partly artificial, upon which is built the atrium courtyard and church of Santa Maria de Otumba.

Modern Utilization: Modern town at Otumba. Church, churchyard, and houselots cover the site area.

Archaeological Remains: Indications here are sparse and the most plentiful Mazapan indications are seen at the cemetery and in fields along houselots of the southwestern corner of the modern town of Otumba. A collection of artifacts were taken from an excavation for a well in the interior courtyard of the sacristry of the church of Santa Maria, which sits on a huge mound some 160 x 160 m, that may be the temple of Huitzilipochtli of Otumba. The sample included Mazapan sherds and figurine heads, together with Classic and Aztec materials. Excavations in the platform on which the church is sitting are indicated.

Site Area: 19 ha definitely, possibly 49 ha.

Classification: High density compact nucleated village, at the least, and possibly a town site, buried under the modern settlement. There is a known area of 19 ha with a possible area of 49 ha.

Date: Not surface sampled; site definitely dated by Marino in his resurvey. Late Toltec.

SITE DESCRIPTIONS: CERRO GORDO, NORTH SLOPE

Zone 15: Cerro Gordo, North Slope, High Piedmont

The systematic west-to-east thunder storm procession, which is such a conspicuous part of the summer rainy season, brings with great force heavy rains to the northwestern quadrant of Cerro Gordo. It is this investigator's subjective impression that rains are heavier here than in the southwestern quadrant, at the foot of which sits Santa Maria Palapa. It is probable that a landform as large as Cerro Gordo would shape its own weather, significantly with respect to peasant agriculture.

The villages of the high piedmont, Santa Maria Maquixco and San Cristobal Colhuacan, cultivate the highest ejido milpa to be found in the entire survey area, their terraces reaching from 2470 to 2680 m (about 9700 to 10,540 ft), and utilize even the higher slopes and the top of 3050 m (about 12,000 ft) Cerro Gordo itself (Plate 6).

The terrace systems maintained in the middle and lower sections of this slope are for the most part carefully tended, kept in repair, and added to yearly by the labor of individual farmers or small groups of the males from one family, laboring with a *compadre*. The most impressive high-slope terraces are those which have been constructed within the beds of the barrancas themselves, filling the lower course of two of those systems with an

Table 11. Populations of Cerro Gordo, North Slope Settlements.

Listed for zonal and interzonal relationships between: Zone 15a, high piedmont of the North Slope; Zone 15b, steep uninhabitable slope; Zone 16, intermediate piedmont of Cerro Gordo-Xaltocan drainage (adapted from Charlton 1965:121-122, Charlton 1970:202, population data from 1960 census).

Settlement-Ecological Zone	Population	Density per ha	Type
Santa Maria Maquixco Zone 15a, intercepting Zone 15b	348	19.1	Low density compact village
San Cristobal Colhuacan Zone 15a, intercepting Zone 15b	306	10.9	Low density compact village
Actopan Zone 16	1,179	12.5	Low density compact village
San Pablo Xuchi Zone 16	236	10.0	Scattered village
Santo Domingo Zone 16	687	11.0	Low density compact village
San Felipe Zacatepec Zone 16	426	17.0	Low density compact village

ascending series of great stone-faced, earth-filled, maize-carpeted steps up the slope, representing a significant increment in milpa available to the villages of the mountain. These terraces might appear to be the result of large community-wide organized efforts by large work teams, because they are so massive and large scale. However, inquiry has revealed that they are the result rather of (1) very small work groups and (2) the continuation of the work, season after season, with small scale additions and improvements of the system added to the work of repair and up-keep, as part of the regular seasonal schedule of activities. The victory over erosional forces is incomplete, however, as one may see numerous areas above the terraces exposed to tepetate and rock by sheet erosion in the higher areas of the ejido. In a finely worked out and systematic presentation of a splendid collection of data on household and village economy as it interacts with the microenvironment of this zone, Thomas Charlton, in a series of reports and papers, notably in that presented in his doctoral dissertation (1965), "Archaeological Settlement Patterns: An Interpretation," and the two papers "Contemporary Settlement Patterns: Cerro Gordo, North Slope and Upper Valley Areas" (1970a) and "Contemporary Agriculture of the Valley (1970b), presented in the first volume of the Teotihuacan Valley Project final report, has made an excellent contribution to our understanding of the cultural ecology of these high slope communities.

Zone 16: Cerro Gordo, North Slope, Intermediate Piedmont

This area of long broad ridges, small eroded rocky hills, and barrancas presents a mixture of soil and water conditions. A subjective impression is that agriculture is much less intensive here today than it was in Aztec times, or, to judge by the large number of abandoned nineteenth-century terrace systems, during the era of large hacienda dominance in this area from about 1865 to 1915.

In the areas where there is maintenance of water and soil control, the land is planted in barley, wheat, maize, squash, and beans. The production of maguey pulque is very important here, not only for local consuption, but also as a cash crop. The tlachiqueros 'bootleg' an unknown quantity of their aguamiel and pulque by running big and little shipments by mule and burro trains on moonless nights down from these piedmont slopes to middlemen in Tecamac, Ozumbilla, Temascalapa, and other communities situated at the near end of the highway system leading into Mexico City. This is done to evade the federal taxes. This is a risky business because armed federal agents sometimes lie in wait in jeeps for these midnight riders. It is not a very comfortable topic for casual inquiry or light conversation.

It is an area of an extraordinary number of large and small Aztec phase sites.

TT-31 to TT-33 (Late Toltec)

Natural Setting: The sites are located from 2440 to 2450 m on a gently sloping lower piedmont area extending from the higher piedmont of Cerro Gordo, from a southeast to northwest direction towards San Juan Bautista Teacalco (Fig. 23). Pirul and prickly pear grow along the barranca wash area, which edges the site area on both the east and the west. The soils are sandy to loamy and are from 10 to 80 cm in depth.

Modern Utilization: Maize and barley are planted through these fields, except on the mounds themselves. Careful bancal control, low terrace walls of both earth and stone are preserved in front of maguey lines.

Archaeological Remains: These 3 locations are clearly linked in a scattered hamlet configuration. Twenty-six mounds are noted here, all of modest size; 6 of these in TT-31, 5 in TT-32 and 15 in location TT-33. The Late Toltec ceramics are overlain in most cases with Aztec ceramics, indicating a continutiy in settlement here. Thomas Charlton excavated an Aztec house in location TT-31, a part of TA-40, in 1963 (Charlton 1966:Figs. 25, 26, and Table 16), providing the Teotihuacan Valley Project with data on a rural Aztec house.

Site Area: 17.5 ha.

Classification: Small, scattered village.

Date: Not surface sampled. Surface survey recorded Late Toltec.

TT-37 and TT-38 (Late Toltec)

Natural Setting: The sites are located from 2455 to 2470 m, in the northwest piedmont of Cerro Gordo about midway downslope from Santa Maria Maquixco toward San Juan Bautista Teacalco. The slope here has a very gentle grade and soils are thin, sandy, and light brown in color. Pirul and nopal grow both on and at the edges of the site

area. In areas behind terrace wall, soils are somewhat deeper, up to 90 cm. Erosion is heavy only in northern edge of TT-38.

Modern Utilization: A highway built by the then Governor of the State of Mexico, Gustavo Baz, was put through this valley north of Cerro Gordo in 1961, and runs from east to west along the northern border of TT-37 at the base of the north piedmont of Cerro Gordo. The southern half of TT-38 is terraced and was planted in barley and maize in 1963. TT-37 is also in an area of low earth and stone terraces and was planted in maize and beans in 1963. Tzacualli hamlets TF-129 (in TT-38) and TF-47 (in TT-38) are seen here. Also found here is the Aztec occupation, TA-53 in TT-37 (see Sanders 1965:156) and TA-52.

Arhcaeological Remains: There are scattered and localized concentrations of ceramic and other occupational indications. No distinct mounding is seen in these locations which can be definitely assigned to the Late Toltec phase construction.

Site Area: 11.7 ha.

Classification: Scattered village.

Date: Surface sample taken at TT-38, Mazapan subphase. On the basis of the predominance of jar rims in the sample, this village may have specialized in pulque production.

TT-34 to TT-36 (Late Toltec)

Natural Setting: The sites are located from 2455 to 2560 m, extending to the high central northwest piedmont of Cerro Gordo, intercepting the steep slopes of Cerro Gordo. The highest part of this scattered village site, TA-34, sits at the base of a steep slope area. TT-35 and TT-36 are separated only by a barranca running between them on the southern border of TT-35 and are located on a gently inclined bench land. Large pirul grow in and on the edges of the site area. Considerable erosion wash is seen in the area of the pedestrian roads between TT-34 and TT-35. TT-34 has also seen erosion to tepetate. The soil cover on TT-35, however, is adequate for maize, beans, and squash cultivation. The soil is dark brown in color and sandy to loamy in texture. Barley is also planted here. The soil cover in location TT-36 is not as good as in TT-35, but is better than in TT-34. This is all tierra de temporal.

Modern Utilization: Thomas Charlton has prepared a fine study of the agricultural economy of the villages of Santa Maria Maquixco and Colhuacan, which are to be found just east of this site area, in his paper, "Contemporary Settlement Patterns: The Cerro Gordo North Slope and Upper Valley Area," which was published in the first volume of the Teotihuacan Valley final reports, in 1970.

Today, barley and maguey are cultivated in the location of TT-36; maize, beans, squash, and barley in TT-35; and patches of maize are found in TT-34. Heavy stone terracing is found in TT-35, and stone has been removed from the heavy Prehispanic occupations in these fields, to define field boundaries and construct the terrace facings.

Arhcaeological Remains: Heavy Aztec is seen in all locations of the site area. Teotihuacan occupations are found in TT-35 and TT-36. The central area of this settlement, TT-35, is heavily built-up. There are two temples here and there are indications of other large structures beneath the field surface in the areas around them.

One temple mound is seen also at TT-36 and a fourth possible mound was recorded for the location TT-34. The spacing and densities of the Late Toltec indications associated with these mounds and the associate mound buildup give an impression of nucleation to the central portion of the site, TT-35. Two large residential mounds are recorded for TT-35, while 15 much smaller mounds are recorded for TT-36.

It is felt that this settlement represented by the locations TT-34 through TT-36 was probably the 'cabecera' of the communities found on the north slope of Cerro Gordo during the Late Toltec phase, with the scattered villages of TT-37, TT-38, TT-31, TT-32, TT-33, and the TT-73 through TT-77 cluster as dependencies of this site, at least for local ceremonial observances. TT-34 through TT-36, may in turn have looked to the nucleated Late Toltec town site of TT-134 at "Los Mogotes" or "Los Cuecillos" de Cerro Buena Vista for more important civic and ceremonial functions. Other occupations here are, in location TT-34, the Tzacualli hamlet TF-3, TA-45-8, TA-49; in location TT-35, the Tzacualli hamlet TF-127, TC-56, TA-45; and in location TT-36, TC-58, and TA-46.

Site Area: 27.8 ha.

Classification: Large, low density compact village.

Date: Surface sampled; TT-34 Mazapan-Atlatongo, TT-35 Mazapan-Atlatongo, TT-36 Mazapan-Atlatongo. A number of specific samples from these sites have a high frequency of jars suggesting specialization in pulque production.

TT-73 to TT-77 (Late Toltec)

Natural Setting: The sites are located from 2575 to 2590 m, at the upper edge of the high piedmont of Cerro Gordo, intercepting the steep uninhabitable slopes of Cerro Gordo itself. There is heavy erosion through much of the area, which is particularly severe in locations TT-73, TT-75, and TT-77. Tepetate is bared in many places. Soils are captured by terracing and the houselots of San Cristobal Colhuacan only in the lower, northern portions of the site area.

Modern Utilization: Grazing only, for most of the site area. Some barley and maize are planted in the lower portions of the site area. Charlton has detailed the modern economy and adaptation made by the villagers of Colhuacan to this environment (Charlton 1970:181-305).

Archaeological Remains: Scattered light to moderate concentrations of Late Toltec ceramic and lithic materials. The sherds are badly eroded. Eleven mounds, ranging from 50 to 100 cm in height are recorded for location TT-74, 3 mounds at TT-75, and from 3 to 7 residential foci recorded for TT-76. Other occupations seen here include those of TA-110, TA-115, and TA-112 as well as the Patlachique hamlet of TF-133.

The largest mound in location TT-74 measures from 1 to 2 m in height and possibly served as a ceremonial focus. The settlement as a whole, however, probably looked to TT-35 for its major ceremonial activities.

Site Area: 12.5 ha.

Classification: Small, scattered village.

Date: Not surface sampled. Surface survey revealed Late Toltec.

Natural Setting: The site is located at 2445 to 2460 m, at the "Los Cuecillos de Cerro Buena Vista," on the east piedmont of Cerro Buena Vista, an adventitious cone of the extinct volcano, Cerro Gordo-Tenan. This is a gently sloping terrain which levels off near its western edge to a small flat plateau-like terrace. West of this terrace is a deep barranca that separates this feature from the steep slopes of Cerro Buena Vista itself. The soils are shallow on the upper portion of the site area, which includes this terrace area. Yucca and high pirul grow here, but there is little cultivation. Seven ceremonial temple platform structures from the Teotihuacan-Late Toltec-Aztec ceremonial center of "Los Cuecillos," or "Los Mogotes," of Cerro Buena Vista are situated on the terrace. Downslope from the terrace, a gentle gradient of much deeper soils extends to the east towards Santo Domingo. Pirul, nopal, and maguey are found here. High wild grasses or "pasto" hay is found on the northern edge of the site area, towards the wash area.

Modern Utilization; Once part of the lands of the Hacienda Salinas, these fields are now shared by ejiditarios of Santo Domingo and Colhuacan. The remains of abandoned dams, drainage ditches, and terrace construction are to be seen throughout the site area, some of which are probably remains of hacienda constructions, whereas others may be Prehispanic in date.

The fields of the central and lower, or eastern, portion of the site are planted with rows of maguey forming a series of step-like descending terraces; the intervening spaces are planted in maguey and barley. Habas and *Phaseolus vulgaris* were seen in the maize fields both in 1962 and 1973. Squash is also planted in these fields. Some of the field borders are planted in nopal.

Archaeological Remains: The entire site area of the Late Toltec phase is found within the much larger Teotihuacan period town of Los Cuecillos, TC-73. This investigator had forgotten the presence of the Late Toltec component in the interval of his first visit to this site in the winter of 1962, and the occasion of the resurvey of 1973. A visit was projected for this site to introduce the investigator's students, new to the variety of sites of the area, to the large, unexcavated Teotihuacan site. The investigator might have missed recording the Late Toltec data had it not been for the altertness of the field assistant, Gary Wilkins, who called attention to the Toltec component. Due to difficulties in obtaining permits to survey from the local authorities, a complete resurvey of the Toltec settlement was not possible, but enough data were gathered to minimally define a substantial Late Toltec occupation of over 37 ha, in a medium to high density distribution. The site may be as much as twice this size. Another survey would be required to determine this. "Los Cuecillos" is a huge and extremely complex site, and because of the heavy agricultural use of the lands of the lower part of the site, it would require a week of intensive survey.

The Late Toltec occupation of this center revived the use of the ceremonial complex on the plateau of the upper portion of the Teotihuacan town-site, and may have involved renovation of the structures. An important group of large mounds, grouped around a plaza directly east of the area of the pyramids, and downslope, has heavy Late Toltec in surface occupations (Fig. 24). It suggests strongly a multi-roomed complex housing an elite group of some sort, political or religious, in the richness of the ceramics, the fragments of sculpture, etc.

The Late Toltec occupation, while not as heavy as the preceeding Teotihuacan, appears to have been partially nucleated. There are, other than the structures cited above, 5 other large low rectangular mounds with heavy Late Toltec sherd concentrations,

which were probably multi-roomed residential structures, housing possibly, merchants, priests, or officials, to judge by the abundant fragments of ceremonial and decorated wares as well as fragments of stone censers, white lime-coated, plaster-coated floors, and stucco.

Site Area: 37 ha.

Classification: Small town.

Date: Not surface sampled; 1973 surface survey team recorded Late Toltec.

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APPENDIX A—Survey Schedule

This appendix consists of a reconstruction of a Site Survey Schedule from the 1963 survey.

Descriptive Data

Site Number _____ Recorder _____

Aerophoto Mosaic Number _____ Location Municipio _____

Date _____ Village _____

Checked by _____ Owner _____

I. Natural Setting of Site:

a. General: Delta Lower Valley Middle Valley Upper Valley

Patlachique Range North Tributary Valley

b. Topography: Alluvial Plain
(Main) Small Alluvial Fan or Plain Piedmont

Gentle slope Steep slope Hill top Ridgetop

c. Soil (based upon exposed cuts—roads, canals, ravines):

Depth (cms) Texture: sand loam clay

Color Amount of erosion

d. Hydrography Permanent streams

Springs

Barrancas—depth, location, width

Washes

e. Vegetation Type, abundance

f. Special resourses (clay, lime, obsidian, basalt, granite, tezontle, salt)

Site Number _____

II. Modern Cultural Features

a. Structures (Note number and location with respect to site features)

b. Jagueys

c. Agricultural use
   1. Crops, state of growth

   2. Erosion control (bancals, terraces)

   3. Humidity control (canals, dams, drainage ditches, cadetes)

   4. General classification—temporal, humedad, riego

d. General relationship of site to agricultural and other land use today

Site Number _____

III. Prehistoric features

a. General condition of site—Erosion, excavation, pitting

b. Mounds—number size, height, classification (ceremonial, domestic) (location map) (clustering-plaza like plans)

Site Number _____

c. Specialized features—(Walls, floors, canals, dams, burials, forts, moats, quarries, workshops)

d. Pottery—Quantity, description

Subjective		Objective
None	Even	Take several 1 x 1 m. counts—on residential mounds, between them, empty areas between mound clusters.
Sparce		
Moderate	Localized & variable	
Heavy		
Very Heavy		

c. Miscellaneous artifacts—relative abundance

Obsidian
- Tools
- Blades - Cores

Ground stone

Manos - metates	Figurines
Celts	Spindle whorls
pestles and mortars	pottery discs

Site Number _____

f. Depth and nature of archaeological deposit (stratification, stone-shell-midden layers, soil changes, total depth)

IV. Miscellaneous Data

Site Number _____ Date _____

Aerophoto Mosaic Number _____ Recorder _____

Amplification of Aerophoto of Site

Site Number _____ Date _____

Aerophoto Mosaic Number _____ Recorder _____

Map of Site Based on Tracing of Aerophoto

Site Number _____ Date _____

Aerophoto Mosaic Number _____ Recorder _____

Photographs

1. General photos—showing ecological setting

Site Number_____

Photographs

2. Photographs of modern and ancient terracing, irrigation, stream beds

Site Number_____

Photographs

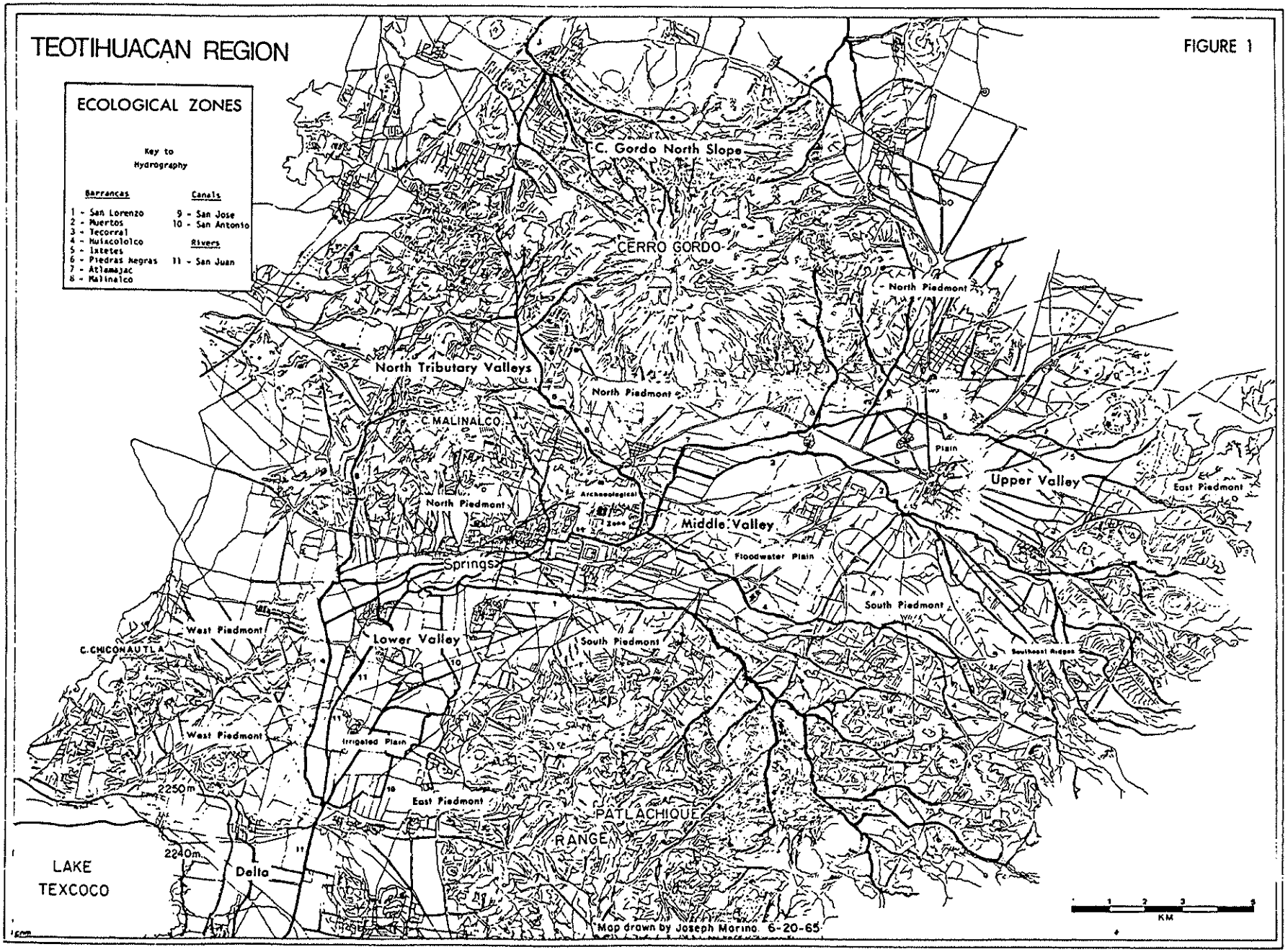
3. Archaeological features (mounds, mound clusters, profiles of walls and floors, etc.)

Site Number _____ Date _____

Aerophoto Mosaic Number _____ Recorder _____

Problems, Summaries, Impressions

These three sheets are designed to permit the recorder to make tentative summary statements about the nature, plan, and function of site, its relationship to environment and land use, problems of dating, relationships to other sites nearby, problems of relating structures to various periods of multi-period sites, desirability and need of further work to define the characteristics of the site, or any other problems or impressions he may wish to record.


TEOTIHUACAN REGION
FIGURE 1
ECOLOGICAL ZONES
Key to Hydrography
Barrancas
1 - San Lorenzo
2 - Muertos
3 - Tecorral
4 - Huiscolotco
5 - Intetes
6 - Piedras Negras
7 - Atlamajac
8 - Malinalco
Canals
9 - San Jose
10 - San Antonio
Rivers
11 - San Juan
C. Gordo North Slope
CERRO GORDO
North Piedmont
North Tributary Valleys
North Piedmont
C. MALINALCO
Plain
Upper Valley
East Piedmont
Archaeological Zone
North Piedmont
Middle Valley
Springs
Floodwater Plain
South Piedmont
West Piedmont
C. CHICONAUTLA
Lower Valley
South Piedmont
Southeast Ridges
West Piedmont
Irrigated Plain
2250m
East Piedmont
PATLACHIQUE RANGE
2240m
LAKE TEXCOCO
Delta
Map drawn by Joseph Marino 6-20-65
KM

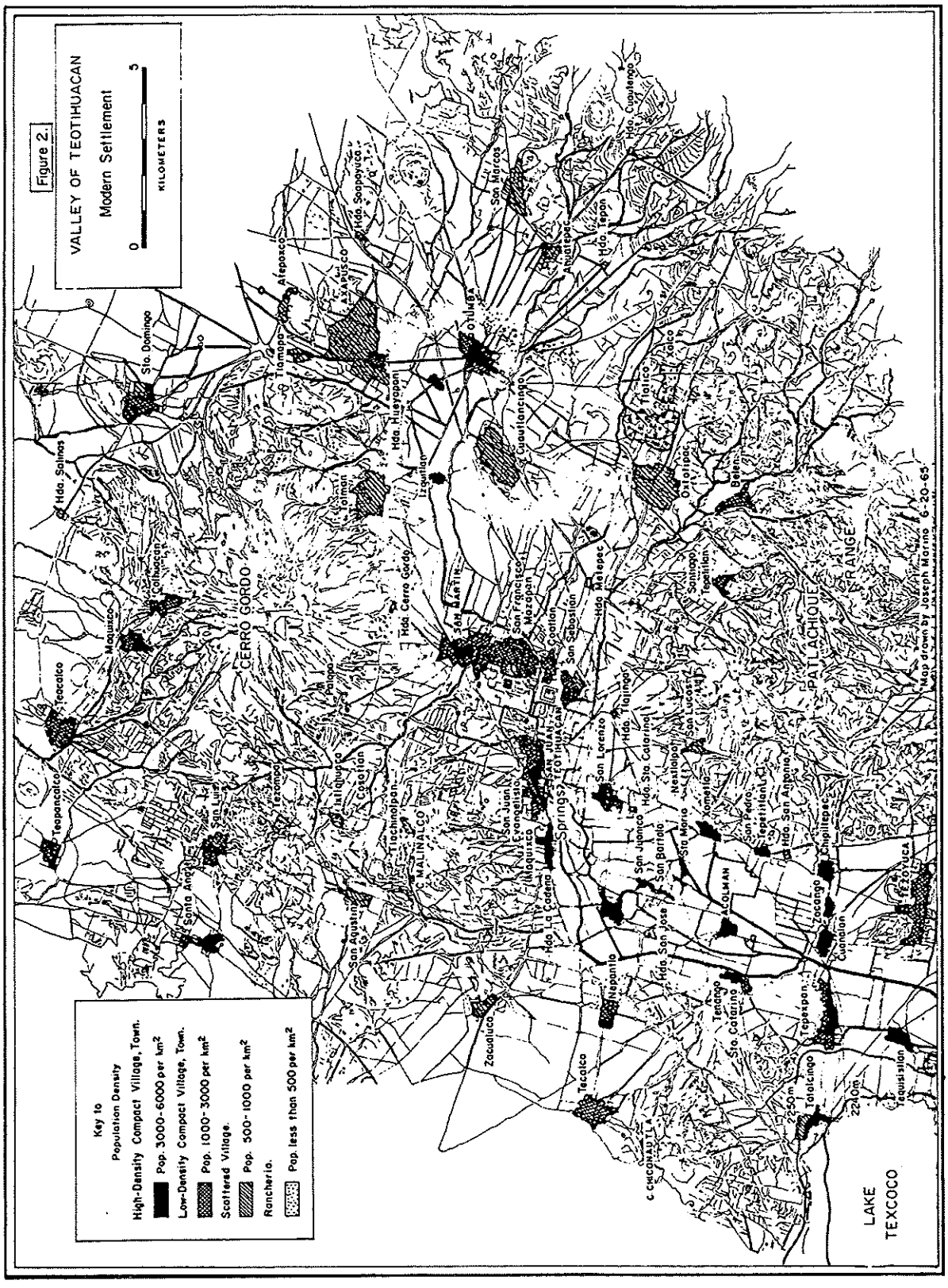
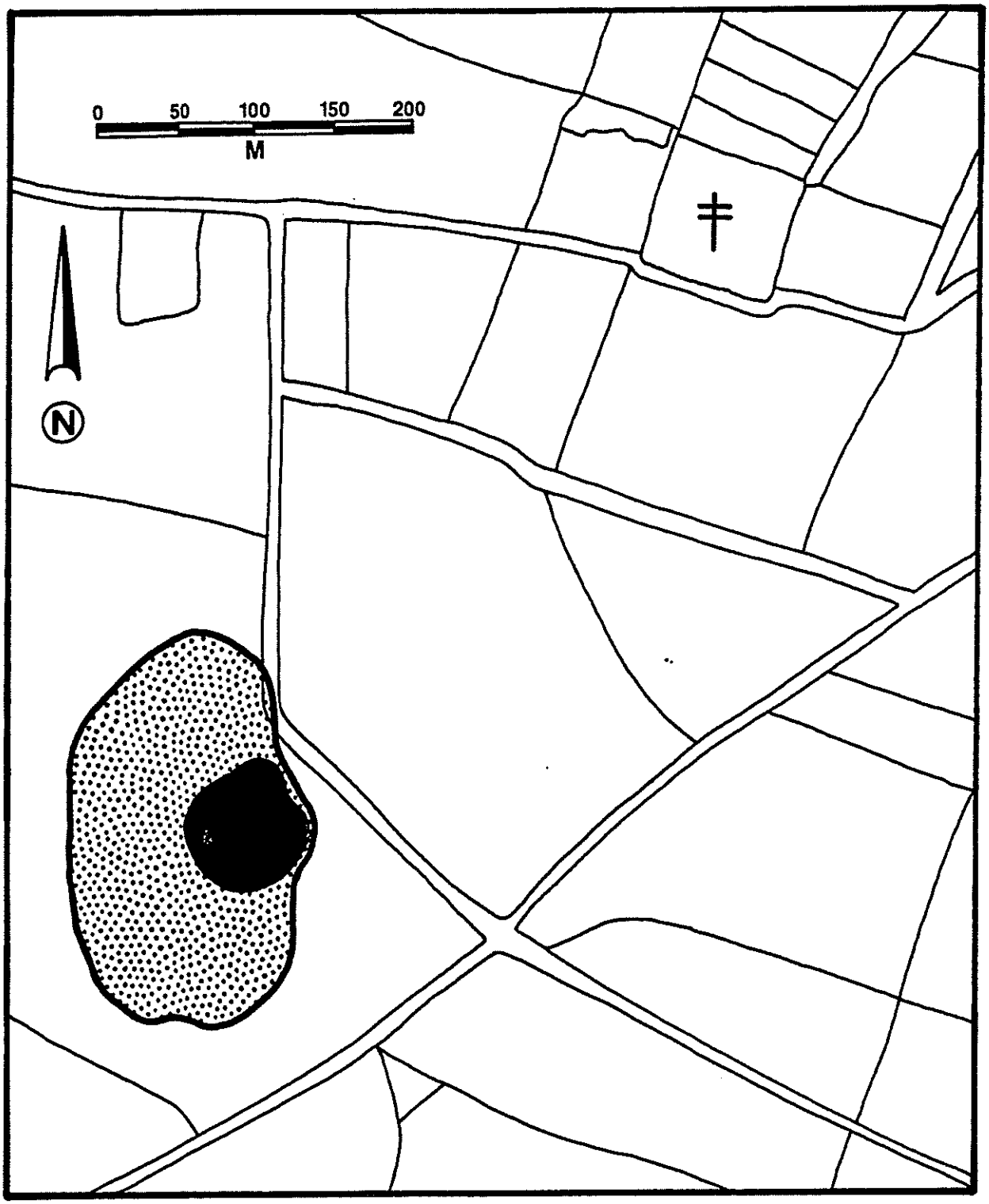


Figure 2.
VALLEY OF TEOTIHUACAN
Modern Settlement
0
5
KILOMETERS
Key to
Population Density
High-Density Compact Village, Town.
Pop. 3000-6000 per km²
Low-Density Compact Village, Town.
Pop. 1000-3000 per km²
Scattered Village.
Pop. 500-1000 per km²
Rancheria.
Pop. less than 500 per km²
CERRO GORDO
PATLACHIQUE RANGE
LAKE TEXCOCO
Teotihuacan
San Juan Teotihuacan
Tepetitlan
Santa Ana Tepetitlan
Tlalmanalco
Tepetlixpa
Ayapusco
Tlamapa
Afeposco
Sto. Domingo
Hda. Salinas
Tecalco
Tepancalco
Maquixco
Hda. Cerro Gordo
Hda. Huayapan
Izquitlan
Cuautlancingo
Oztotipac
Belen
Tlalco
Hda. Soapayuca
Hda. Tepan
Hda. Cuautenco
Hda. Matepec
Hda. Tlalinga
Hda. Sta. Catarina
Hda. San Jose
Hda. San Antonio
Hda. La Cadena
Nexticapan
Sta. Maria Nativitas
Sta. Catarina
Tezoyuca
Chiautla
Chimalhuacan
Tlapacoya
Tulantongo
Zacualuca
Napantla
Tezoyuca
Cuanalan
Tepetlixpan
Tulantongo
Tezquisalon
2250m
2240m
6-20-63

Figure 2



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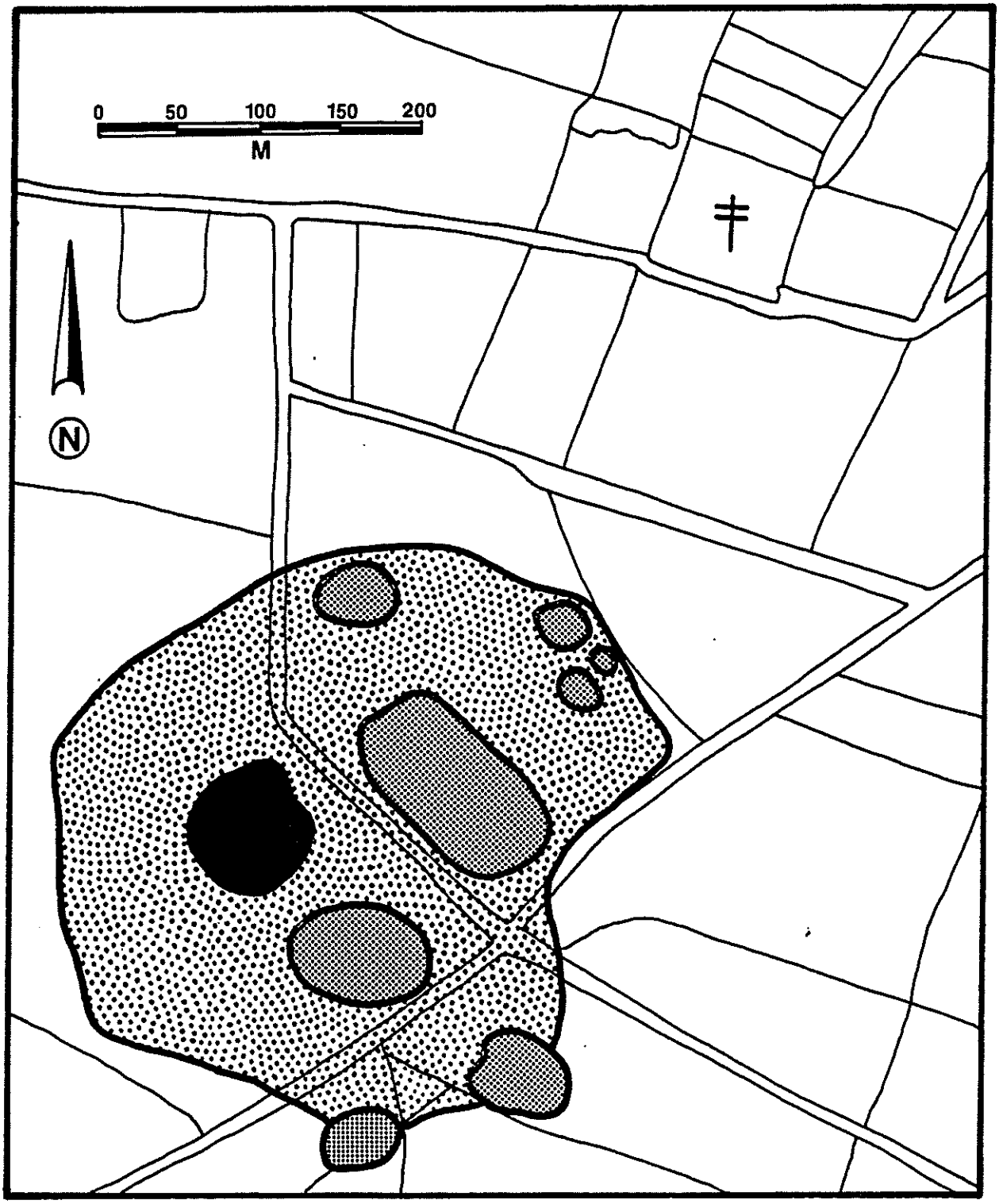

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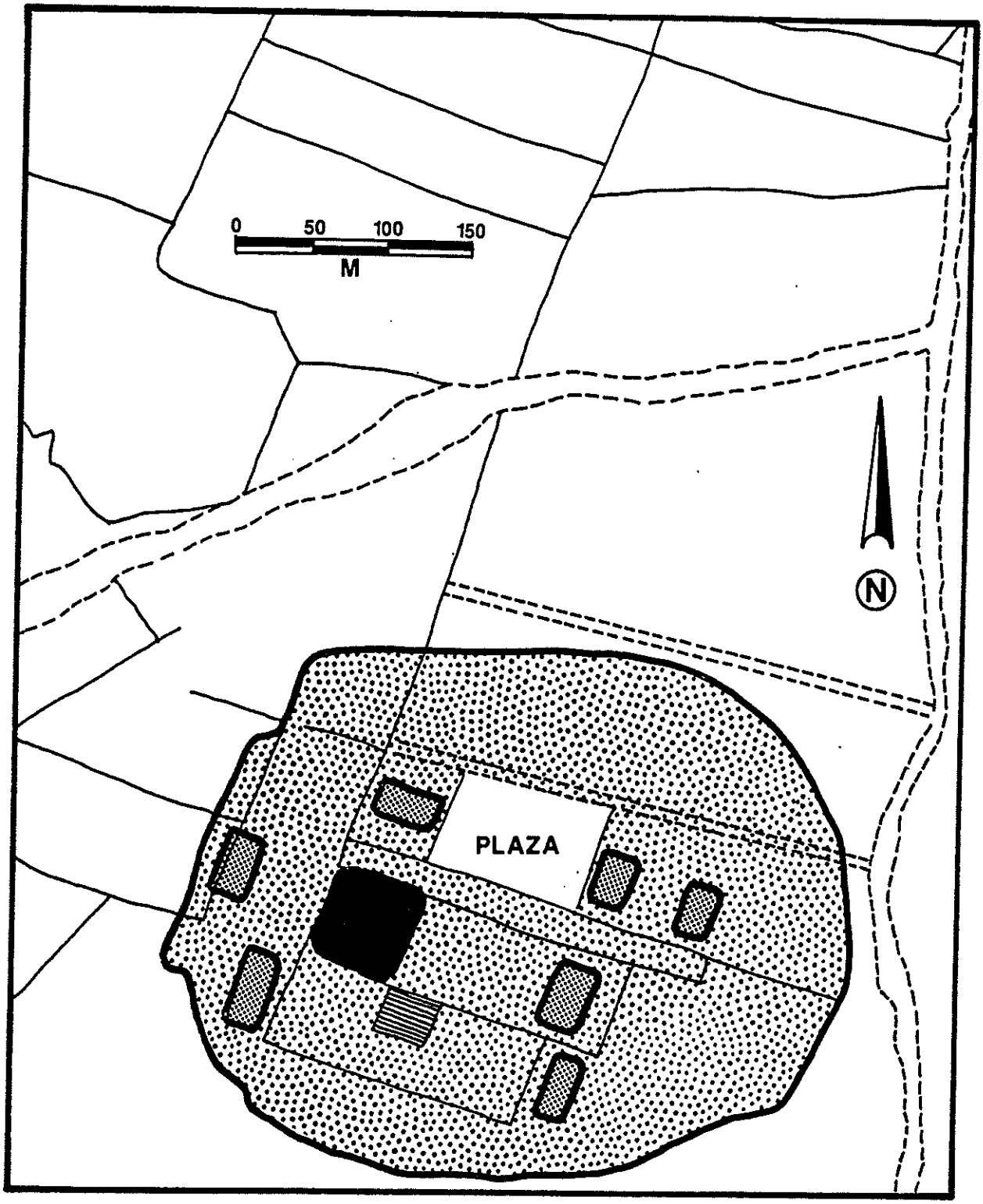

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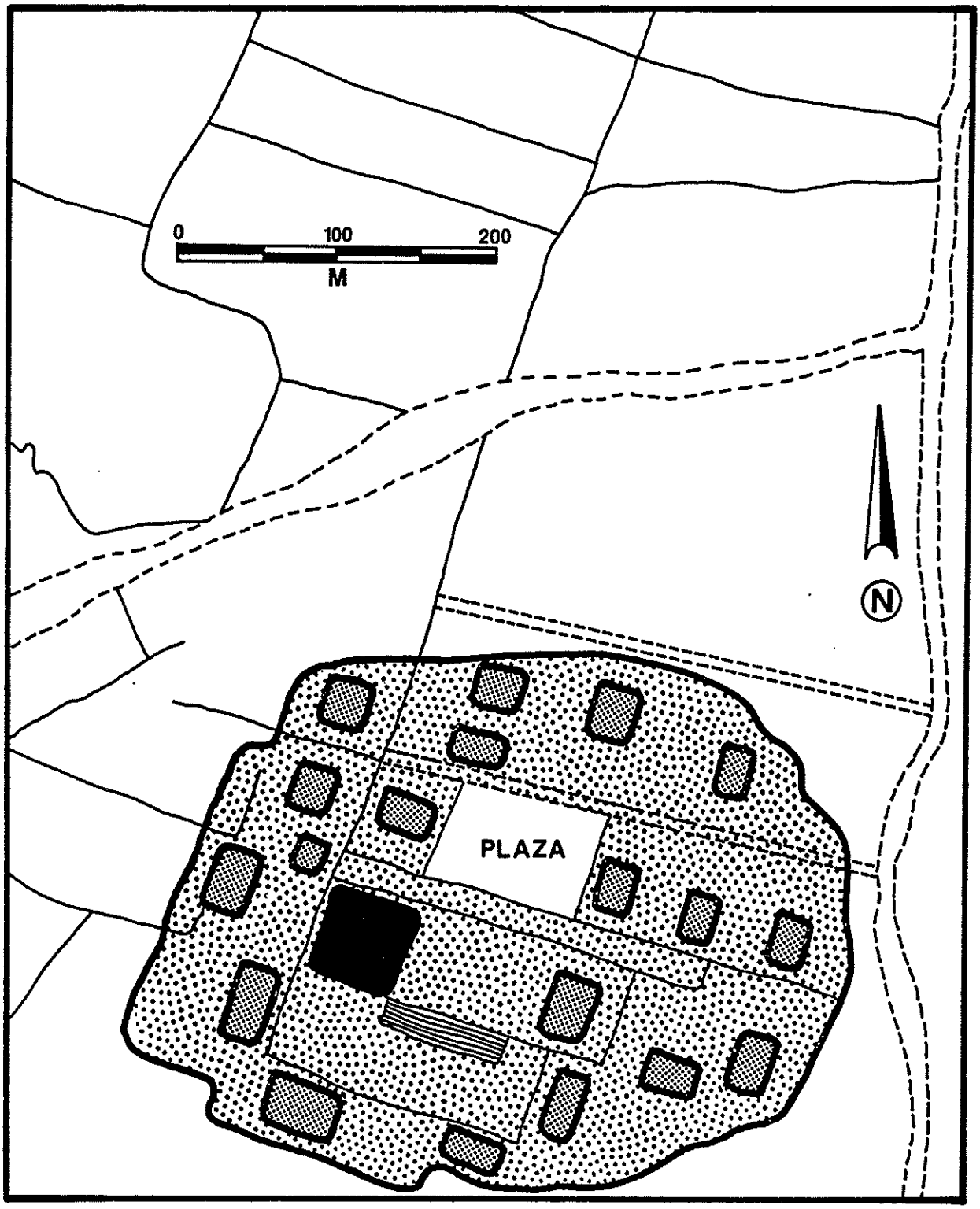

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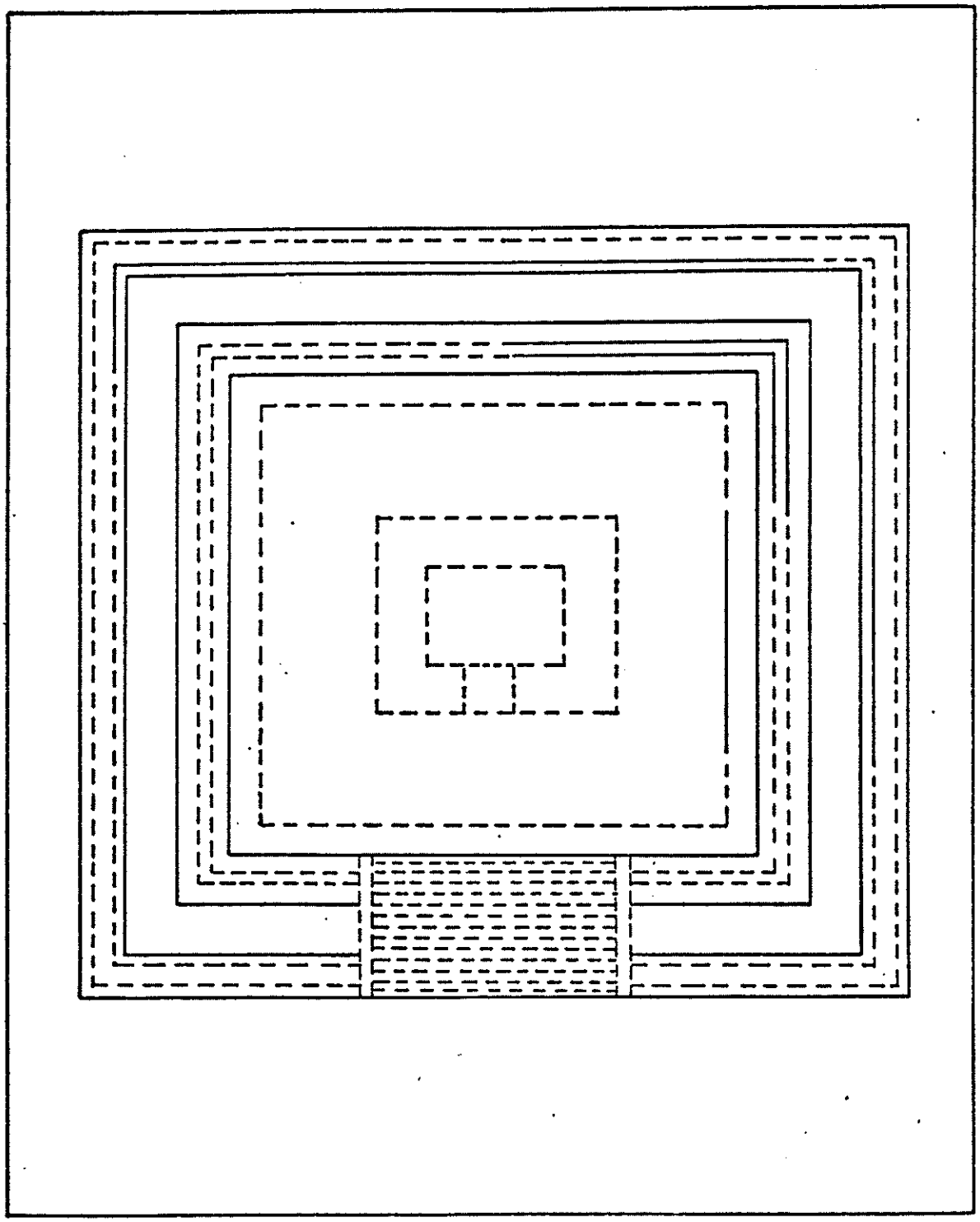

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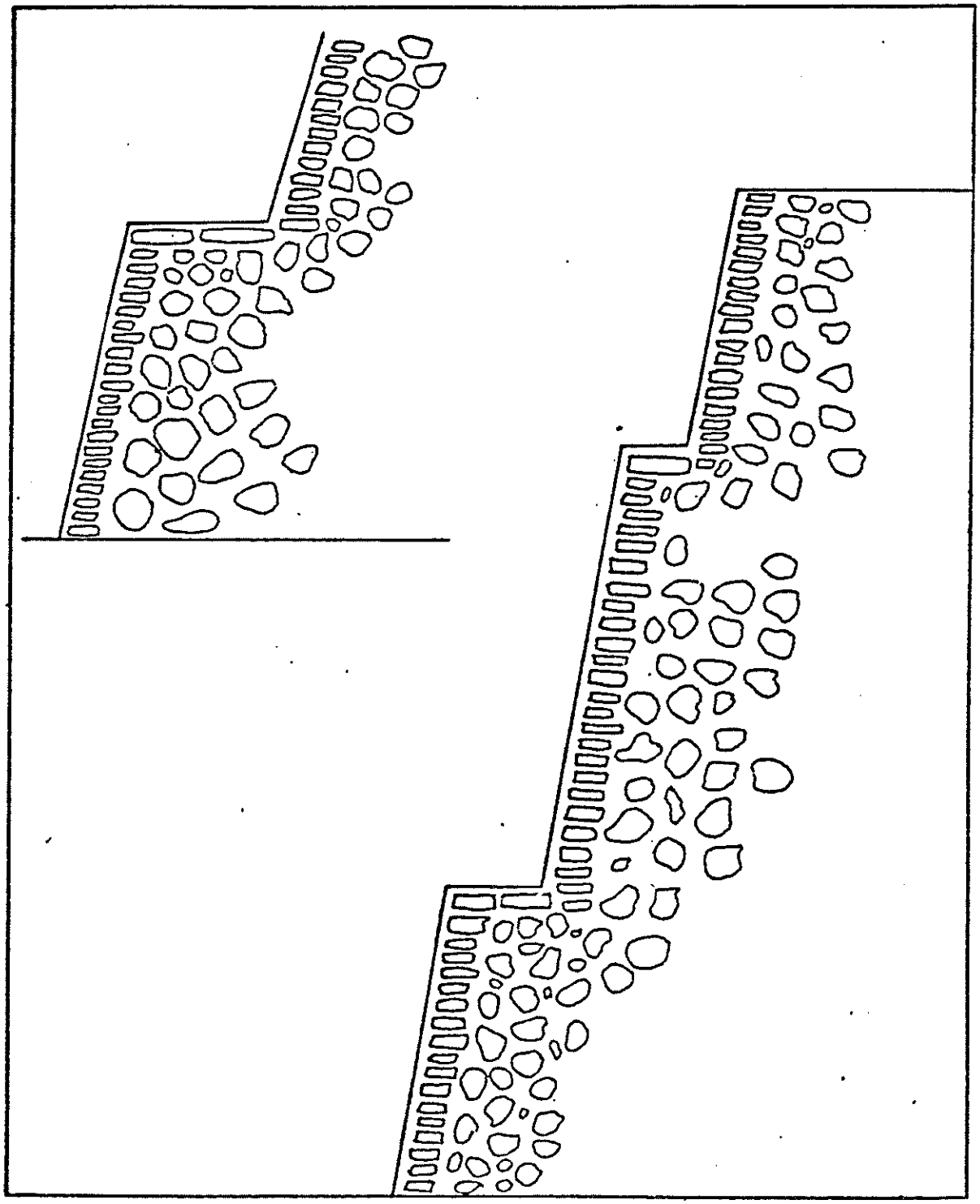

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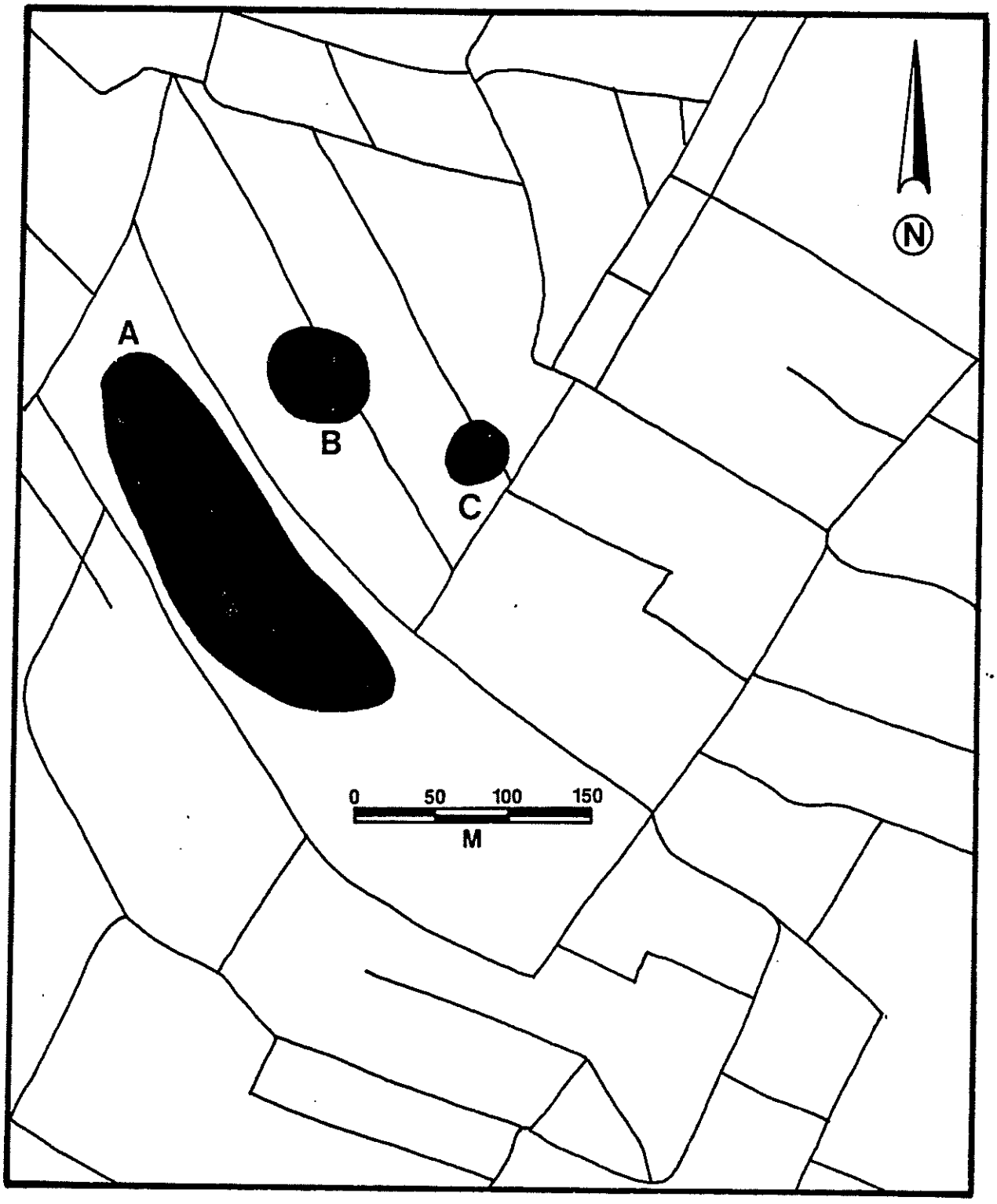

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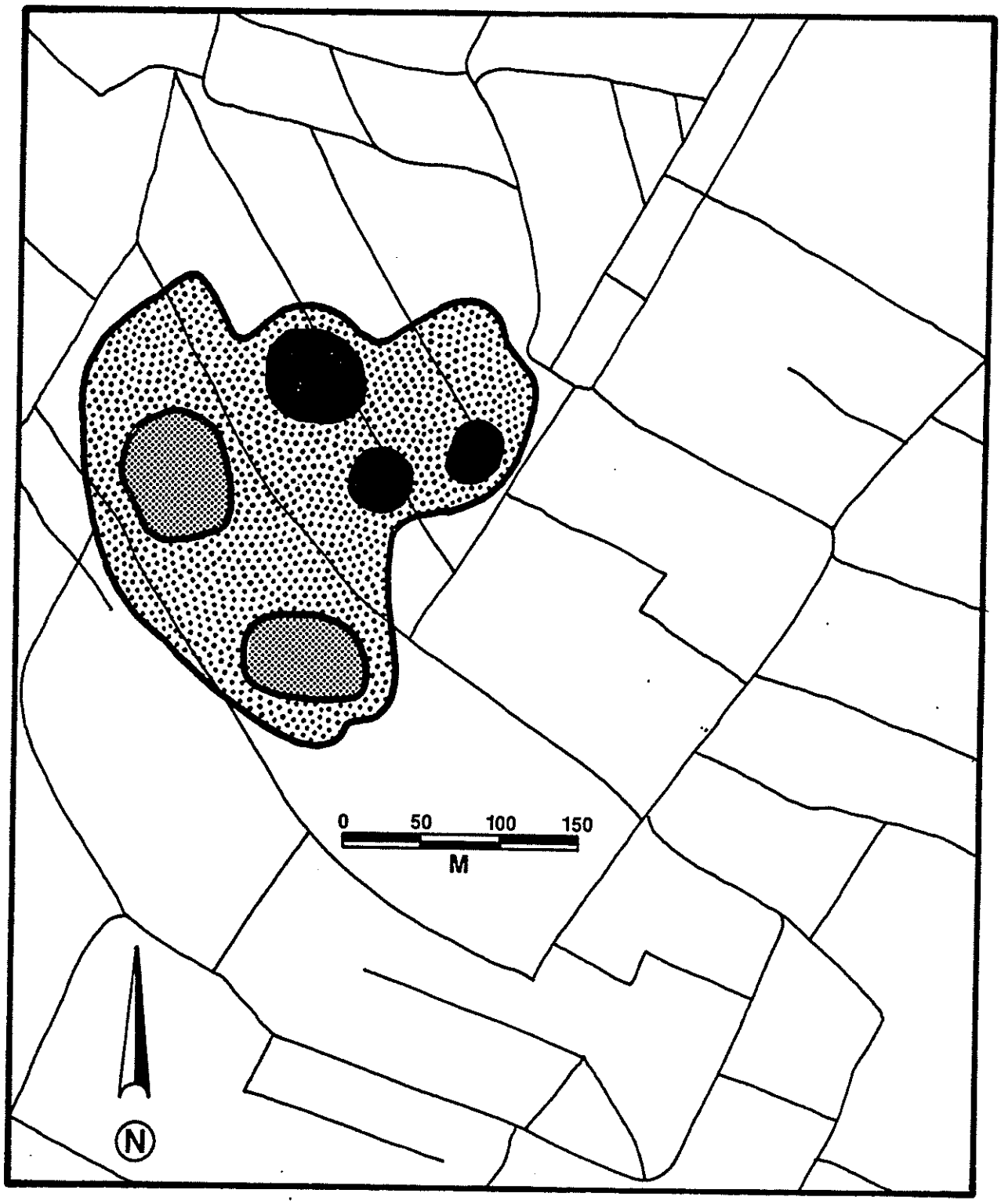

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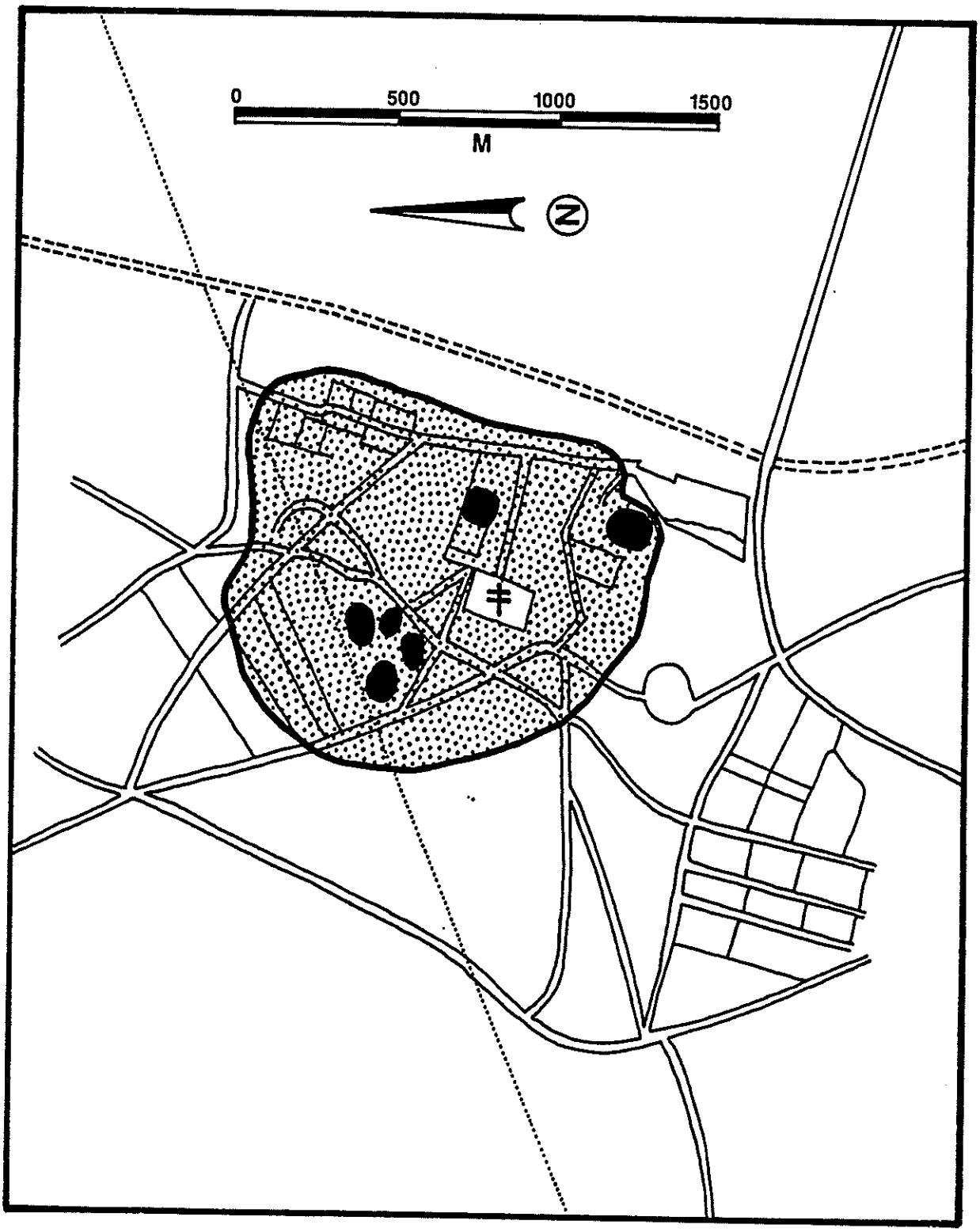

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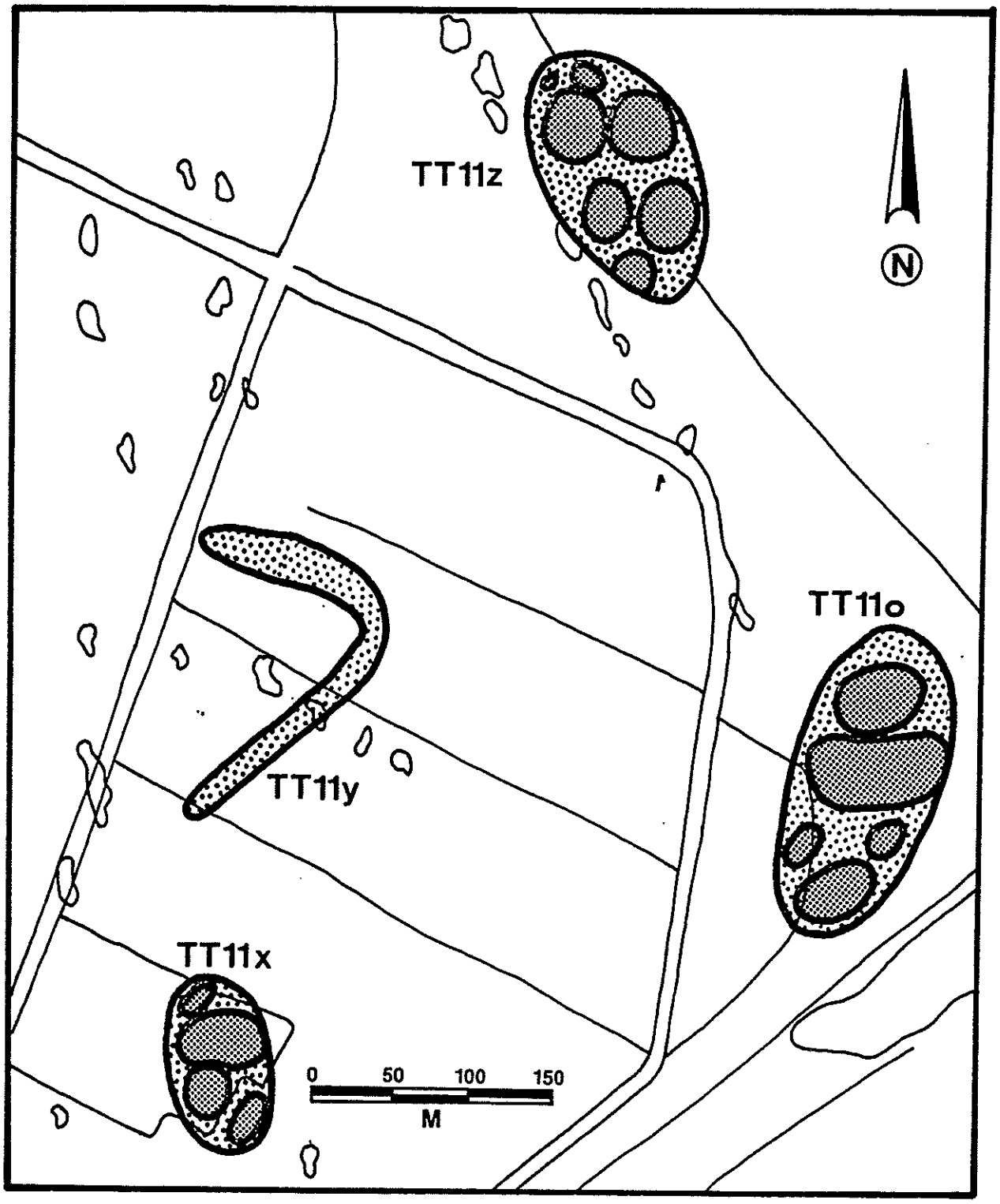

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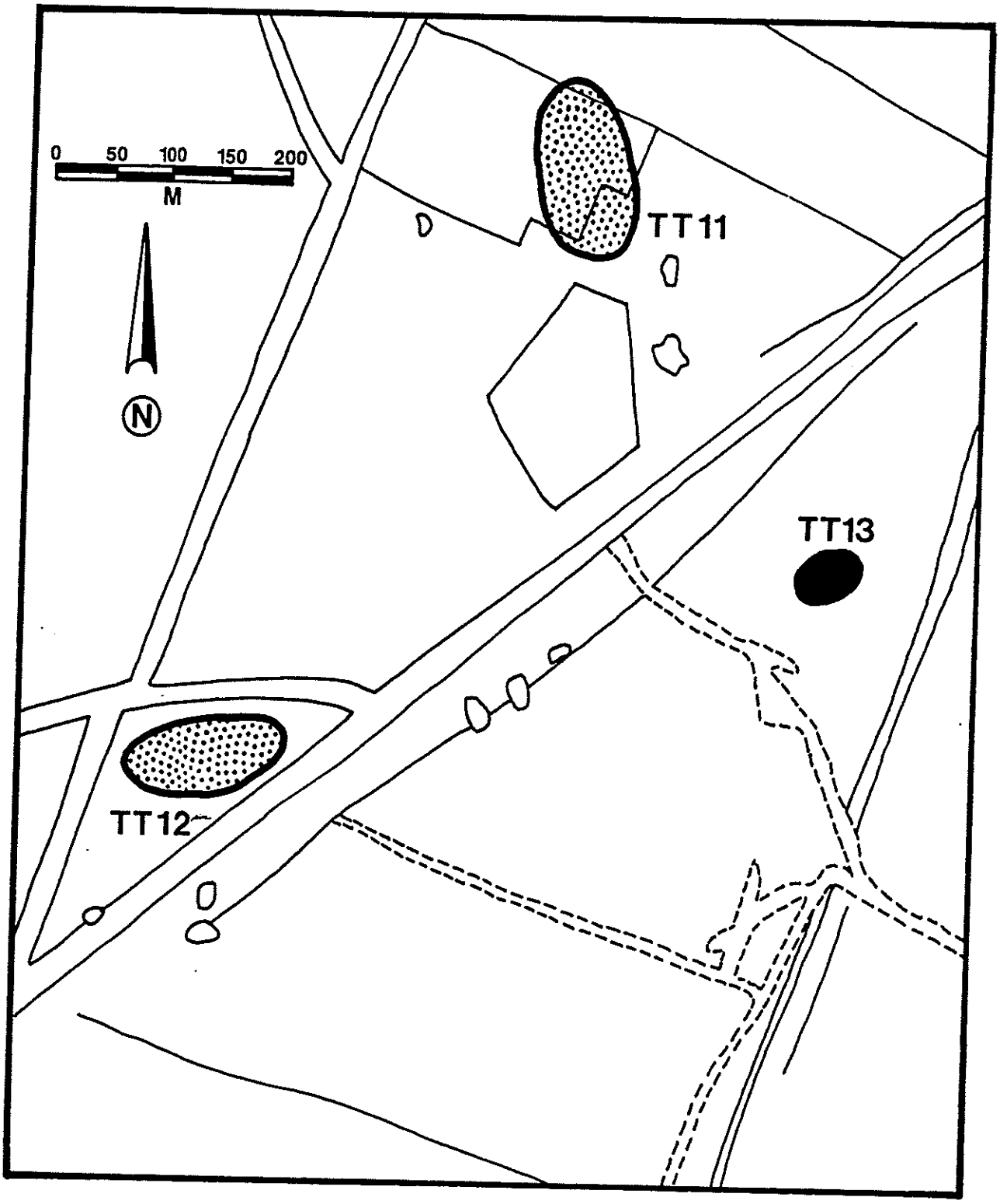

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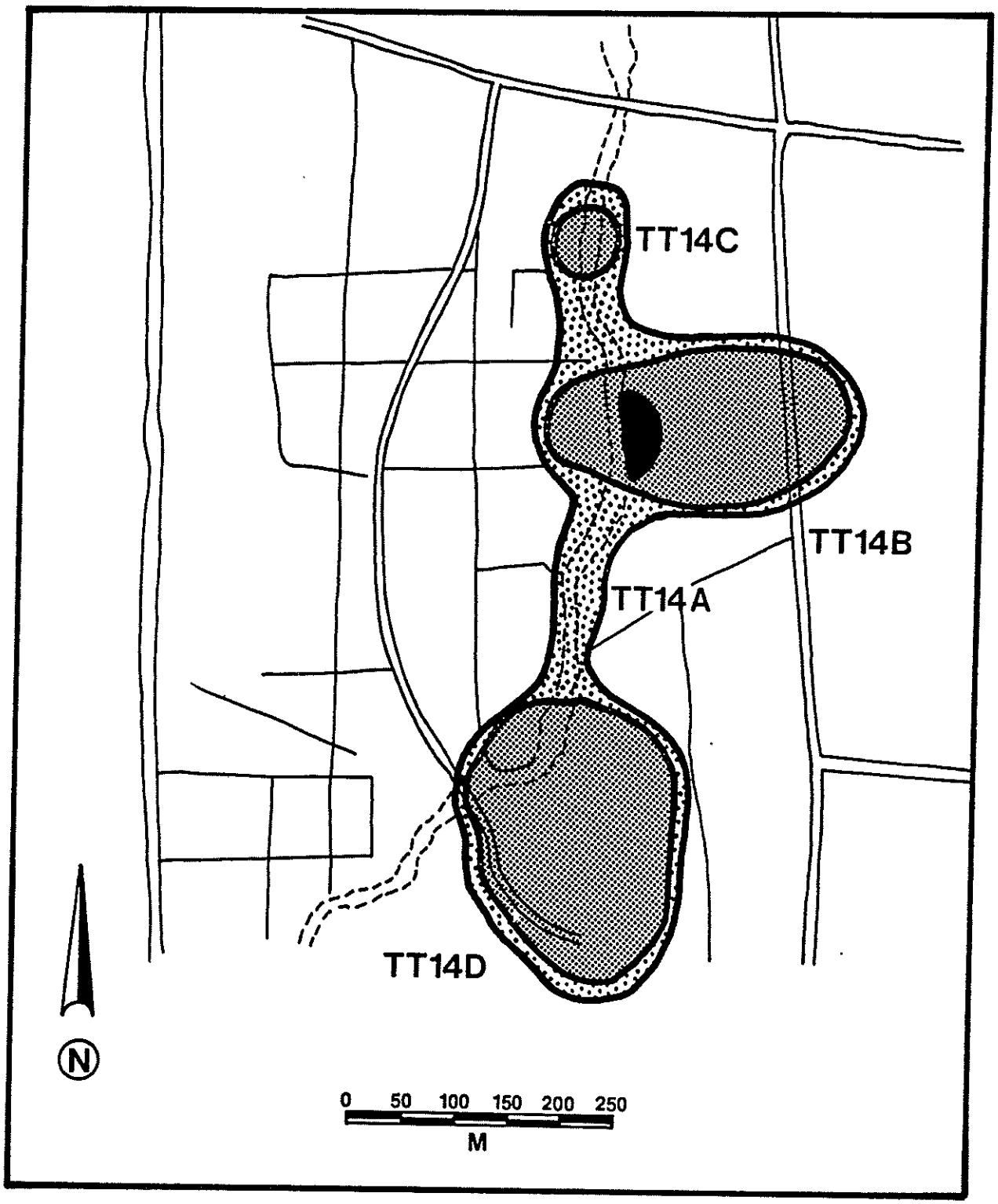

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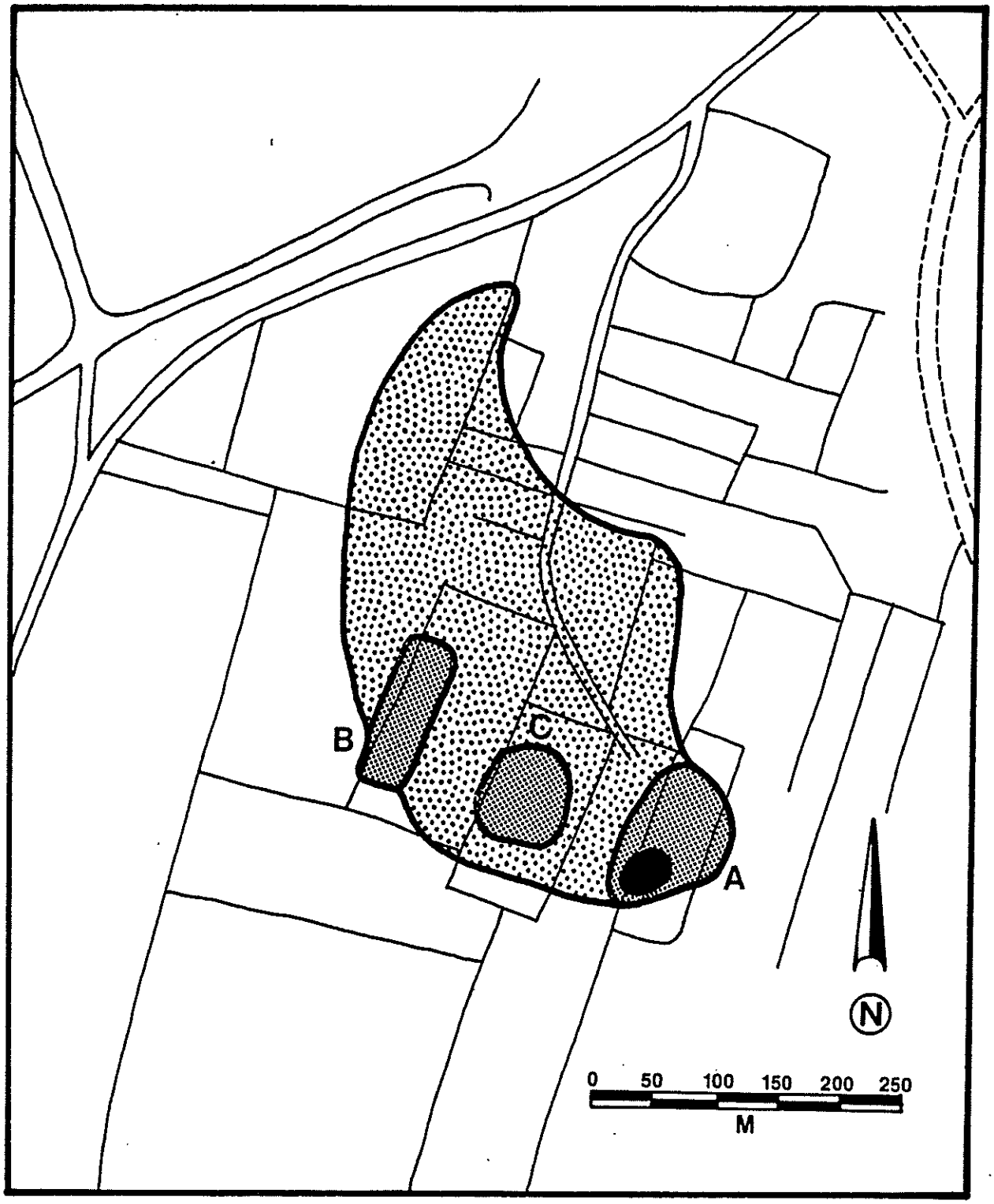

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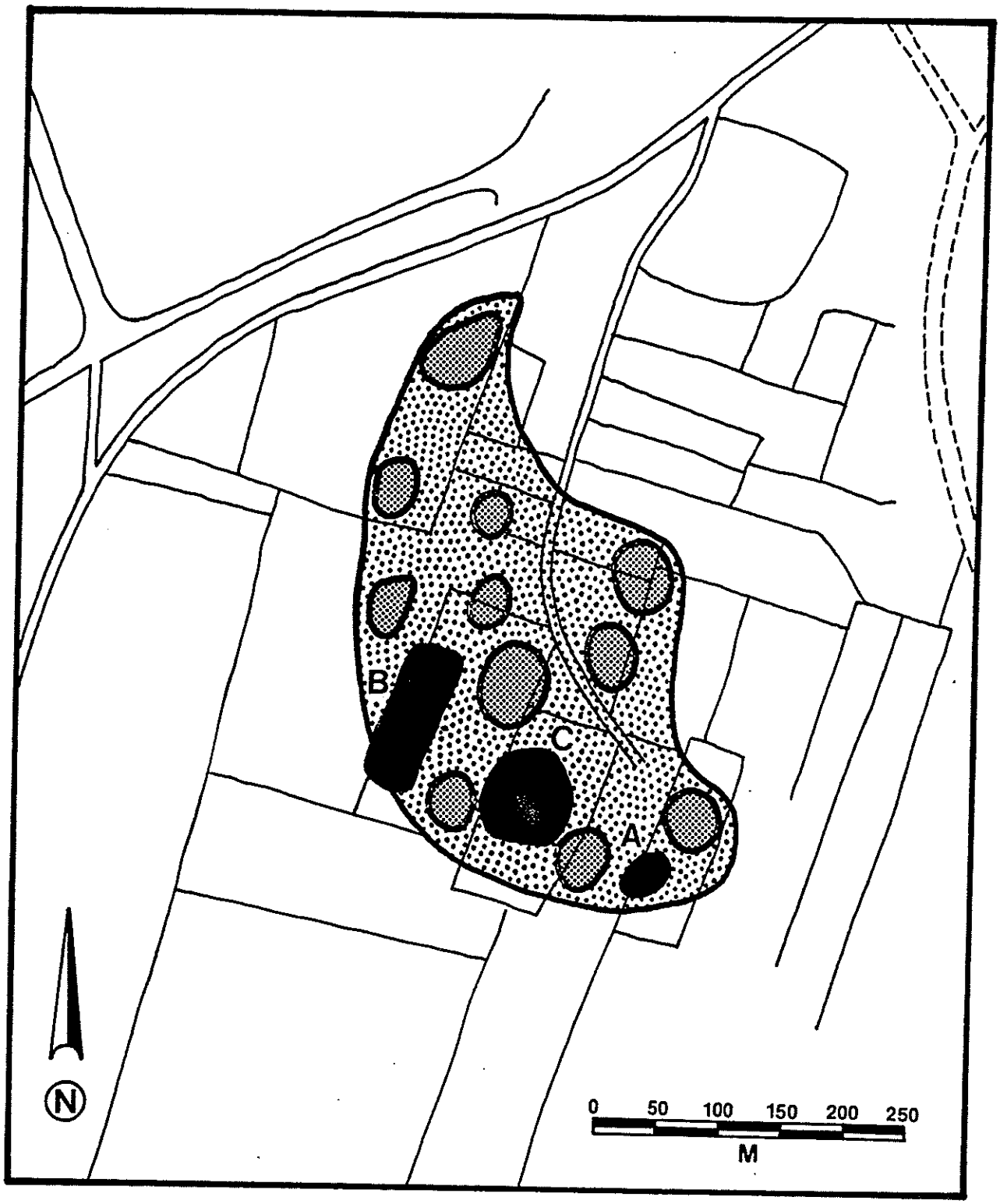

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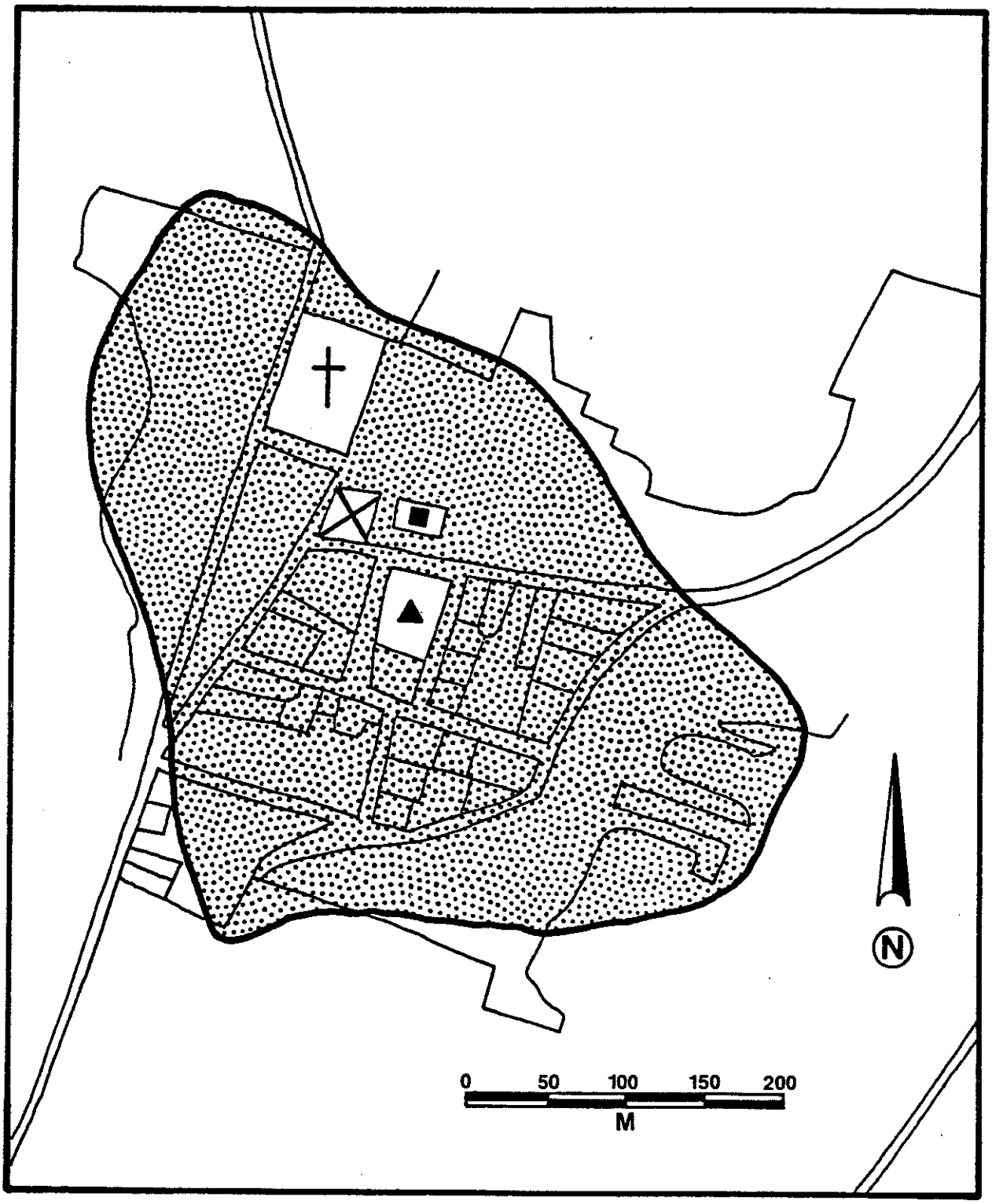

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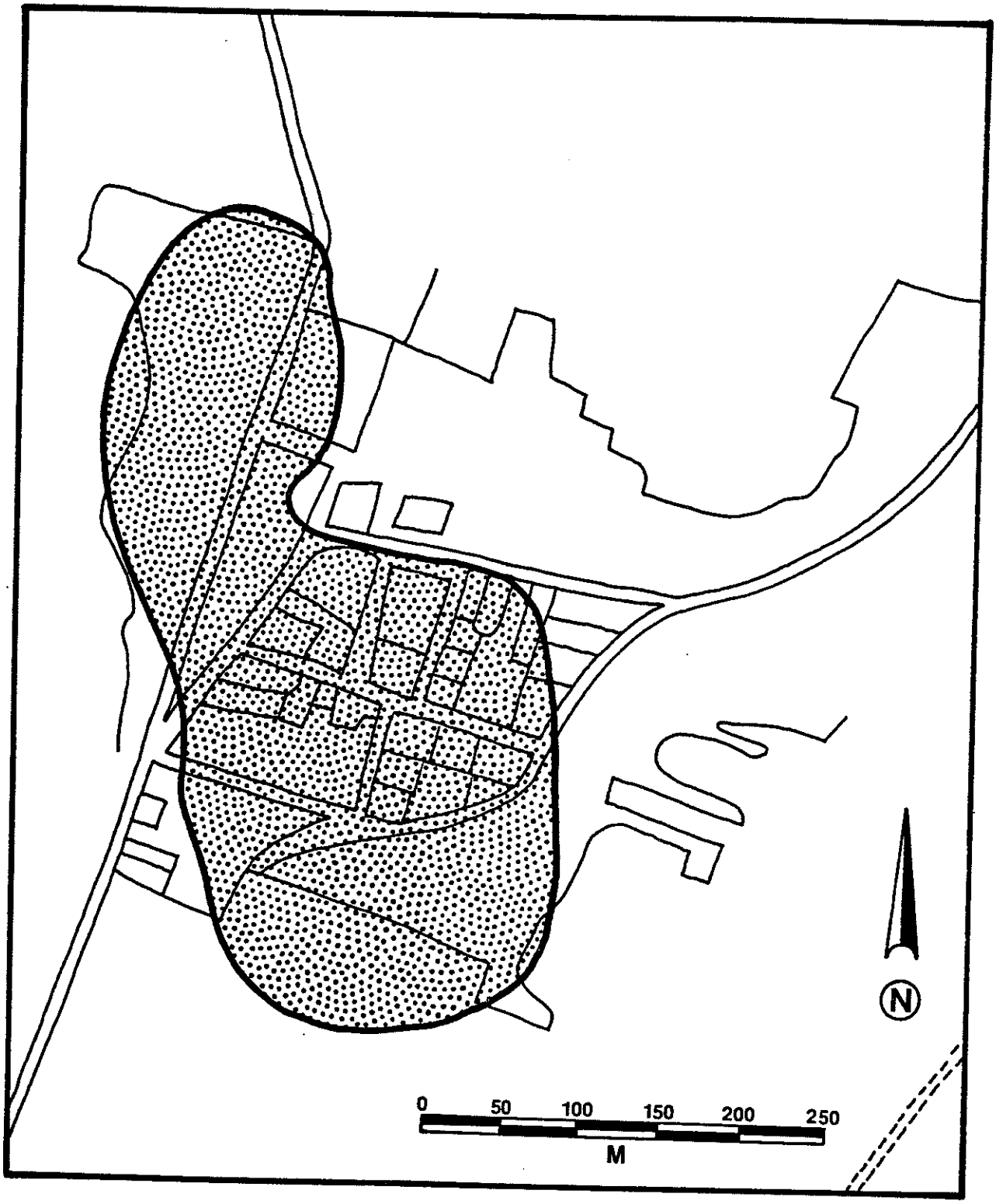
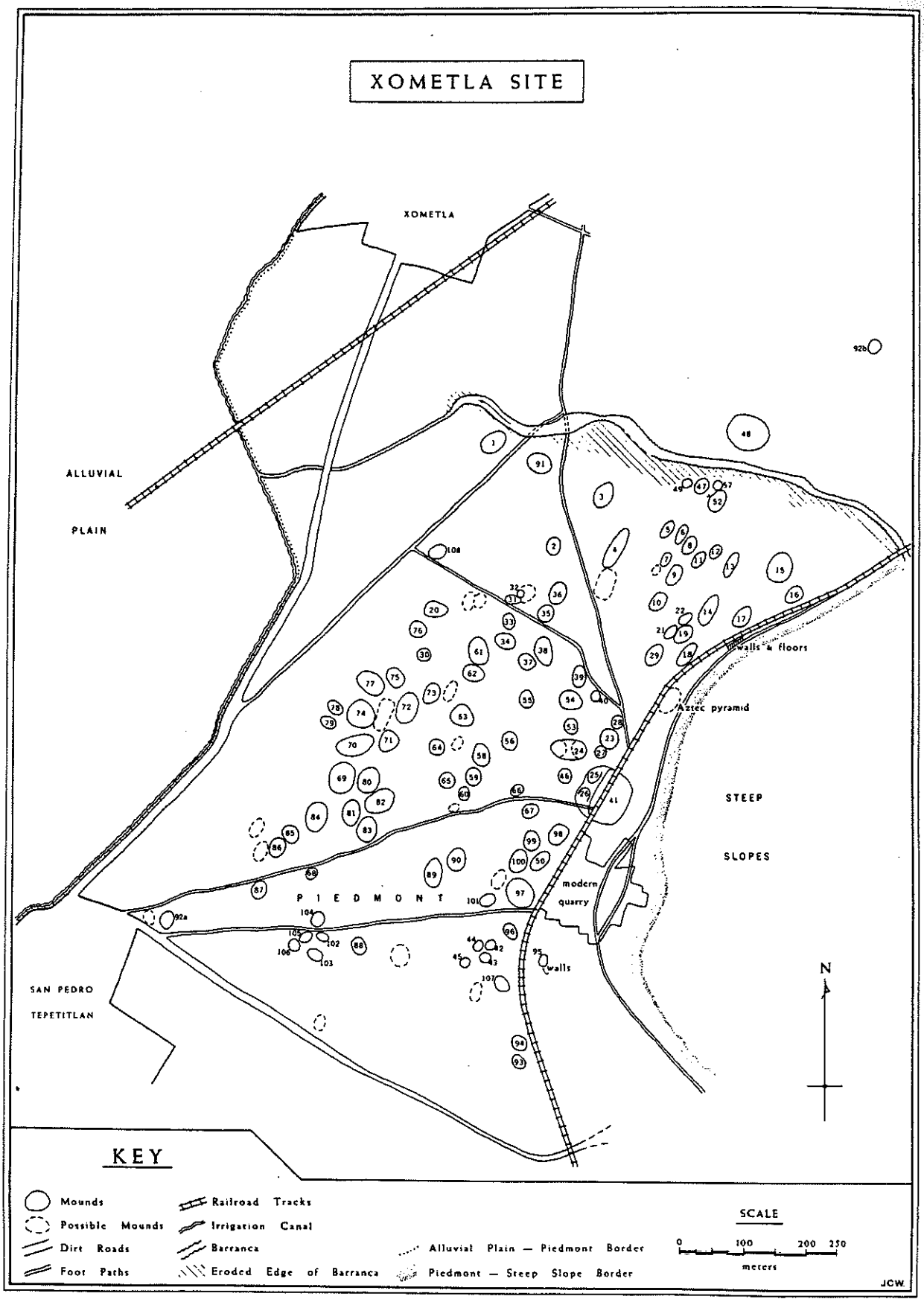


Figure 18


XOMETLA SITE
XOMETLA
ALLUVIAL
PLAIN
walls & floors
Aztec pyramid
STEEP
SLOPES
modern
quarry
P I E D M O N T
walls
SAN PEDRO
TEPETITLAN
N
KEY
Mounds
Possible Mounds
Dirt Roads
Foot Paths
Railroad Tracks
Irrigation Canal
Barranca
Eroded Edge of Barranca
Alluvial Plain — Piedmont Border
Piedmont — Steep Slope Border
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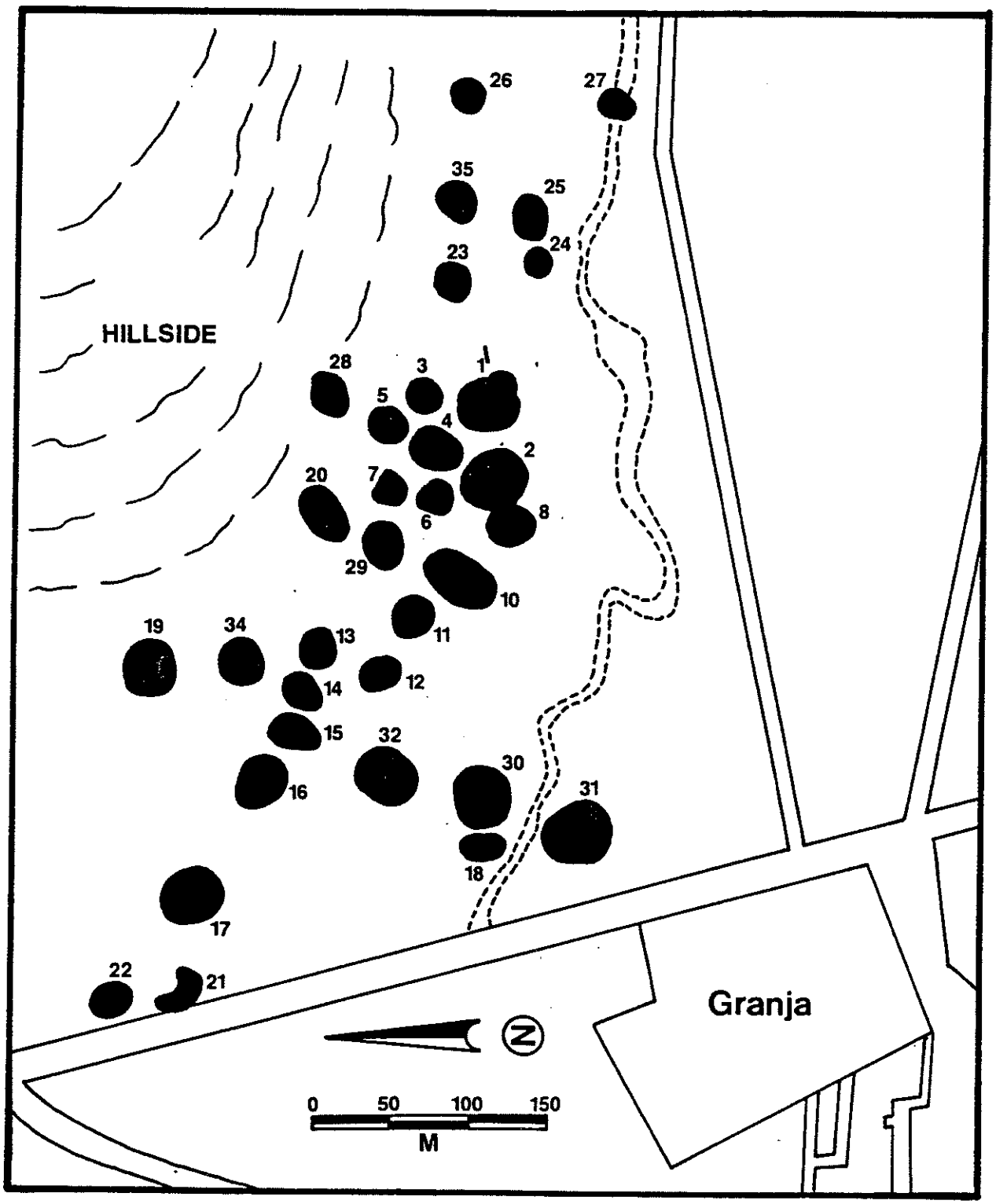
JCW

Figure 19



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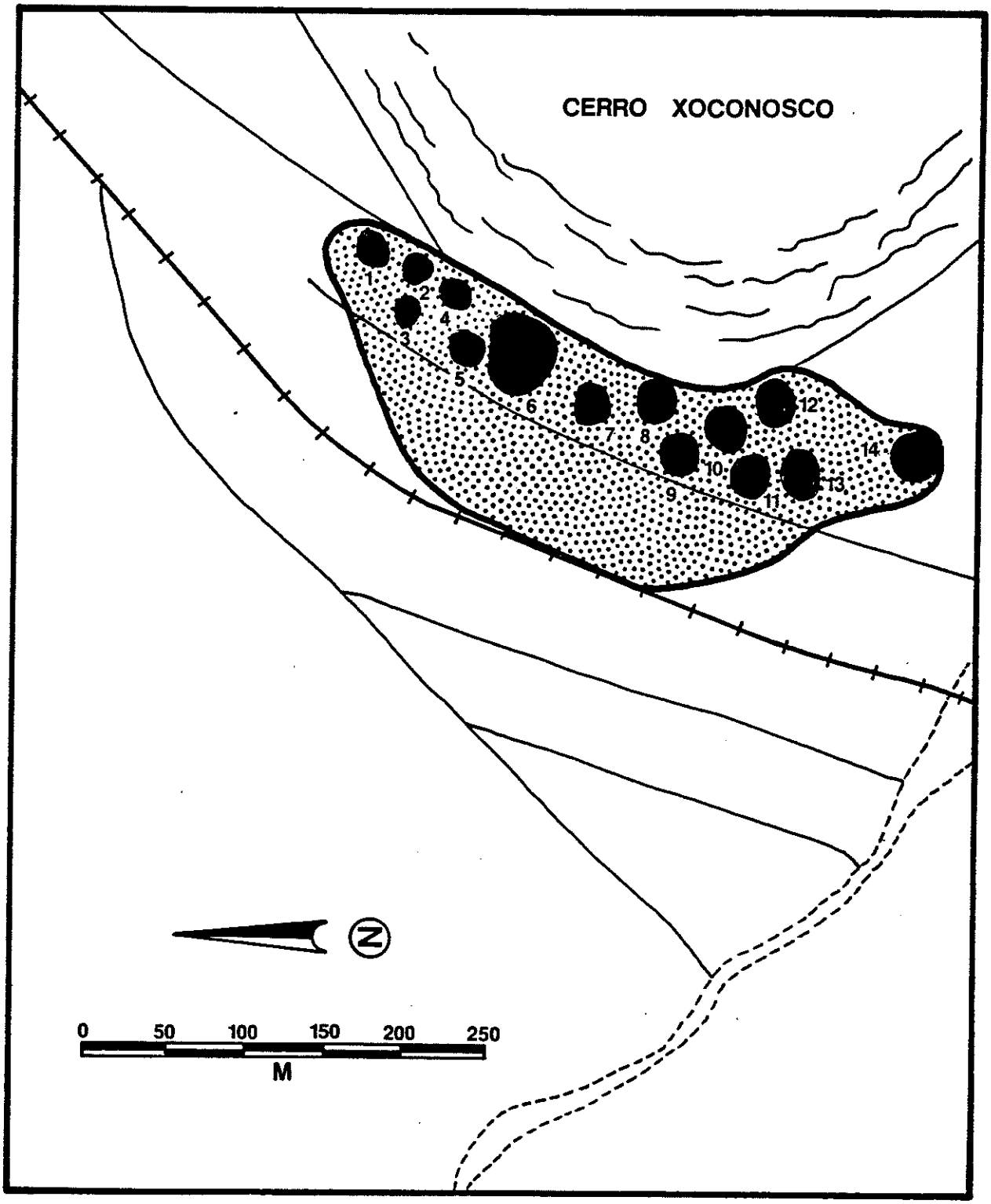
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Figure 21

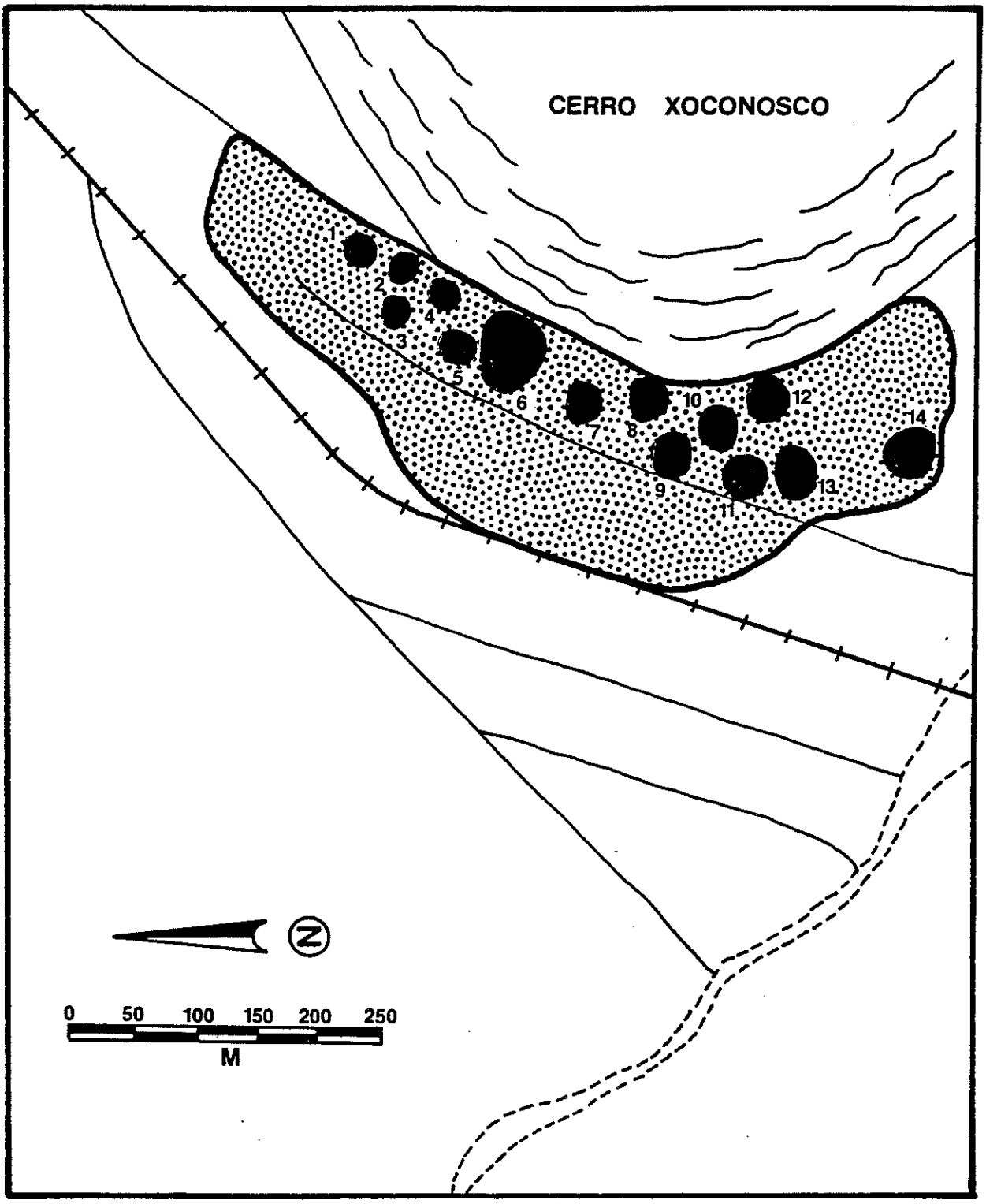
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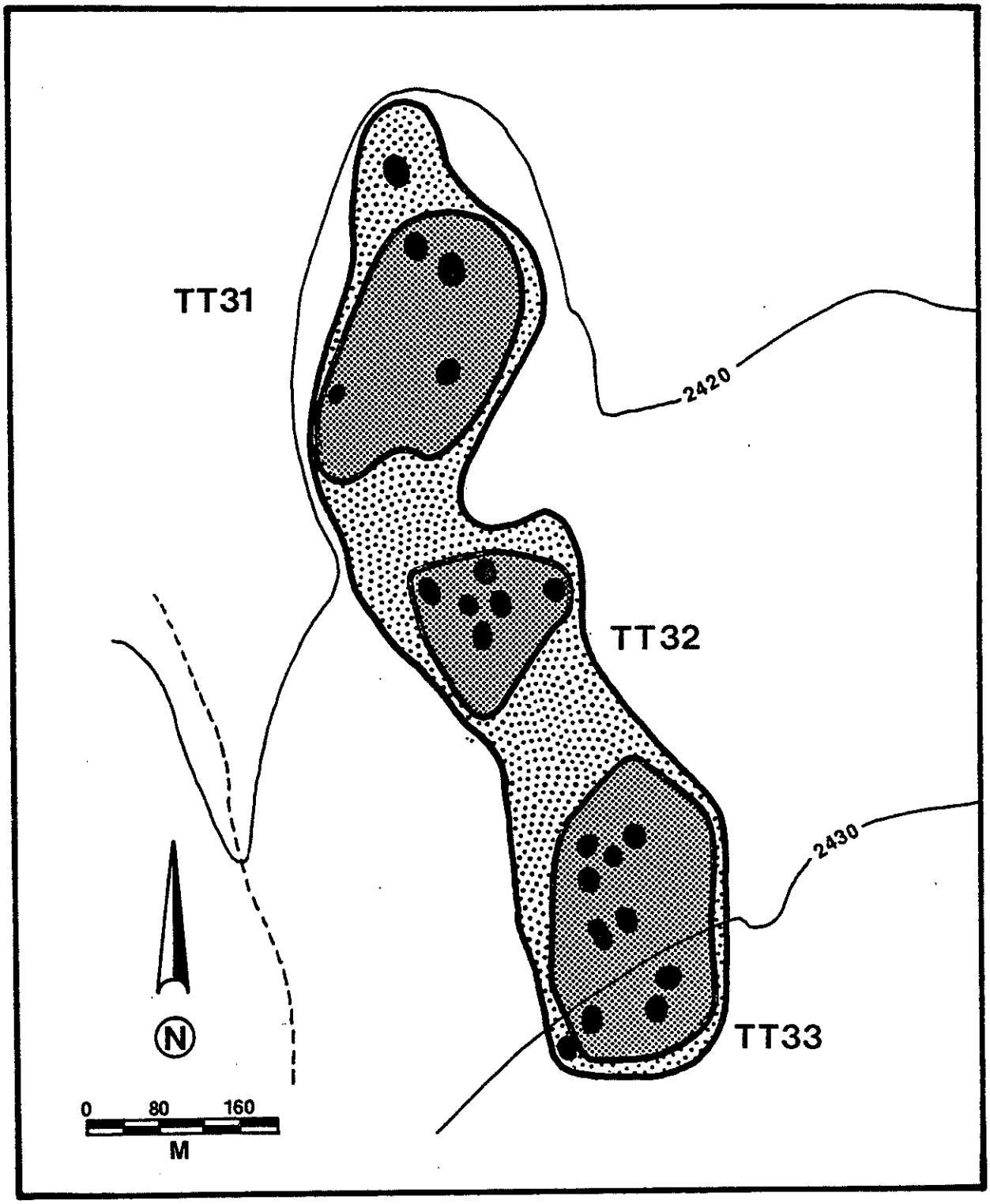
Figure 22



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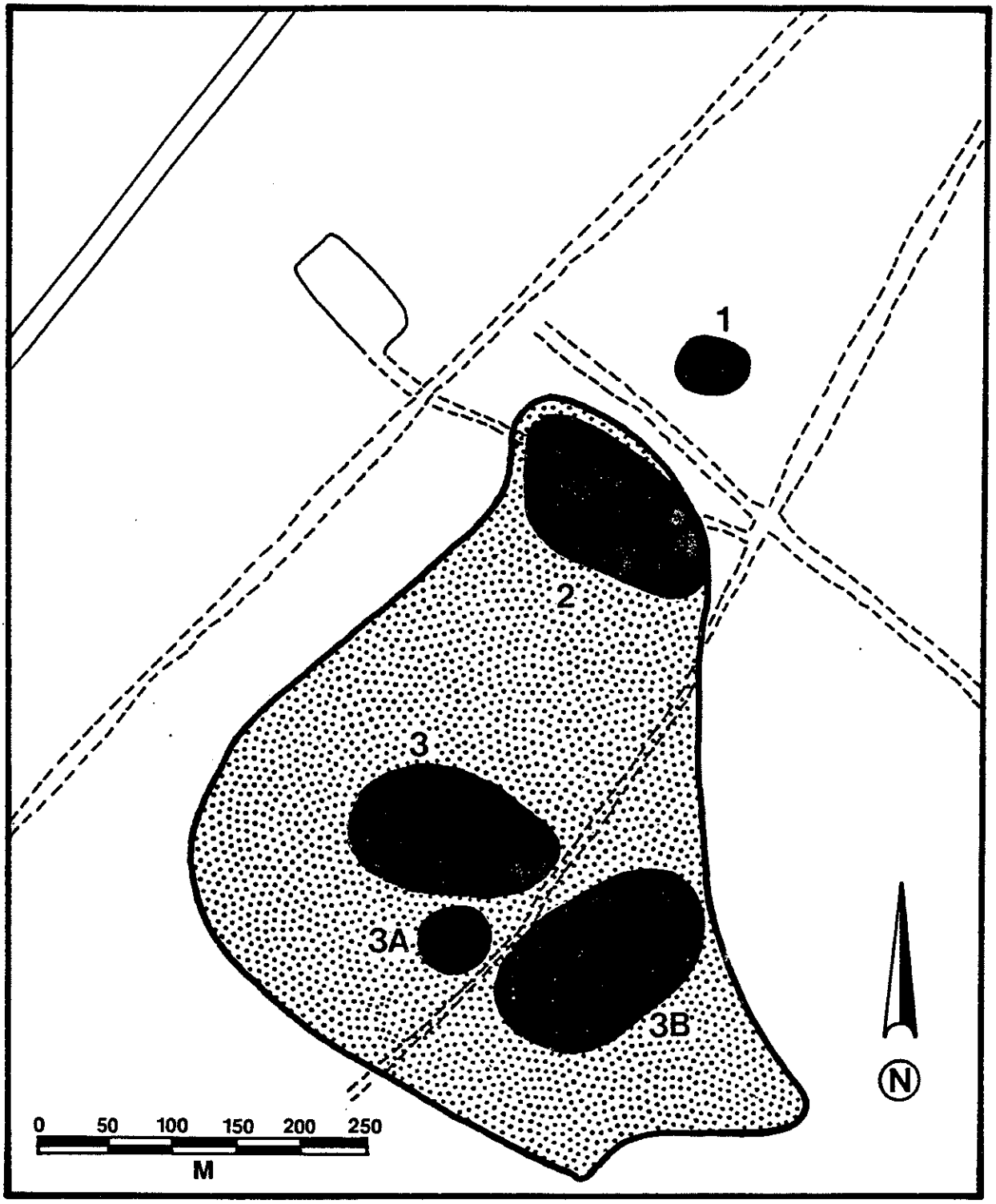

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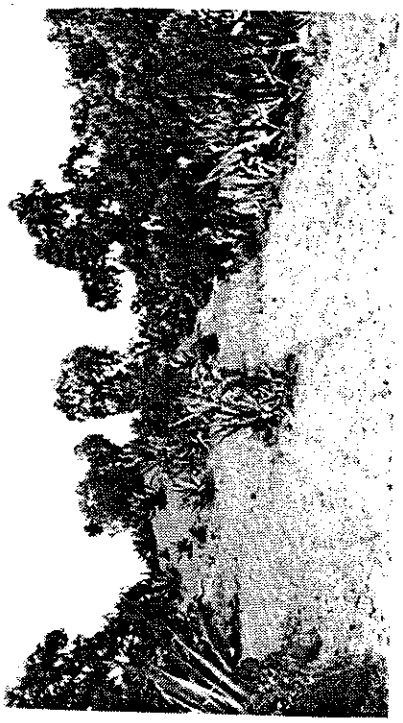
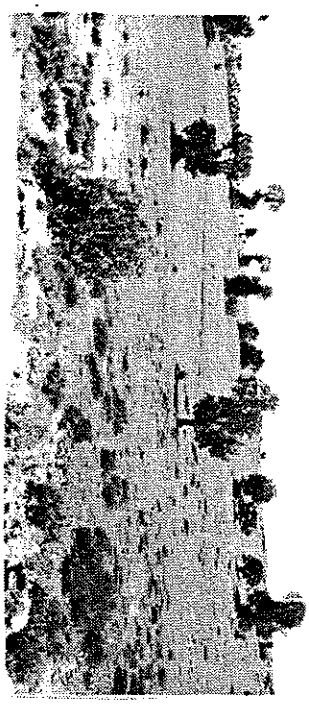


Plate 1

c



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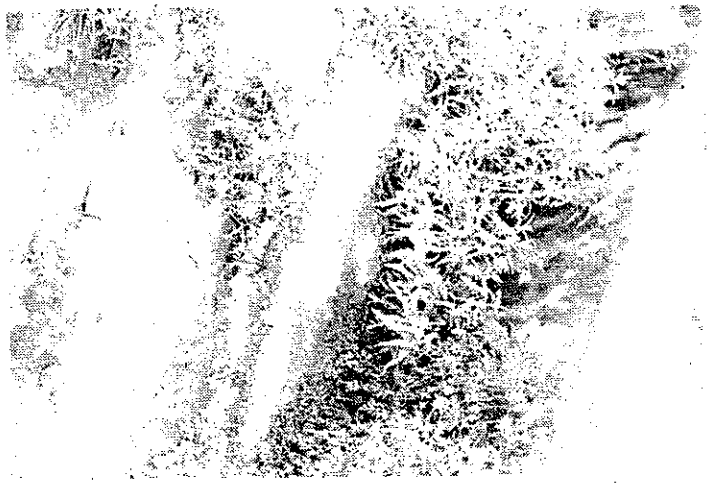
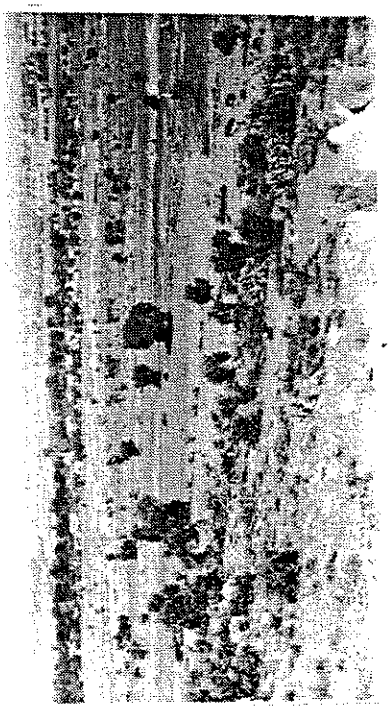


d

b

Plate 2

b



d

a

c

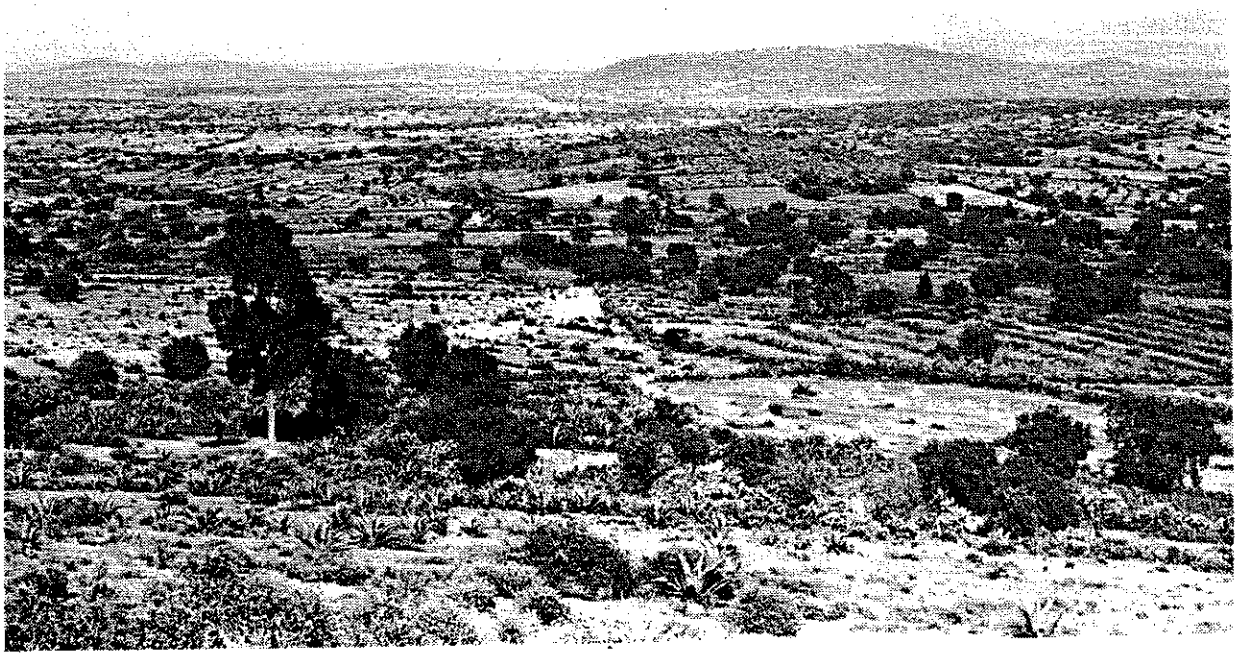
Plate 3

Plate 4

a

b

Plate 5



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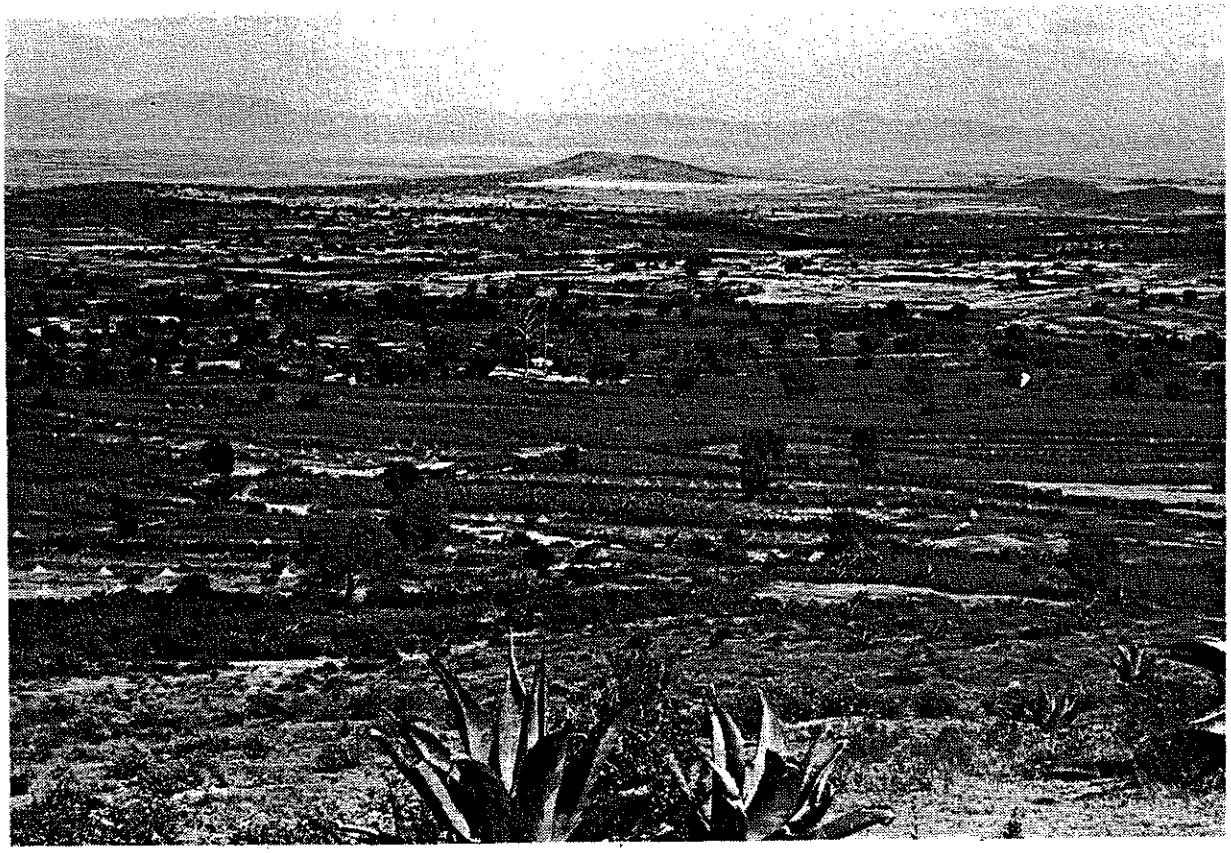

b

Plate 6

CHAPTER 8

MAPPING TOLTEC PERIOD SETTLEMENT IN THE TEOTIHUACAN VALLEY: COMMENTARY

by

William T. Sanders

and

Carson N. Murdy

TABLE OF CONTENTS

Page

LIST OF MAPS AND TABLES 519

INTRODUCTION 520

CHRONOLOGICAL PHASING 521

PREPARATION OF THE MAPS 522

MODELLING TOLTEC PERIOD SETTLEMENT 523
Early Phase 524
Late Phase 524
Oxtotipac Subphase 525
Xometla Subphase 525
Mazapan and Atlatongo Subphases 525

BIBLIOGRAPHY 527

LIST OF MAPS

Map		Page
1	Toltec Period Occupations	535
2	Early Toltec Settlements	in pocket
3	Late Toltec Settlements	in pocket
4	Early Toltec Settlement Classification	536
5	Late Toltec Settlement Classification	537

LIST OF TABLES

Table		Page
1	Site Tabulation and Classification	528

INTRODUCTION

The primary activity of the Teotihuacan Valley Project was a surface survey, the object of which was to reconstruct the settlement system of the valley for each of the major phases of Prehistoric occupation. Sites were initially located by reconnaissance survey, using 1:25,000 scale aerial photographs for field orientation. Once located, the sites were resurveyed using 1:4000 scale photographs. Data were recorded on tracings of these amplified photographs, which included natural and modern occupational features as well as archaeological data such as site boundaries, structural remains, and surface concentrations of artifacts (primarily sherds). Surface samples of pottery for dating were collected from many, but not all sites. In a survey of this type, the researcher is always faced with time constraints. Because our surveys, from the beginning, had as their major objective complete areal coverage rather than sampling the universe, there was a continual problem of deciding whether to dedicate more time to investigation of fewer sites, or to maximize areal coverage with a lesser degree of survey intensiveness. Invariably the latter option was chosen.

The above strategy and methodology, which are discussed in greater detail in Volume 2, Volume 4—Part 1, and in Chapter 7 here, were followed during the first three years of the project as well as during the first few months of the fourth year. In the final months of the fourth year, Parsons and Sanders, working independently, devised a more economic tactical approach to the survey. From that time forward, the 1:4000 scale photographs were taken into the field; each area on the photograph was systematically examined, field by field; and all archaeological data were recorded thereon in the field. Using this approach, much more ground was covered more rapidly, and sites were defined later, in the laboratory, following each day's fieldwork.

Because of the relatively short time spent on each site, there are some problems with the quality and completeness of the data. To illustrate this, we have chosen to publish separately the results of the surveys by Thomas Charlton and Joseph Marino. Marino's study, essentially a revised version of his dissertation, generally represents the level of observation used in the Teotihuacan Valley Project. An exception here is his discussion of the sites and the map of the Cerro Gordo, North Slope area (*cf.* Evans 1986:Map 4), where we have opted to include the results of the subsequent, more intensive survey of this zone by Charlton. In contrast, Charlton's much more intensive resurvey of the Upper Valley area southeast of Otumba is presented separately in Chapter 9. As the reader will note, additional sites, missed in the original survey, were found in Charlton's resurvey, and some manifestations noted as trace occurrences by Parsons have been redefined as hamlets. This problem of the accuracy of the approach used in the Teotihuacan Valley Project is particularly acute for the Late Toltec phase because of the generally dispersed settlement and the tendency for the settlements to be very small, in many cases probably single family hamlets. This problem has also plagued subsequent surveys of other areas of the Basin of Mexico.

CHRONOLOGICAL PHASING

In Part 1 of this volume, the Toltec period was divided into two phases, Early and Late, each characterized by a distinctive array of numerous ceramic types. There is no doubt as to both the ease of distinguishing the ceramic complexes pertaining to the two phases and their chronological discreteness. In contrast, we have experienced more difficulty in sorting out our suggested subphases, Oxtotipac and Xometla in the Early phase and Mazapan and Atlatongo in the Late phase. To a great degree, the differences between subphases are quantitative, *i.e.*, differences in the frequency ratios of major types and subtypes of pottery. There are very few mutually exclusive attributes, and even fewer such ceramic types.

This is particularly true of the differences between the Oxtotipac and Xometla subphases and, with the exception of the excavated sample from the Oxtotipac cave, it was difficult to definitely identify Oxtotipac ceramics from surface collections. We had Early phase samples where Oxtotipac ceramics were probably present, in the Lower Valley where most of the Early phase sites were found; however, they were always mixed with Xometla ceramics, with the latter usually predominant. In a number of cases in the Middle and Upper valley, we found what we identified as trace occurrences of isolated Oxtotipac sherds, but never in sufficient quantity or condition of preservation to be certain. At best, because of the scanty representation, they indicate evidence of land use, but not necessarily permanent occupation.

The Mazapan-Atlatongo relationship is a somewhat different problem. Mazapan was first defined by Vaillant at Teotihuacan in the form of scattered surface sherds on Classic mounds or intrusive burials into the fill of such mounds. Later, some of the attributes of what he called Mazapan were found to occur with major building construction in Acosta's excavations at Tula, confirming a post-Teotihuacan date, and thus had some association with the legendary Toltec and their capital at Tula. Recent work at Tula, however, shows that the distinctive Red/Buff ceramic complex of the Mazapan phase, which is associated with the apogee of the site, is not actually abundant, and the only variety that is well-represented is the Wide Band Red/Buff molcajete. In place of the Red/Buff complex, which is essentially a complex of service wares, are a number of Orange and Cream Slip wares. These ceramics also occur in sites in the Teotihuacan Valley, but as minority types, and, indeed, they are lacking in many Late Toltec sites in the valley.

We interpret this situation as follows. Vaillant's Mazapan ceramic complex, in which Red/Buff varieties such as Mazapan Wavy Line, Toltec Red/Buff, and Wide Band Red/Buff occur in large quantities in association with plainware jars, comals, and basins, represent local Teotihuacan Valley products characteristic of what we call the Late Toltec phase. Added to these wares, almost certainly late in that phase, are a number of types of Orange and Cream Slip wares that represent local imitations and/or importation of Tula ceramics, which characterize what we call the Atlatongo subphase. Based upon this reasoning, we can separate those sites with only a Mazapan subphase component and those with components of both subphases, but we cannot distinguish those sites that may have had only an Atlatongo subphase component, because all of the earlier ceramic types continued in use during that subphase. In retrospect, this problem is unfortunately exacerbated by the fact that not all Toltec sites in the Teotihuacan Valley were surface collected; those sites that were sampled have been analyzed by Susan Evans (see Part 1, this volume).

Finally, perhaps the major deficiency in our data with respect to both chronology and population distribution during this period, is the fact that this survey project examined the 18 km² occupied by the Classic city of Teotihuacan in only a very cursory fashion (see discussion by Marino, Chapter 7), and the Teotihuacan Mapping Project personnel, as yet, have not published in detail the evidence of the Toltec occupation of the city. Furthermore, there is no indication in any of the earlier publications from the Mapping Project that the kinds of subphase distinctions we wish to make are being analyzed.

All of these problems inherent in this survey must be, and have been, borne in mind with respect to the series of maps and the table summarizing Toltec settlement patterns and history that we present and discuss below.

PREPARATION OF THE MAPS

The data relating to this survey of Toltec period sites in the Teotihuacan region are summarized here in a series of five maps, as follows.

Map 1	Toltec Period Occupations	p. 535
Map 2	Early Toltec Settlements (in pocket)	
Map 3	Late Toltec Settlements (in pocket)	
Map 4	Early Toltec Settlement Classification	p. 536
Map 5	Late Toltec Settlement Classification	p. 537

These maps, which present a reassessment of some of the settlement data as well as a new system of separate numeration of Early and Late phase components of sites, supplant Maps 1 and 2 published by Evans in Part 1 of this volume.

Various procedures and conventions were used in plotting data on these maps. Maps 1 through 3 are presented on a base map prepared by Joseph D. Marino, Jr. using the original 1:25,000 scale aerial photographs and drawing in all observable lineaments. Maps 4 and 5 are presented on a contour topographic base map prepared by Robert S. Santley, using information from topographic maps published by *CETENAL* (*cf.* Sanders *et al.* 1979:77-79).

On Maps 2 and 3, much of the data on settlement size and distribution were transferred from maps previously published by Sanders (1965:Figs. 9 & 10), double-checking site locations and boundaries on the original aerial photographs and the tracings in the field notes for each site. Where the actual boundaries of a site could not be determined by these methods, the site is represented by a small rectangle, proportional to its area. These maps show each Toltec component of every site discussed by Marino (Chapter 7; *cf.* Marino 1975) as well as other sites discussed in Part 1 of this volume (*e.g.*, TT-25a; Koehler 1986). For orientation, the maximum boundary of Classic Teotihuacan (Millon 1973:Fig. 13a) is shown as well as the boundaries of Charlton's survey in the Upper Valley (Chapter 9). These maps do not, however, show the archaeological sites discussed by Charlton, but only those sites delimited by Parsons and Marino. Map 1, showing the maximum Toltec occupation of the valley, was produced using overlays of Maps 2 and 3 and drawing the maximum boundaries of the sites through both phases.

On the interpretive maps, Maps 4 and 5, several categories of sites, following Marino's classification and listed in Table 1, have been combined under one map symbol and designation. Thus, sites variously called ceremonial centers, isolated pyramid precincts, etc. have been subsumed under *hilltop ceremonial precinct;* small low density compact villages, small scattered villages, etc. have been called *small dispersed villages;* large low density compact villages, low density line villages, large scattered villages, etc. have been called *large dispersed villages;* small high density compact villages have been called *small nucleated villages;* and large high (or medium) density compact villages, large high density villages or towns, etc. have been called *large nucleated villages*. The sites shown as provincial or regional centers have been so classified on the basis of additional data apart from the size and density of the sites. On the other hand, in some cases where Marino grouped several discrete small sites together as a dispersed hamlet (*e.g.*, TT-88 to TT-90) or as a scattered line village (*e.g.*, TT-46 to TT-58), the sites have been mapped as a series of individual hamlets in order to show more accurately the actual distribution of the population. Finally, in the Upper Valley portion of Map 5, the site numeration and classifications given by Charlton have completely replaced the site designations of Marino and their distribution as shown on Map 3, in order to give a more complete picture of settlement during this phase.

MODELLING TOLTEC PERIOD SETTLEMENT

Depending on the specificity of the chronology used, Toltec period settlement patterns in the valley can be modelled in various ways. Map 1 includes all of the sites that date to the general Toltec period, regardless of their phase or subphase dating. The total time span covered by these sites is approximately 400 years, from A.D. 800 to 1200. Many site surveys in Mesoamerica are based on a chronology as coarsely grained as this, which would make all of these sites contemporary, and these surveys have been used to derive detailed reconstructions of settlement systems based on this level of chronological control. Were we to reconstruct the Toltec period settlement system from the pattern revealed by this map, we would reach the following conclusions.

1. The agricultural resources of the valley were almost fully utilized suring this period because the total estimated population of 80,000 to 90,000 was two-thirds to three-fourths of that achieved during the Teotihuacan and Aztec periods, the two periods of maximum population.

2. There existed a well-defined hierarchy of sites that followed an almost classic central place model, including the following.
   a. A large urban community of 30,000 to 40,000 people.
   b. Three secondary or provincial administrative centers evenly spaced throughout the valley. Two of these, as well as the city, are in the same locations as some of the later Aztec towns (*i.e.*, Otumba, Acolman, and San Juan Teotihuacan).
   c. The large villages in the Lower Valley and small dispersed villages and hamlets on the piedmont of the Middle and Upper valley reflect a pattern that suggests a close association of variation in population distribution with variation in agricultural resources.

However, by separating the occupations into two phases, as we have done, a number of departures from the above model result. First, it can be demonstrated that the population during the overall Toltec period declined to a level of only one-third, possibly even to one-fourth, of the Teotihuacan period peak, and was correspondingly far below that of the late Aztec period. Second, the supposed secondary, or provincial, centers were not functioning as such at the same time that the Toltec city of Teotihuacan was at its peak, which thus reduces the complexity of the settlement hierarchy to a relatively simple system. Third, the nature of settlement during the two phases was quite distinct. The Early phase sites tended to be larger, fewer, and more densely nucleated; they were mostly concentrated in the Lower and Middle valley. In contrast, the Late phase sites tended to be smaller and more dispersed, and they were generally distributed through all ecological zones of the valley. As a result, most Early phase sites also have a Late phase component, whereas there are numerous Late phase sites with no Early phase component. Thus, on the basis of dividing the Toltec period into two phases, we can assess the settlement system as follows.

Early Phase

Teotihuacan itself suffered a dramatic reduction of population from approximately 125,000, at its Classic peak, to 30,000 to 40,000, although it was still a major urban center, perhaps the largest in Mesoamerica and certainly the largest in Central Mexico during this time. Virtually all of the rural population, less than 10,000, was concentrated in nucleated settlements, either on the edge of and within the irrigated alluvial plain of the Lower Valley, or in suburb-like communities ringing the city itself. The population as a whole could have been supported by the permanently irrigated land of the Lower Valley floodplain and the floodwater irrigated plain of the Middle Valley. Given the nature of this settlement system and the probable agricultural system in use, we suggest that land tenure was collective, either owned by the state or by corporate groups smaller in size than the state but larger than the household.

Late Phase

The Late phase community of Teotihuacan declined to a town of no more than 5000 to 10,000 people, comparable in size to the later Aztec town of that name, but it still was the largest settlement in the Teotihuacan Valley. This decline was almost certainly in response to the meteoric rise of the Toltec capital of Tula, some 70 km to the northwest. The rural population was dispersed over virtually all ecological zones of the valley. Most of the Early phase communities in the Lower Valley continued to flourish, but were now smaller in population and more dispersed. The vast majority of the new settlements elsewhere in the valley were of the hamlet type (*i.e.*, rural settlements of less that 100 people). Also present were three smaller administrative centers, each linked to a rural population cluster, such that the total population of the valley was almost identical to the total during the Early phase. It is apparent that there was a general dispersal of the formerly urban population into the countryside during this phase. The relatively even, widespread distribution, and small size of settlements suggest either a relatively low level of intensity of land use and/or a change in emphasis from communal to individual land tenure.

The above, then, is our current assessment of settlement patterns in the Teotihuacan Valley during the Toltec period. However, many interesting questions remain as to what degree we would modify even these conclusions if it were possible to apply our subphase chronology to the same sample of sites. Unfortunately, as we pointed out previously, chronological control over the extent of occupation by subphase presents a number of problems. The most serious of these is our lack of control of the population distribution and its size in the city itself. Recognizing this, and the other chronological difficulties described previously, we can only offer the following as hypotheses for further testing.

Oxtotipac Subphase

Our inability to locate substantial non-urban settlements, with the exception of the type site; the fact that nearly all of our isolated occurrences of the Oxtotipac complex outside of the city consist of traces; and that these are widely distributed along the edges of the alluvial plain of the Lower, Middle, and Upper valley, suggest that virtually all of the population resided in the city during this subphase. The trace occupations can be best understood as evidence of agricultural utilization, rather than permanent residence. Considering this interpretation, an unanswered question is whether the Oxtotipac occupation at Teotihuacan was larger than or similar to that of the Xometla subphase. Either the valley experienced an over all population decline toward the end of the Teotihuacan period (*i.e.*, at the end of the Metepec phase) to the 40,000 to 50,000 people we estimated as being there during the Early Toltec phase, or the decline occured as a gradual process during the Oxtotipac subphase to reach that level by the beginning of the Xometla subphase.

Xometla Subphase

The basic pattern during this subphase would be that which we have reconstructed for the Early Toltec phase in general, with a capital city of 30,000 to 40,000 in which resided 75% to 80% of the population and the balance residing in nucleated villages in the Lower and Middle valley.

Mazapan and Atlatongo Subphases

In our discussion of chronological phasing, we suggested that the introduction of Orange and Cream Slip wares into the Teotihuacan Valley, during what we call the Atlatongo subphase, represented an increased influence from the Toltec capital of Tula. In all probability, these ceramics appear in the valley in connection with the incorporation of this region into the political sphere of Tula, implying that during the earlier Mazapan subphase, the valley was politically and culturally autonomous. Accepting this hypothesis, however, it is still unclear as to how these events related to the formation of the four central communities that we have dated to the Late phase. Did the city of Teotihuacan increase or decrease in population between the Mazapan and Atlatongo subphases? Were the three other secondary centers occupied as such throughout the Late phase, or only during one subphase? If the latter, which subphase? We see two possible alternative models.

The most probable model is that during the Mazapan subphase only one center, Teotihuacan itself, flourished as the capital of a small but highly centralized state that integrated the whole population of the valley. In the succeeding Atlatongo subphase, when this region was incorporated into the Toltec empire, the Toltec established three secondary centers and reduced the status of Teotihuacan to their level, ostensibly as a technique of

reducing the power of the one-time autonomous state. Following the model of the Aztec period system, each of the four small principalities that resulted either could have been ruled by Toltec governors or were converted into fiefdoms of Toltec noble families. Supporting this reconstruction are the finds of the Chacmool and other elite sculpture at the Acolman Convent (in fact, the presence of the sculpture, along with the widespread distribution of Late phase ceramics at Calvario, was the basis for Marino's reconstruction of a town at Acolman rather than a village), because this sculpture is clearly Tula-Toltec in compostion and style.

The alternative model is that during the Mazapan subphase, the population of the valley was organized into four separate polities, each with its own small capital. Upon conquering this region, the Toltec may have centralized their administration of the valley at Teotihuacan and forced the abandonment of the other three centers for ease of control.

There are additional questions regarding the relative size of the population during these two subphases. Did the rural population increase or decrease during the Late phase, and what was its relationship to the urban population? Our analysis of the surface samples of ceramics indicates that not all Late phase rural sites have Atlatongo subphase occupations, which suggests a decline in population from the Mazapan subphase. However, this suggestion is complicated by the possibility that if the Orange and Cream Slip wares were in fact imported from Tula, the people in many of the rural sites may have been unable to procure them. Furthermore, because of the chronological difficulties discussed earlier, we cannot be completely sure whether those sites occupied during the Atlatongo subphase were occupied during the Mazapan subphase as well. Accepting the first of our two alternative models of Late phase political history, a distinct possibility is that the rural population declined as the result of migration into the newly founded towns.

What is obviously needed for the resolution of our subphasing problems is first, the solution of the chronological problems we discussed previously; second, an extensive program of surface sampling of those sites not sampled in the original survey; and third, a reevaluation of the samples from the Teotihuacan Mapping Project. Most desireable would be a resampling of all sites in the valley using statistically more valid methods of surface collection.

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Table 1. Site Tabulation and Classification

SITE NUMBER	ADDITIONAL TOLTEC	COMPONENTS OTHER	ECOLOGICAL LOCATION	POLITICAL LOCATION	DATE PHASE	DATE SUBPHASE	AREA (ha)	CLASSIFICATION
TT-1	—	TA-12	LV	Santa Catarina Acolman	L	Mazapan Atlatongo	7.4	small, low density village
TT-2	TT-146	TA-3	LV	Totolcingo	E	NS	2.5	hamlet
TT-3	TT-147	TA-9	LV	Chiconautla	E	NS	2.1	hamlet
TT-4	TT-148	TF-5 (Patlachique) TF-75 (Tzacualli) TA-9	LV	Chiconautla	E	Xometla	9.0	small dispersed village
TT-5	TT-149	TA-8	LV	Chiconautla	E	NS	2.9	hamlet
TT-6	TT-150	TA-9	LV	Chiconautla	E		3.2	hamlet
TT-7	—	TA-8	LV	Chiconautla	L	Mazapan	2.4	hamlet
TT-8	TT-151	TA-9	LV	Chiconautla	E	Xometla	4.2	hamlet
TT-9	—	TA-9	LV	Chiconautla	E	Xometla	1.0	hamlet
TT-10	TT-152	TF-210 (Altica) TF-187 (Chiconautla) TT-189 (Cuanalan) TF-187 (Patlachique) TC-4 TA-12	LV	Santa Catarina Acolman	E	Xometla	15.0	large, high density compact village
TT-11	TT-153	—	LV	Santa Catarina Acolman	E	Xometla	4.2	small, high density compact village
TT-12	TT-154	—	LV	San Marcos Nepantla	E	Xometla	2.8	compact hamlet
TT-13	—	—	LV	San Marcos Nepantla	E	NS	?	compact hamlet
TT-14	—	TF-188 (Patlachique) TC-6 TA-157	LV	Atlatongo	L	Mazapan Atlatongo	13.5	small, low density compact village
TT-15	—	TF-137 (Tzacualli) TC-7 TA-24	LV	Cerro Acuila	L	Mazapan Atlatongo	7.0	dispersed hamlet
TT-16	—	TF-13 (Tzacualli) TA-14	LV	Presa Barranca Colorado	L	Mazapan Atlatongo	8.0	dispersed hamlet
TT-17	TT-155	TA-12	LV	Granjas Santa Catarina	E		18.0	small, high density compact village
TT-18	TT-156	TA-13 TA-18	LV	Totolcingo Tepexpan Quarry	E		6.0	dispersed hamlet
TT-19	TT-157	—	LV	Cerro Tlahuico	E			trace
TT-20	TT-158	TF-3 (Tzacualli) TA-164 TA-165	LV	Calvario Acolman	E	Xometla	34.0 - 37.0	town
TT-21	TT-159	TF-214 (Cuanalan) TA-87-14	LV	San Antonio Huixtonco	E		40.0 - 50.0	medium density compact village or town

SITE NUMBER	ADDITIONAL TOLTEC	COMPONENTS OTHER	ECOLOGICAL LOCATION	POLITICAL LOCATION	DATE PHASE	DATE SUBPHASE	AREA (ha)	CLASSIFICATION
TT-22	TT-160	TF-124 (Patlachique) TF-34 (Cuanalan) TC-131 TA-27 TA-166-12	LV	San Pedro Tepetitlan	E	Xometla	3.2	hamlet
TT-23	TT-161	TF-140 (Tzacualli) TC-13 TA-168-17 TA-179-40	LV	Hda. Santa Catarina	E	Xometla	9.0 - 10.0	small, low density compact village
TT-24	TT-162	TC-102 TA-175	LV	Xometla-Cerro Xoconosco	E	Xometla	5.0	dispersed hamlet
TT-25	TT-163	TF-25 (Patlachique) TF-26 (Tzacualli) TF-191 (Tzacualli) TC-12 TA-12	MV	San Juan Evangelista	E	Xometla	31.4	large, high density town
TT-26	TT-164	—	LV	Totolcingo highway cut	L	Oxtotipac	.	trace
TT-27	TT-165	TF-91 (Cuanalan) TF-91 (Tzacualli) TC-11 TC-12 TA-12	MV	San Juan Teotihuacan	E	NS	27.0	high density compact village or town ward
TT-28	TT-166	TF-38 (Cuanalan) TC-16 TA-162	LV	Cuanalan	E	NS (Xometla)	22.0	large, high density compact village
TT-29	—	—	NTV	Cerro Santa Paula	E	NS	1.5	small scattered village
TT-30	TT-167	TC-115 TC-123	MV	Hda. Metepec	E	NS	51.0	large, high density compact village or town ward
TT-31 to TT-33	—	TA-40	CGNS	San Juan Teacalco	L	NS	17.5	small scattered village or hamlet
TT-34 to TT-36	—	TF-3 (Tzacualli) TA-45-48 TA-49 TF-127 (Tzacualli) TC-56 TA-45 TC-58 TA-46	CGNS	Maquixco Alto	L	NS	27.8	large, low density compact village
TT-37 TT-38	—	TF-129 (Tzacualli) TA-53 TF-47 (Tzacualli) TA-52	CGNS	Maquixco Alto	L	NS	11.7	scattered village
TT-39 to TT-45	TT-85	—	MV	Tolman	L	NS	19.4	small scattered village
TT-46 to TT-58	TT-87 and TT-167 to TT-170	TF-120 (Tzacualli) TT-67 TA-68 TA-69 TA-70	MV	Tolman	L	Mazapan Atlatongo	42.6	small scattered line village

SITE NUMBER	ADDITIONAL TOLTEC	COMPONENTS OTHER	ECOLOGICAL LOCATION	POLITICAL LOCATION	DATE PHASE	DATE SUBPHASE	AREA (ha)	CLASSIFICATION
TT-59	——	TA-158	MV	Cerro Gordo	L	NS		mountain top ceremonial precinct
TT-60	——	TC-34 TA-106 TA-102	UV	Sopayuca	L	NS	17.4	small scattered village
TT-61	——	—	UV	Otumba	L	Mazapan	21.0	dispersed hamlet
TT-62	——	—	MV	San Esteban Axapusco	L	Mazapan	21.0	small, low density compact village
TT-63	——	TF-203 (Tzacualli) TA-103	UV	Cerro San Lucas	L	Coyotlatelco Mazapan	79.3	large scattered line village
TT-64		TA-81-63		Cerro San Lucas		Mazapan Atlatongo		
TT-66 to TT-69		TC-123 TA-103 TA-104 TA-101		Cerro de la Calera		NS		
TT-65	TT-171	—	NTV	Cerro Colorado de Tenpoala	E	Xometla		low density line village
TT-70	(See TT-60)							
TT-71	TT-172	NW Teotihuacan	MV	San Martin Oxtoyahualco	E	NS		ceremonial cave
TT-72	TT-124 TT-122	Teotihuacan	MV	San Francisco Mazapan	E	Xometla	425.0	regional center
TT-73 to TT-77	——	TF-133 (Patlachique) TA-110 TA-112 TA-115	CGNS	San Cristobal Colhuacan	L	NS	12.5	small scattered village
TT-78	TT-125	Teotihuacan	MV		E	NS	350	large town (western barrio) TT-72 is eastern barrio
TT-79	——	—	MV	San Martin Oxtoyahualco	E	NS		ceremonial cave
TT-80	——	—	MV	San Martin Oxtoyahualco	E	NS		ceremonial cave
TT-81	——	NW Teotihucan	MV		E	NS		ceremonial cave
TT-82	TT-98 to TT-102	TF-166 (Tzacualli) TT-168 (Tzacualli) TF-37 (Chiconautla) TC-112 TC-113 TA-203	MV	San Nicolás Oxtotipac	E	NS	15.0	small, low density compact village
TT-83	——	—	UV	San Nicolás Oxtotipac	E	NS	2.2	dispersed hamlet
TT-84	TT-173	TF-195 (Tzacualli) TC-116 TA-153-42	MV	San Mateo Tenango	E	NS	44.6	large, high density compact village

SITE NUMBER	ADDITIONAL TOLTEC	COMPONENTS OTHER	ECOLOGICAL LOCATION	POLITICAL LOCATION	DATE PHASE	DATE SUBPHASE	AREA (ha)	CLASSIFICATION
TT-85	TT-43	—	MV	Santiago Tolman	E	NS	1.1-2.2	two dispersed hamlets
TT-86	—	—	MV	Barranca de Enmedio	E	NS	2.0	dispersed hamlet
TT-87	TT-51	TF-118 (Tzacualli) TA-68 TA-70	MV	Santiago Tolman	E	NS	4.2	dispersed hamlet
TT-88 to TT-90	—	TF-166 (Tzacualli) TC-126 TA-90-56	MV	Cuahutlacingo	L	NS	7.0	dispersed hamlet
TT-91	TT-174	TA-208	UV	San Lorenzo Cholpa	E	NS	1.5	hamlet
TT-92 and TT-96	—	—	UV	Otumba	L	NS	19.0 - 49.0	high density compact nucleated village
TT-93 to TT-95	—	TF-181 (Patlachique) TF-167 (Tzacualli) TC-127 TC-128 TA-90 TA-91	MV	Cuahutlacingo	L	NS	17.1	dispersed hamlet or scattered village
TT-97	—	TF-196 (Tzacualli) TA-80-57	MV	Rio de San Lorenzo West of Oxtotipac	L	NS	6.2	dispersed hamlet
TT-98 to TT-102	TT-82	*cf.* TT-82	MV	Oxtotipac	L	NS	33.0	small dispersed village
TT-103 to TT-105	—	TF-97 (Patlachique) TA-189 TA-191	MV	El Paso de Tepetlaoxtoc	L	NS	12.6	small scattered line village
TT-106	—	TC-105 TA-71-69	MV	Barranca San Cristobal Nonoalco	L	NS	0.5	single house
TT-107	TT-126 to TT-127	TF-204 (Cuanalan)	UV	Hda. Cualtenco	L	NS	29.0	small scattered village
TT-108	TT-175	TxTF-3 (Patlachique) TxET-6 TxA-20 TA-35	LV	Cerro Azteca	E	NS		hilltop ceremonial precinct
TT-109	—	—	LV	La Mesa Cerro Chiconautla	L	NS	5.0	dispersed hamlet
TT-110	TT-176	—	LV	Cerro Chiconautla	L	NS		isolated pyramid precinct
TT-111	—	—	NTV	Cerro Chiconautla	L	NS	2.0	dispersed hamlet
TT-112	—	—	NTV	Tlachinolpa	L	NS	2.3	dispersed hamlet
TT-113	—	—	NTV	Cerro Tonalan	L	NS	3.0	dispersed hamlet
TT-114	—	TA-133	NTV	Cerro Tlaltepec	L	NS	18.0	scattered village
TT-115	—	TC-20 TA-129-6	NTV	Road to Temascalapa	L	NS	6.4	small dispersed village or hamlet
TT-116	—	—	NTV	Barranca de Tompiatla	L	NS	5.2	dispersed hamlet
TT-117	—	—	NTV	Santa Maria Palapa	L	NS	4.5	dispersed hamlet

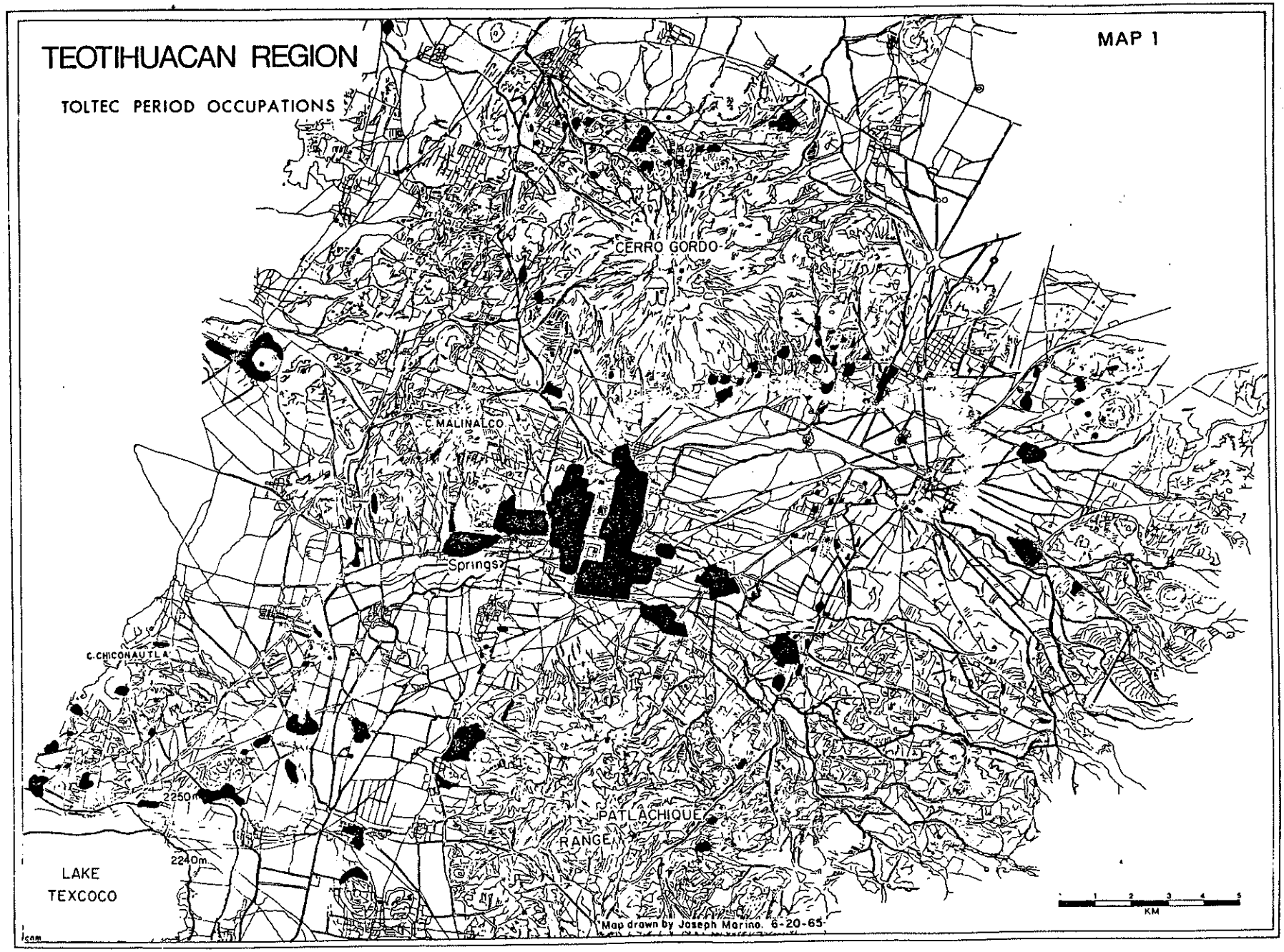
SITE NUMBER	ADDITIONAL TOLTEC	COMPONENTS OTHER	ECOLOGICAL LOCATION	POLITICAL LOCATION	DATE PHASE	DATE SUBPHASE	AREA (ha)	CLASSIFICATION
TT-118 to TT-121	—	TF-124 (Tzacualli) TA-114-50; TA-146-46	MV	Santa Maria Palapa	L	NS	15.0	scattered village
TT-122	TT-72 North	Teotihuacan TA-148-46; TA-151	MV	San Fransisco Mazapan	L	NS	169.0	large town of two barrios
TT-123	TT-177	TC-119	MV	Metepec	L	NS	2.0	dispersed hamlet
TT-124	TT-72 South	Teotihuacan	MV		L	NS	42.0	large scattered village
TT-125	TT-78	(see TT-122)						
TT-126 and TT-127	TT-107	—	UV	Ahuatepec	L	NS	29.0	small scattered village
TT-128	—	TF-31 (Platlachique) TA-181	MV	Cerro Patlachique	L	NS		hilltop ceremonial precinct
TT-129	—	TF-18 (Patlachique) TC-95	UV	San Marcos Ahuatepec	L	NS	39.0	small scattered village
TT-130	—	TF-209 (Chiconautla) TC-130 TA-73	UV		L	NS	9.0	dispersed hamlet
TT-131	—	TA-205	UV		L	NS	4.0	dispersed hamlet
TT-132	—	TF-40 (Tezoyuca) TA-162	LV	Cerro Tezoyuca	L	NS	21.0	small, low density compact village
TT-133	—	TC-8 TA-219-21	LV		L	NS	2.0-3.0	small, low density compact village
TT-134	—	TC-73	CGNS	Cerro Buena Vista	L	NS	37.0	small town
TT-135 and TT-136	—	TF-182 (Patlachique) TF-123 (Tzacualli) TC-114 TF-59 (Tzacualli) TA-204	MV	Cuahutlacingo	L	NS	19.0	dispersed hamlet
TT-137 to TT-141	—	TF-218 (Patlachique) TF-170 (Tzacualli)	UV		L	NS	5.0	dispersed hamlet
TT-142	—	TF-219 (Tzacualli) TA-58	UV		L	NS	1.0	one family hamlet
TT-144	TT-178	—	LV	Acolman Convento	E	NS		ceremonial precinct
TT-145	TT-179	—	NTV	Cerro Colorado de San Geronimo	E	NS		hilltop ceremonial focus
TT-146	TT-2	*cf.* TT-2	LV	Totolcingo	L	NS	2.5	compact hamlet
TT-147	TT-3	*cf.* TT-3	LV	Chiconautla	L	NS	2.1	hamlet
TT-148	TT-4	*cf.* TT-4	LV	Chiconautla	L	Mazapan	18.0	small scattered village
TT-149	TT-5	*cf.* TT-5	LV	Chiconautla	L	NS	12.2	ceremonial focus or low density compact village

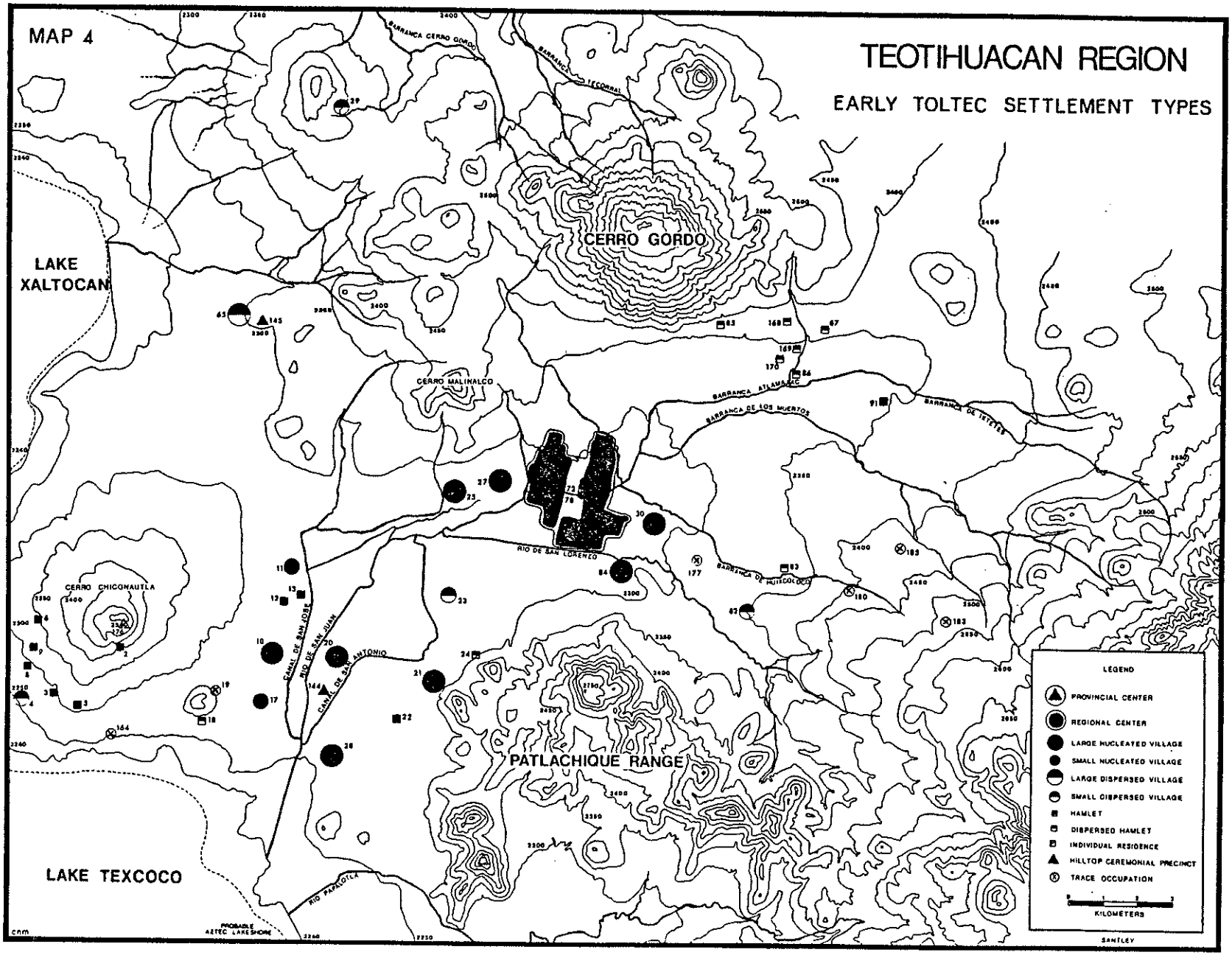
SITE NUMBER	ADDITIONAL TOLTEC	COMPONENTS OTHER	ECOLOGICAL LOCATION	POLITICAL LOCATION	DATE PHASE	DATE SUBPHASE	AREA (ha)	CLASSIFICATION
TT-150	TT-6	*cf.* TT-6	LV	Chiconautla	L	Mazapan Atlatongo	5.8	dispersed hamlet
TT-151	TT-8	*cf.* TT-8	LV	Chiconautla	L	Mazapan	4.2	dispersed hamlet
TT-152	TT-10	*cf.* TT-10	LV	Santa Catarina Acolman	L	Mazapan	25.0	larger, low density compact village
TT-153	TT-11	—	LV	Santa Catarina Acolman	L	Mazapan	15.0	small, low density compact village
TT-154	TT-12	—	LV	San Marcos Nepantla	L		2.8	dispersed hamlet
TT-155	TT-17	*cf.* TT-17	LV	Granjas Santa Catarina	L	Mazapan Altatongo	18.0	small, low density compact or scattered village
TT-156	TT-18	*cf.* TT-18	LV	Totolcingo-Tepexpan Quarry	L	Mazapan Atlatongo	48.0	small scattered village
TT-157	TT-19	—	LV	Cerro Tlalmico	L	Mazapan Ataltongo	4.0 - 5.0	dispersed hamlet
TT-158	TT-20	*cf.* TT-20	LV	Calvario Acolman	L		34.0 - 37.0	small, low density compact village
TT-159	TT-21	*cf.* TT-21	LV	San Antonio Huixtonco	L	NS	64.0	large scattered village
TT-160	TT-22	*cf.* TT-22	LV	San Pedro Tepetitlan	L	Mazapan Atlatongo	12.0	small dispersed village
TT-161	TT-23	*cf.* TT-23	LV	Hda. Santa Catarina	L	Mazapan Atlatongo	28.0	small to large low density compact village
TT-162	TT-24	*cf.* TT-24	LV	Xometla-Cerro Xoconosco	L	Mazapan Atlatongo	6.0	dispersed hamlet
TT-163	TT-25	*cf.* TT-25	MV	San Juan Evangelista	L	Mazapan Atlatongo	82.0	large, low density compact village
TT-164	TT-26	*cf.* TT-26	LV	Totolcingo highway cut	E	Mazapan Atlatongo	4.8	small, high density compact village
TT-165	TT-27	*cf.* TT-27	MV	San Juan Teotihuacan	L	NS	27.0	high density compact village or town ward
TT-166	TT-28	*cf.* TT-28	LV	Cuanalan	L	NS	14.0	small, low density compact village
TT-167	TT-30	*cf.* TT-30	MV	Hda. Metepec	L	NS	51.0	large dispersed village
TT-168 to TT-170	TT-46 to TT-58	*cf.* TT-46 to TT-58	MV	Tolman	E	NS		three isolated dispersed hamlets
TT-171	TT-66	*cf.* TT-65	NTV	Cerro Colorado de Tenpoala	L			scattered village
TT-172	TT-71	*cf.* TT-71	MV	San Martin Oztoyahualco	L	NS		ceremonial cave
TT-173	TT-84	*cf.* TT-84	MV	San Mateo Tenango	L	NS	57.4	scattered village
TT-174	TT-91	*cf.* TT-91	UV	San Lorenzo Cholpa	L	NS	1.5	hamlet

SITE NUMBER	ADDITIONAL TOLTEC	COMPONENTS OTHER	ECOLOGICAL LOCATION	POLITICAL LOCATION	DATE PHASE	DATE SUBPHASE	AREA (ha)	CLASSIFICATION
TT-175	TT-108	*cf.* TT-108	LV	Cerro Azteca	L	NS		hilltop ceremonial precinct
TT-176	TT-110	—	LV	Cerro Chiconautla	E	NS		isolated pyramid precinct
TT-177	TT-123	*cf.* TT-123	MV	Metepec	E	NS		trace
TT-178	TT-144	—	LV	Acolman Fort-Convento	L	NS		ceremonial center (?)
TT-179	TT-145	*cf.* TT-145	NTV	Cerro Colorado de San Geronimo	L	NS		hilltop ceremonial focus
TT-180	—	TC-25	UV		E	NS		trace
TT-181	TT-182	TC-83	UV		E	NS		trace
TT-182	TT-181	TC-83	UV		L	NS		trace
TT-183	TT-184	TC-87	UV		E	NS		trace
TT-184	TT-183	TC-87	UV		L	NS		trace
TT-185	—	TC-94	UV		E	NS		trace

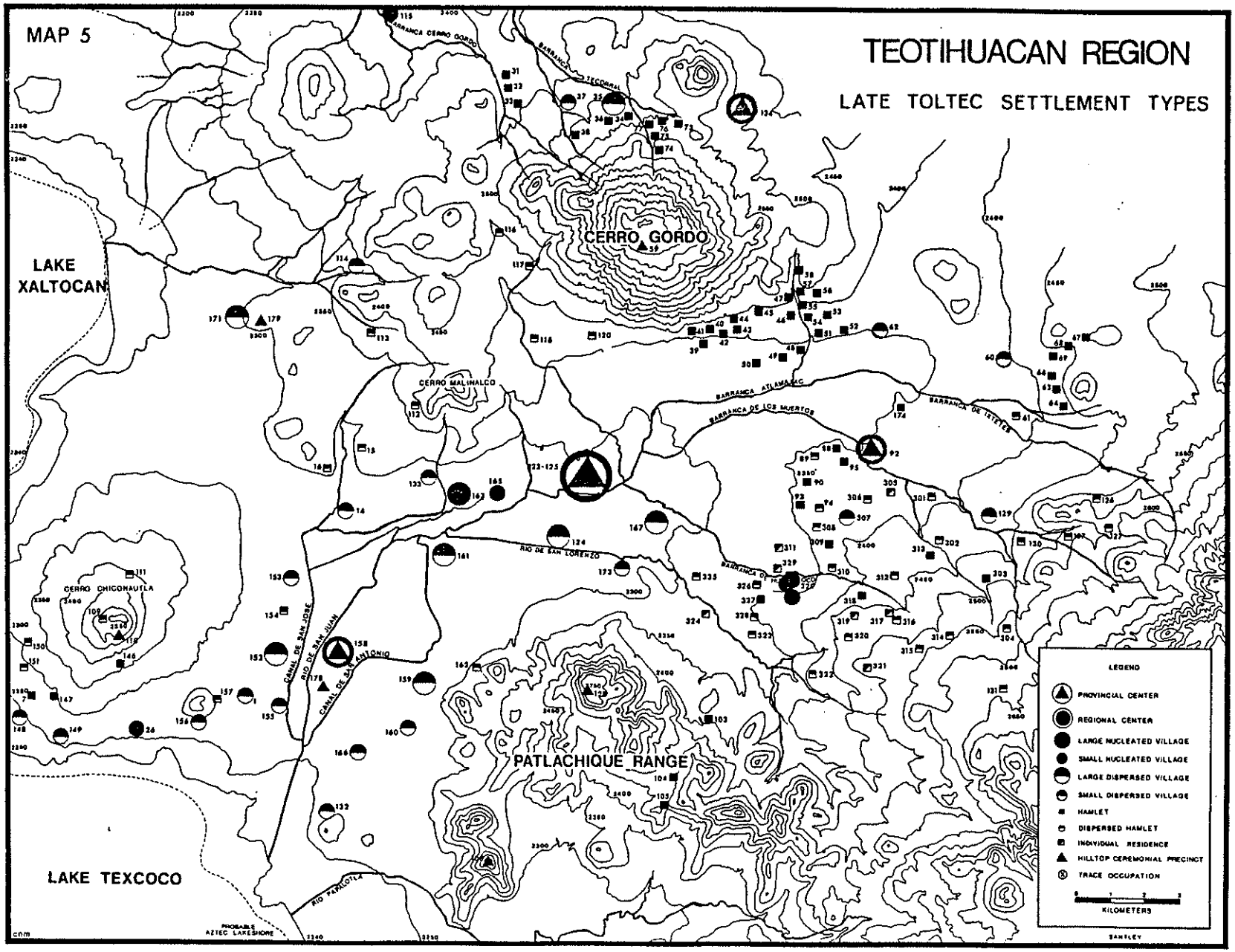
ABBREVIATIONS: LV = Lower Valley, MV = Middle Valley, UV = Upper Valley, NTV = North Tributary Valleys, CGNS = Cerro Gordo North Slope, L = Late Toltec, E = Early Toltec, NS = Not Sampled.

Map 1


TEOTIHUACAN REGION
TOLTEC PERIOD OCCUPATIONS
MAP 1
CERRO GORDO
C. MALINALCO
Springs
C. CHICONAUTLA
2250m
2240m
LAKE
TEXCOCO
PATLACHIQUE
RANGE
1 2 3 4 5
KM
Map drawn by Joseph Marino. 6-20-65


MAP 4
TEOTIHUACAN REGION
EARLY TOLTEC SETTLEMENT TYPES
CERRO GORDO
LAKE XALTOCAN
CERRO MALINALCO
BARRANCA CERRO GORDO
BARRANCA DE TECORRAL
BARRANCA ATLAMAC
BARRANCA DE LOS MUERTOS
BARRANCA DE ISTEES
RIO DE SAN LORENZO
BARRANCA DE HUITZCOLOCO
CERRO CHICONAUTLA
CANAL DE SAN JUAN
RIO DE SAN JUAN
CANAL DE SAN ANTONIO
PATLACHIQUE RANGE
LAKE TEXCOCO
RIO PAPALOTLA
PROBABLE AZTEC LAKESHORE
LEGEND
PROVINCIAL CENTER
REGIONAL CENTER
LARGE NUCLEATED VILLAGE
SMALL NUCLEATED VILLAGE
LARGE DISPERSED VILLAGE
SMALL DISPERSED VILLAGE
HAMLET
DISPERSED HAMLET
INDIVIDUAL RESIDENCE
HILLTOP CEREMONIAL PRECINCT
TRACE OCCUPATION
KILOMETERS
SANTLEY

Map 4


MAP 5
TEOTIHUACAN REGION
LATE TOLTEC SETTLEMENT TYPES
LAKE XALTOCAN
CERRO GORDO
CERRO MALINALCO
CERRO CHICONAUTLA
PATLACHIQUE RANGE
LAKE TEXCOCO
BARRANCA CERRO GORDO
BARRANCA DE TECORRAL
BARRANCA ATLAMAXAC
BARRANCA DE LOS MUERTOS
BARRANCA DE ISTEYEH
RIO DE SAN LORENZO
CANAL DE SAN JOSE
RIO DE SAN JUAN
CANAL DE SAN ANTONIO
RIO PAPALOTLA
PROBABLE AZTEC LAKESHORE
LEGEND
PROVINCIAL CENTER
REGIONAL CENTER
LARGE NUCLEATED VILLAGE
SMALL NUCLEATED VILLAGE
LARGE DISPERSED VILLAGE
SMALL DISPERSED VILLAGE
HAMLET
DISPERSED HAMLET
INDIVIDUAL RESIDENCE
HILLTOP CEREMONIAL PRECINCT
TRACE OCCUPATION
KILOMETERS
SANDLEY

Map 5

CHAPTER 9

THE LATE TOLTEC OCCUPATION OF THE UPPER TEOTIHUACAN VALLEY, SOUTHEAST PIEDMONT

by

Thomas H. Charlton

TABLE OF CONTENTS

Page

LIST OF FIGURES 542

INTRODUCTION 543

NATURAL AND CULTURAL GEOGRAPHY 543

THE MAPS 544

SITE DESCRIPTIONS 544
- TT-300 544
- TT-301 545
- TT-302 545
- TT-303 546
- TT-304 547
- TT-305 547
- TT-306 548
- TT-307 548
- TT-308 549
- TT-309 550
- TT-310 550
- TT-311 551
- TT-312 552
- TT-313 552
- TT-314 553
- TT-315 553
- TT-316 555
- TT-317 556
- TT-318 556
- TT-319 556
- TT-320 557
- TT-321 557
- TT-322 558
- TT-323 559
- TT-324 560
- TT-325 560
- TT-326 561
- TT-327 562
- TT-328 562
- TT-329 563

CONCLUSIONS 565
- Settlement Patterns 565
  - Community Patterns 565
  - Structures 565
  - Intra-Site Patterns 565
  - Inter-Site Patterns 566
  - Zonal Patterns 567

Summary and Conclusions 567

ACKNOWLEDGEMENTS 567

BIBLIOGRAPHY 569

LIST OF FIGURES

Figure		Page
1	Key to Figure 2	570
2	Areas Intensively Surveyed in the Eastern Teotihuacan Valley	571
3	Key to Figure 5	572
4	Upper Valley, Southeast Piedmont Late Toltec Settlements	573
5	Key to Figure 7	574
6	Upper Valley, Southeast Piedmont Late Toltec Settlement Types	575
7	Upper Valley, Southeast Piedmont Survey Area	576

INTRODUCTION

During 1968 and 1969 I directed surface survey and surface collections within the area of the eastern Teotihuacan Valley marked on Figures 2 and 7. My survey complemented those previously carried out by Sanders (1965) and by students of J. R. Parsons (personal communication 1966). I completed the survey between those sections that had been previously intensively surveyed and took surface collections from sites that I located as well as from sites previously noted. Although the main orientation of the 1968 to 1969 survey and collections was toward a recovery of Postconquest settlement patterns, I did collect, and subsequently study, surface samples from sites of all periods of occupation. My own Preconquest sites have been referred to in brief comments in 1968 (Charlton 1968). This paper is the first extensive presentation of any of the pre-Aztec data from the southeast Teotihuacan Valley area in which I conducted my research. It rests heavily not only on my own surveys and analyses but also on the surveys and site reports prepared by J. R. Parsons and W. G. Mather III (1965).

NATURAL AND CULTURAL GEOGRAPHY

The area of the southeast piedmont of the Upper Teotihuacan Valley was selected for survey and surface collection primarily on the basis of historical documents relating to the area and the then current state of knowledge relating to archaeological occupations in that part of the valley. The study area is approximately 48 km^2 as measured on a flat air photograph. It ranges in elevation from about 2330 to almost 2700 m. The area is drained by three major barranca systems, the Barranca del Muerto on the north, the Barranca de Huixcoloco in the center, and Barranca San Lorenzo on the south. The headwaters of the northern and southern barranca systems almost converge between 2650 and 2700 m thus presenting effective hydrographic boundaries on the north, east, and south. The survey and collections extended short distances on the north and south outside of these borders. The western edge of the survey area is not so clearly related to topographic or hydrographic features. On the south it extends from the southeast ridges into the Middle Valley plain. This extension was determined by the presence of a known Postconquest community in the plain. In the north, the survey border skirts the edge of the lands of the modern community of Cuahutlacingo, located on the continuing ridgetop to the west.

The topography within the survey area is best described as one of long ridges running generally from southeast to northwest and defined by the various barranca drainage systems. The least complex of the ridges is that on the north, defined by the drainage of the Barranca del Muerto. This ridge slopes gently, and relatively evenly, from the upper end to its termination south of Otumba. The other ridges to the south are marked by relatively level plateau areas in their eastern sections. From these elevated areas, the ridges descend through a series of steep hillslopes interspersed with lower and more gentle slopes until the Middle Valley plain is reached. Small hills occur along the southern ridges thus forming a very complex topography.

Today, the major communities are found along a band running from Oxtotipac in the south through Tlaltica, Tocuila, Tlamimilolpa, and Otumba in the north. Just outside of the survey area on the west is the community of Cuahutlacingo. To the east are a few

scattered rancherias. Although some agriculture is carried out within the survey area, it is not an area of high agricultural productivity. Most farmers rely on rainfall agriculture although there is evidence of some minor floodwater irrigation systems being used today. The data suggest that these are remnants of much larger systems that were utilized by the haciendas in the area prior to the agrarian reform. The soils are badly eroded through much of the survey area and soil depths rarely reach 50 cm, most usually being between 15 and 25 cm. Much of the uncultivated area is over-grown with thick thorny underbrush and wild pirul trees along with magueys, indicative of a much broader utilization of the area in the past. It is my belief that much of this erosion and lack of present use of lands occurred after the agrarian reforms of the twentieth century when the haciendas no longer maintained the terrace and metepantli systems and the farmers concentrated on an intensive use of the best lands within the areas each town received. As I have indicated previously (1972), the modern occupation appears to be a direct out-growth of population increase beginning about 1750 and continuing to today.

THE MAPS

I have prepared four maps of the area and the Late Toltec settlements. In Figure 2, the areas intensively surveyed within the eastern Teotihuacan Valley are marked. This is obviously an oversimplification since many of the surveyed areas overlap. However, it does indicate both the extent of such intensive survey as well as the specific locations of the area under consideration in this paper. Figure 7 presents the detailed topography, toponymy, and hydrography of the survey area. In Figure 4, I have indicated, as best as possible on a map of this scale, the approximate areas and boundaries of Late Toltec sites along with notations on the extent of continuous, as opposed to discontinuous, occupation. Figure 6 summarizes the distribution of the *types* of Late Toltec settlements found within the survey area.

SITE DESCRIPTIONS

TT-300

Natural Setting: The site is located at 2380 to 2390 m between Otumba and the north branch of the Barranca del Muerto. Topographically, this area is the western end of a long piedmont ridge sloping from east to west. It falls within Zones 12 and 13, the plain and east piedmont. Soil in the northern portion of the site was quite deep (greater than 50 cm) and level. In the southern section, the soil was of moderate depth (25 to 50 cm) and sloped gently to the edge of the barranca on the south.

Modern Utilization: In both 1963 and 1968, maguey and maize were planted in the site area.

Archaeological Remains: The survey by Mather in 1963 noted a concentration of Late Toltec ceramics in Field 88. A surface collection made in Field 89 during 1968 also included a concentration of ceramics from the same period. Neither Mather nor I noted

any associated structural remains, concentrations of stone, or continuous deposition of Late Toltec ceramics between these two ceramic concentrations. The Late Toltec materials may be obscured by the heavy Aztec deposits from TA-80. The site consists of two ceramic concentrations separated by approximately 140 m. Each may represent the remains of a single residential unit.

Site Area: 1.5 ha, including the area between the two concentrations; 0.02 ha, if only the area of the two concentrations is included.

Classification: Dispersed hamlet.

Date: Northern concentration noted as Late Toltec by Mather. Surface sample from southern concentration in 1968 includes Late Toltec ceramics.

TT-301

Natural Setting: Located at 2400 to 2410 m on the south side of the north branch of the Barranca del Muerto southeast of Otumba, the site is situated on a long piedmont ridge defined by the north and south branches of the Barranca del Muerto. It is included within Zone 13, the east piedmont. The area has a flat surface with soil depths between 0.50 and 1.0 m.

Modern Utilization: In 1964 and in 1969, Parsons and I both noted that the area of TT-301 was devoted to pasture and maguey cultivation. As part of the ridge, it belonged to the Hacienda Tepa.

Archaeological Remains: In 1964, Parsons noted an area of Aztec occupation in the area of TT-301 which he did not number. In 1969, I collected 6 areas of mounding and ceramic concentrations within the area of Aztec occupation. Three of these collections included substantial Late Toltec ceramics. Neither Parsons nor I noted any distribution of Late Toltec ceramics between the concentrations. Terminal Formative ceramics were included in two of the three collections. The collections were taken from concentrations of ceramics and structural debris located between 140 and 160 m apart. Each may represent a single residential unit. Later Aztec occupation only occurs in one of the three collections with Late Toltec ceramics although an earlier Terminal Formative occupation does occur in a portion of TT-301.

Site Area: 3.7 ha, including surface areas between the 3 concentrations; 0.03 ha, if only the concentrations are measured.

Classification: Dispersed hamlet.

Date: Three surface collections (Tl. 3, Coll. D, Coll. E) taken in 1969 include Late Toltec ceramics.

TT-302

Natural Setting: The site is located at 2430 to 2450 m on the north side of the south branch of the Barranca del Muerto, south of TT-301. It is situated on the same piedmont ridge noted for TT-301. The land slopes gently to the west and soil depths are about 50 cm.

Modern Utilization: In 1964 and 1969, the area of TT-302 was covered by pasture and maguey cultivation.

Archaeological Remains: Surface collections which I made in 1969 in TA-39 indicated a general light scatter of Late Toltec ceramics over all of the Aztec site area. There is a concentration of those ceramics in moderate numbers in collections from the area between Mounds 171a and 175. This area forms part of the "nucleated" center of TA-39, described by Parsons as including "nearly continuous heavy rock rubble and moderate surface pottery, though with few recognizable tlatels." Neither Parsons nor I noted any Late Toltec ceramics between the concentrations of ceramic debris and stones from which collections were taken. It is quite possible that the later Aztec occupation has obscured the details of the Late Toltec settlement in this area. The 6 concentrations of ceramics and stone which were collected in 1969 are located about 60 m apart with one situated 200 m away from a cluster formed by the other five.

Site Area: 7.2 ha, including surface areas between all 6 concentrations collected; 3.6 ha including surface areas between the 5 clustered concentrations (excluding C1); 0.06 ha, if only the concentrations are measured.

Classification: Dispersed hamlet.

Date: Six surface collections (B1, C1, Mounds 173, 174, 175, 176) taken in 1969 include Late Toltec ceramics.

TT-303

Natural Setting: The site is located at 2480 to 2500 m, south of the Hacienda Tepa in the center of the long piedmont ridge on which TT-301 and TT-302 are also situated. The surface slopes gently to the west and soil depths vary between 0.25 and 0.50 m.

Modern Utilization: In 1964 and 1968, the area of TT-302 was covered by pasture and maguey cultivation. Minor floodwater canals occur throughout the site area.

Archaeological Remains: During the survey in 1964, Parsons noted a very light Late Toltec occupation throughout the site area of TA-37. This clustered within the area he defined as the nucleated center of the Aztec site. Surface collections that I made in the TA-37 site area during 1968 confirm this observation of Parsons. Late Toltec ceramics occur in all areas of TA-37 but are concentrated in moderate quantities in the cluster of mounds numbered 58 to 68, 76, and 77 which form part of the nucleated center defined by Parsons. In this area, designated TT-303, light Toltec ceramics occur between the mounds. Undoubtedly the mounds are Aztec in date but they include sufficient material to indicate the presence of a small Late Toltec settlement in the same area. The mounds are located between 40 and 60 m apart with rubble and ceramics found between them. One mound, Number 59, was identified by Parsons as ceremonial in nature because of its height (2 m). The Late Toltec ceramics indicate only domestic occupations in this site. The site is defined on the basis of the occurrence of moderate quantities of Late Toltec ceramics in samples collected from moderately well preserved Aztec mounds concentrated in the nucleated area of TA-37.

Site Area: 4.8 ha, including areas between the mounds with light Late Toltec ceramics noted.

Classification: Compact hamlet.

Date: Surface collections taken from the mounds noted above in 1968 indicate a Late Toltec occupation.

TT-304

Natural Setting: The site is located at 2560 to 2570 m in the center of the long piedmont ridge on which TT-301 to TT-303 are situated. The surface slopes gently to the west, north, and east. Soil depths in the site area average about 20 cm.

Modern Utilization: In 1964, 1967, and 1968, the area of TT-304 was covered with pasture and maguey cultivation. Old floodwater irrigation canals are located near the site. In 1975, I observed the area of TT-304 and TA-38 being levelled by machinery in order to be cultivated. My observations in 1976 and 1977 indicate that the entire area has been virtually destroyed for further archaeological studies.

Archaeolgical Remains: In this survey of TA-38 in 1964, Parsons noted that the "Toltec occupation of the TA-38 site area is very light and scattered, and no definite Toltec site was recognized." Surface collections which I made in 1967 and 1968 from mounds and ceramic concentrations within TA-38 indicate a very light but widespread occurrence of Late Toltec ceramics throughout the site area. Moderate concentrations of those ceramics occurred in collections from 5 mounds, Numbers 99, 100, 106, 146, and 162a. These mounds are clustered in the central portion of TA-38 and represent Aztec house structures with associated Late Toltec ceramics. Neither Parsons nor I noted any continuous deposition of Toltec ceramics between these mounds. Four of the mounds collected are from 40 to 100 m apart. A fifth mound is located about 120 m away from the other four. Substantial later Aztec occupation in TA-38 may have effectively obliterated detailed traces of the preceding Late Toltec occupation, except for scattered ceramic distributions within the site area. TT-304 is a remnant of the previous occupation.

Site Area: 2.7 ha, including areas between the mounds in which no Late Toltec ceramics were noted; 0.1 ha, if only the areas collected are included.

Classification: Dispersed hamlet.

Date: Surface collections from 1967 and 1968 indicate a Late Toltec occupation with the heaviest occurrences of ceramics within the area designated TT-304.

TT-305

Natural Setting: The site is located at 2410 to 2420 m, south of the Barranca del Muerto in the Barrio Santa Maria Tlamimilolpa. Topographically, this area is part of a broad and gently sloping long piedmont ridge located south of Otumba and defined on the north by the Barranca del Muerto and on the south by the Barranca de Huixcoloco. This ridge is part of Zone 14, Upper Valley, south piedmont and the southeast ridges. The field in which TT-305 is located slopes gently to the north and is covered with soils between 20 and 30 cm in depth.

Modern Utilization: In 1963, Mather noted that the field was in pasture with maguey rows present. This was also the situation in 1968.

Archaeological Remains: During 1968 I collected surface samples of pottery and artifacts from selected areas within Mather's defined area of TA-80. Light Late Toltec

ceramics occured in Collection 15 from Field 36. TT-305 probably represents an isolated Late Toltec occupation composed of one household. The later TA-80 occupation has obliterated the details of the Late Toltec occupation in this area. The collection was taken in an area of heavy stone and light ceramic deposits. Mather had noted the structure and stone deposits as possibly being ancient. The associated nineteenth- and twentieth-century ceramics, along with the relatively good condition of the walls, suggest that it is of recent construction and use.

Site Area: 0.01 ha.

Classification: Isolated rural residence.

Date: The 1968 collection indicates a Late Toltec occupation.

TT-306

Natural Setting: The site is situated at 2410 to 1420 m, south of Otumba and southwest of TT-305 on the same ridgetop. The area is flat with a gentle slope to the Barranca del Muerto on the north. Soils are thin ranging from almost non-existent in areas of exposed tepetate to maximum depths of 20 cm.

Modern Utilization: In 1963 and in 1968, the site area was covered with pasture which was in poor condition, and with widely spaced rows of magueys.

Archaeological Remains: The materials upon which this site is identified were found in surface collections taken in 1968 at 3 areas of mounding and ceramic concentrations along the southern edge of TA-80 as defined by Mather in 1963 and by my surface survey in 1968. Between the areas collected, occupational debris is either very scanty or absent. The 3 foci of Late Toltec occupation are located 240 to 300 m from each other and are situated 760 m from TT-305. I have grouped these 3 occupations under site TT-306 for convenience in describing them. I must note, however, that there is no evidence that these were other than 3 isolated rural households with no intervening occupations. The westernmost collection (a) was taken from mound Number 3 noted by Mather in his survey of TA-80. This collection contained a preponderance of Aztec ceramics and the mounding probably dates from that occupation. Collections b and c were taken from areas noted by Mather as having medium quantities of Aztec ceramics with some mounding possibly being present. In both instances, although Preconquest occupations were noted, the bulk of the ceramics dated from the Postconquest Colonial and Republican periods.

Site Area: 6.4 ha, including the unoccupied areas between the collections; 0.03 ha, including only the occupied areas.

Classification: Isolated rural residences; possibly a dispersed hamlet.

Date: The 1968 surface collections support a Late Toltec occupation in these 3 loci.

TT-307

Natural Setting: The site is located at 2420 to 2440 m, southwest of TT-306 about 700 m on the same ridgetop. The surface is relatively level with a gentle slope to the west. Soil depth ranged from 20 to 50 cm over the area of the site.

Modern Utilization: During the 1968 survey I noted that the fields in which TT-307 is located were planted in maize, barley, and maguey.

Archaeological Remains: TT-307 is defined on the basis of a general continuous light to medium scatter of Late Toltec ceramics over the surface of the ground. In addition, there were 2 definable mounds within the boundaries of the site. One of these mounds, Number 13 was 1 m high and measured approximately 10 x 20 m. From the evidence of the stone dispersed around the mound, it probably had originally been much larger and now is badly destroyed. Initial observations indicated a substantial quantity of Late Toltec ceramics. The collection subsequently made in 1968 supported this observation with over 50% of the collected ceramics being Late Toltec. Given the size of this mound, it is possible that it functioned in a ceremonial role within the site. The ceramic data are not adequate to support this interpretation. Mound Number 15 was also included in TT-307. This mound was about 50 cm in height and approximately 5 x 10 m in preserved dimensions. Wall bases were visible on the surface. Although the ceramic collection from Mound 15 indicates a Late Toltec component in that area of TT-307, it is quite probable that the Aztec occupation, which is virtually coincidental with the Late Toltec occupation, is represented by the actual mound structure. One other surface collection within TT-307 supports the interpretation of this area as having a Late Toltec occupation that has become obscured through later Aztec use of the same area.

Site Area: 18.1 ha.

Classification: Small, dispersed village.

Date: Survey observations and surface collections indicate a Late Toltec occupation.

TT-308

Natural Setting: The site is located at 2390 to 2410 m, southwest of TT-307 at a distance of about 700 m on the same ridgetop as sites TT-305 to TT-307. The surface of the site slopes gently to the southwest. Soil depth varies from 10 to 30 cm over the site area.

Modern Utilization: None of the fields in which TT-308 is located were planted when surveyed in 1968. Pasture and magueys were present in all areas.

Archaeological Remains: The surface in the area of site TT-308 is covered with light to medium concentrations of ceramics, stone, and artifacts of obsidian and basalt (manos and metates). The ceramics include moderate quantities of Terminal Formative materials, traces of Late Teotihuacan occupation, moderate Late Toltec ceramics, and moderate Aztec materials. On the basis of 3 surface collections made within the area of TT-308 and the observations made during surface surveys in 1968, I have defined the site and its boundaries. Although there is some evidence of non-agricultural production within this site area (obsidian workshops) it is not possible, on the data available, to assign these activities to any one period of occupation. Most of the Late Toltec ceramics are domestic in nature. The Late Toltec occupation is very much obscured by reason of the previous occupations and the later Aztec use of the same area. The Late Toltec indications appear to be relatively light over most of the surface of the site with some tendency for medium concentrations to occur in the easternmost section.

Site Area: 5.9 ha.

Classification: Dispersed hamlet.

Date: Three surface collections taken in 1968 indicate a Late Toltec occupation.

TT-309

Natural Setting: The site is located at 2400 to 2420 m, approximately 130 m southeast of TT-308 on the southern edge of the same ridgetop. The area of the site slopes gently to the west and the south. Soil depth varies from 10 to 15 cm.

Modern Utilization: The site is situated within the modern Rancheria of Tocuila. Part of the area was in pasture with magueys in 1968. Approximately half of the area was planted in maize, beans, habas, and nopals. The areas immediately adjacent to the modern houses were the best cared for parts of the site.

Archaeological Remains: The ceramics scattered over the surface of TT-309 varied from scanty to light to medium in quantity. Both Aztec and Late Toltec ceramics were noted during the survey in 1968. In the 3 surface collections taken from the site area, the quantities of Late Toltec ceramics were equal to, or surpassed, the quantities of Aztec ceramics. Light rock concentrations were scattered over the surface. It would appear on the basis of survey observations and surface collections, that TT-309 represents the very destroyed and dispersed remains of a Late Toltec rural community. Aztec and modern utilization of the same area have caused the obliteration of Late Toltec occupation.

Site Area: 8.2 ha.

Classification: Compact hamlet.

Date: Data from analyses of 3 surface collections taken in 1968 indicate a Late Toltec occupation.

TT-310

Natural Setting: The site is located at 2400 to 2450 m, on the slopes southeast of TT-309 and north of the Barranca Huixcoloco and along the north and south edges of the same barranca. The slopes vary from gentle to medium and are oriented to the drainage of the barranca. Soil depths vary from 10 to 50 cm.

Modern Utilization: Part of this site, on the south side of the Barranca de Huixcoloco, falls within the town of San Francisco Tlaltica. On the north side of the same barranca, there is the scattered settlement of the Rancheria Tocuila. Agricultural use of the land varies over the total area included within TT-310. Along the north side of the barranca, soils are relatively deep (approximately 50 cm) and maize, beans, habas, and squash were planted in 1968. Similar crops were planted along the southern edge of the barranca within Tlaltica. The soils tended to be somewhat thinner there and erosion outside of the tended houselots was a problem. On the slopes leading to the ridgetop on the north side of the barranca, the soils are thinner and barley, maize, and magueys were planted.

Archaeological Remains: I have grouped a series of widely separated Late Toltec occupations encountered during survey in 1968 within TT-310. There is no evidence to suggest that this ever was a continuously occupied area. Rather the occupations are scattered and probably represent isolated rural households of one or two structures each. I have indicated the six isolated occupations that make up site TT-310 with the letters a through f.

TT-310a was defined on the basis of a surface collection made at an Aztec mound, Number 9. Late Toltec ceramics were noted during survey and the collection confirmed their presence. The mound is probably Aztec.

TT-310b consists of 2 mounds, Numbers 10 and 11, located at the junction of the hillslope and the relatively level and deep soils along the Barranca de Huixcoloco. Late Toltec ceramics were noted on these mounds along with Aztec ceramics during survey. Analysis of the surface collections made at each of the mounds indicates definite Late Toltec occupation. It is probable that the 2 mounds also are Aztec in origin but constructed within a Late Toltec area of occupation.

TT-310c has been defined on the basis of surface survey observations and Late Toltec ceramics in a collection taken at a modern house ruin. The data suggest a site with one residential structure near the edge of the barranca.

TT-310d was defined on the basis of light concentrations of Late Toltec ceramics observed during survey and on the presence of appreciable quantities of those ceramics in 3 surface collections taken within the site area. Light stone debris also occurred over the site area. In addition to the Late Toltec ceramics Terminal Formative and Aztec ceramics were also found in the collections. The Aztec and contemporary occupations have obscured the details of the Late Toltec site.

TT-310e was defined on the basis of surface ceramics collected in an area where light to medium Aztec pottery had been noted during survey. Late Teotihuacan period ceramics and Aztec ceramics are also found in the same collection. This site probably was a single household although the details of the occupation have been obliterated by the Aztec and contemporary occupations.

TT-310f was also defined on the basis of a surface collection taken in an area of light to medium Aztec ceramics noted during survey. Traces of Late Toltec ceramics also occurred in collections taken in other parts of the same Aztec site. It is possible that more than one household was represented here. However, the Aztec occupation has again obscured the details of the Late Toltec occupation and I would suggest that at least one and possibly two or three residential units may be represented in this site.

Site Area: 54.8 ha, including all unoccupied areas between sites; TT-310a = 0.01 ha; TT-310b = 0.02 ha; TT-310c = 0.01 ha; TT-310d = 2.8 ha; TT-310e = 0.01 ha; TT-310f = 0.01 ha.

Classification: Isolated rural residences or possibly a very dispersed hamlet.

Date: Surface collections and surface survey observations support a Late Toltec occupation for this site.

TT-311

Natural Setting: The site is located at 2370 to 2380 m, about 700 m southwest of TT-308 on the south slope of the ridgetop. The surface of the site slopes gently to the south. Soil depth is about 25 cm.

Modern Utilization: In 1968, the field in which TT-311 is located was planted in barley, maize, habas, squash, and maguey. A drainage ditch runs to one side of the field.

Archaeological Remains: These consist of a light to medium concentration of ceramics and rocks in the center of the field. The ceramics included both Late Toltec and Aztec materials. They probably indicate the remains of a single household occupied in both periods.

Site Area: 0.01 ha.

Classification: Isolated rural residence.

Date: No surface collection made; surface survey recorded Late Toltec.

TT-312

Natural Setting: The site is located at 2460 to 2490 m, approximately 1000 m northeast of TT-310. The surface of this area slopes gently to the west and south draining into the Barranca de Huixcoloco. Soil depth varies from 20 to 50 cm.

Modern Utilization: The areas in which Late Toltec occupation occurs were in pasture with maguey rows present in 1964 and 1968. There is some evidence of floodwater irrigation canals through the site area; these were not in use when the sites were surveyed and collected.

Archaeological Remains: In 1968, I collected surface samples from mounds and areas of ceramic concentrations within the Aztec TA-57 site defined by Parsons. Light concentrations of Late Toltec ceramics were found in several collections suggesting a very light occupation in the general area of moderate quantities of ceramics. Although the mounds themselves probably date from Aztec occupation, the association of Late Toltec ceramics indicates prior occupation in the same areas. The sites were probably isolated rural residences. I have indicated the three collections and Late Toltec sites as 312a, 312b, and 312c. Neither Parsons nor I noted any quantities of Late Toltec occupation in the areas between these mounds. The mounds are located 450 to 550 m apart.

Site Area: 10.5 ha, including areas between the mounds in which no Late Toltec ceramics were noted; 0.03 ha, if only the areas collected are included.

Classification: Isolated rural residences; possibly a dispersed hamlet.

Date: Surface collections indicate a Late Toltec occupation at 3 loci within TT-312.

TT-313

Natural Setting: The site is located at 2450 to 2470 m, on the south side of the Barranca del Muerto about 900 m northeast of TT-312. The surface of the site slopes gently to the north and the Barranca del Muerto. Soil depth ranges from 5 to 25 cm in the site area. Substantial erosion in the same area had exposed tepetate in some sections.

Modern Utilization: TT-313 falls within an area of badly eroded terraces which were in pasture in 1964, 1967, and 1968. Some maguey cultivation was also noted.

Archaeological Remains: I collected surface samples from mounds and areas of ceramic concentration noted by Parsons within Aztec site TA-56 during survey in 1964. In the analysis of these collections, I noted that there is a general light scatter of Late Toltec ceramics over the entire surface area of TA-56. The materials are concentrated in

3 mounds. Parsons noted that the areas between the mounds also indicated a Late Toltec occupation. The mounds are probably Aztec in date and that later occupation has obscured the details of the Toltec occupation in the same area.

Site Area: 5.0 ha.

Classification: Compact hamlet.

Date: Surface survey observations and collections taken in 1967 and 1968 indicate a Late Toltec occupation.

TT-314

Natural Setting: The site is situated at 2550 to 2600 m, approximately 1400 m southeast of TT-312, south and north of two small barrancas feeding the north branch of the Barranca de Huixcoloco. To the north, the site area is flat with a gentle slope to the west and south. On the south, the surface is slightly steeper with drainage to the north and west. Soil depth over the site surface is variable ranging from bare tepetate to possibly 30 cm soil depths.

Modern Utilization: This is variable with much of the area being in pasture and magueys in 1964 and 1968. Some maize, beans, and barley were planted in deep soil areas.

Archaeological Remains: I have grouped under TT-314 several Late Toltec occupations which probably represent isolated households. I should note, however, that there is a general light scatter of Late Toltec ceramics in the surface collections taken from mounds and ceramic concentrations in this area of TA-85, TA-86, and my 1968 Surface Survey Strip Number 6. Thus we may be dealing with a very dispersed Late Toltec hamlet.

TT-314a consists of Late Toltec ceramics associated with a 1968 surface collection taken at mound Number 481 in TA-85, an Aztec site defined by Parsons. Parsons had also noted the occurrence of light quantities of such ceramics on the surface during survey as well as Late Toltec ceramics on the edge of the Barranca del Muerto north of TT-314a. No collections were taken in that area but I have included it on the map.

TT-314b is defined on the basis of surface collections taken at the Rancho Nopaltepec and at mound Number 483 in TA-86 delineated by Parsons. One problem with this site is the presence of Terminal Formative and Teotihuacan ceramics along with substantial Aztec, Colonial, and Republican period materials. Since other collections made in 1968 at TA-85 and TA-86 include consistent low frequencies of Late Toltec ceramics it is possible that there was a light continuous occupation across the relatively flat ridgetop surface, but these may have easily been obscured by the other occupations. TT-314b probably represents two Late Toltec households.

TT-314c is a cluster of two Late Toltec households identified on the basis of collections taken in 1967 and 1968 at two mounds, Numbers 489 and 491 in TA-86. The site is located along the south edge of the small barranca feeding the Barranca de Huixcoloco.

TT-314d was discovered during survey in Survey Strip Number 6, mound Number 40, and was noted as having both an Aztec and a Late Toltec component. A surface

collection taken in 1968 confirmed this first impression. The mound is probably the remnant of an Aztec structure.

TT-314e is defined on the basis of a surface collection taken from an area of ceramic concentration with light to medium Aztec pottery noted during survey. The collection contained a moderate amount of Late Toltec ceramics, probably the remains of a household occupation.

TT-314f was discovered during surface survey in 1968 when I noted an area of light to medium ceramics containing both Aztec and Late Toltec materials. A surface collection taken in this area verified the interpretation. The site appears to be that of a single household.

TT-314g is identified as a single house site on the basis of Late Toltec ceramics found in an area of light to medium ceramic and rock concentrations in Survey Strip Number 6. A surface collection supported this observation.

Both surface survey observations and analyses of surface samples indicated a light, non-continuous Late Toltec occupation across the Aztec sites of TA-85 and TA-86. The data include both ceramics and structural debris. It is most probable that the structural debris is Aztec. The site details have been obscured both by the later occupations and by the presence of early Terminal Formative and Teotihuacan sites.

Site Area: 62.5 ha, including all areas between foci of occupation; 0.07 ha, if only concentrations are included.

Classification: A very dispersed hamlet; possible isolated rural residences.

Date: Surface survey observations and surface collections indicate a Late Toltec occupation in this area.

TT-315

Natural Setting: The site is located at 2560 to 2590 m, on the east and west side of the south branch of the Barranca de Huixcoloco about 600 m west of TT-314 near the Rancheria of Coyotepec. This area forms part of Zone 14, south piedmont and the southeast ridges. It is bordered on the east and north by the south branch of the Barranca Huixcoloco and on the south by the Barranca La Carmelita, which joins the Barranca San Cristobal to the west. Another branch of the Barranca de Huixcoloco marks the western edge. The ridge is marked by a sharp drop in elevation between the 2500 and 2450 m contour intervals. TT-315 is located in the Barranca drainage on land that slopes gently to the north. The soil depth varies from non-existent in areas of exposed tepetate to shallow depths of 20 cm. Most of the site area was eroded badly in 1964 and 1968.

Modern Utilization: With the exception of a few terraces in the community of Coyotepec (TT-315a) most of the surface of the site was not cultivated and was either in pasture and magueys or badly eroded to tepetate. In Coyotepec some maize had been planted on terraces.

Archaeological remains: I have grouped 3 areas with Late Toltec occupation within TT-315.

TT-315a consists of Late Toltec ceramics noted as occurring in light quantities on the surfaces of old terraces within Coyotepec. Two surface collections indicate that this occupation is mixed with later Aztec ceramics. However, there is evidence of probably two or three Late Toltec household units at TT-315a.

TT-315b was noted by Parsons as Location G in site TA-59. It is an area of heavy rock with moderate Aztec ceramics and a trace of Late Teotihuacan pottery. A collection from this area included evidence for a Late Toltec occupation and traces of Late Teotihuacan and Early Toltec ceramics along with Aztec materials. Collections from other areas near Location G produced traces of Late Toltec ceramics. Although I have not included these trace amounts in defining the site 315b, it is possible that the area occupied by the Late Toltec community may have been larger.

TT-315c is located on the slopes east of the barranca where I noted several concentrations of Aztec ceramics. Samples taken in 1968 from these areas indicated that one had a moderate Late Toltec component. This area was defined on the basis of a moderate rock and ceramic distribution but with no obvious mounding present. It is probable that the debris represents the remains of a single household.

Site Area: 20.32 ha, including intervening areas with few traces of Late Toltec occupation; 0.04 ha, including only the defined loci of occupation.

Classification: Dispersed hamlet.

Date: Surface survey observations and analysis of surface collections indicate a Late Toltec occupation.

TT-316

Natural Setting: This site is located at 2520 to 2540 m, approximately 800 m northwest of TT-315, on a ridge which slopes toward the north and the Barranca de Huixcoloco. Much of the surrounding area has been eroded to tepetate. Soil depths vary within the site area ranging from 10 to 30 cm.

Modern Utilization: The site area was in pasture and magueys in 1964 and 1968. Some drainage ditches were present.

Archaeological Remains: This site is marked by light to moderate quantities of Aztec ceramics on the surface and by moderate Late Toltec ceramics in the collections taken from 4 mounds within the site area of TA-58, Numbers 230, 232, 233, and 235. Parsons had noted the presence of Late Toltec ceramics around mound Number 233 and in our collection these were the most abundant materials at that mound. The area of the site is cut through by several washes. The erosion and Aztec occupation have undoubtedly obscured the Late Toltec occupation somewhat. There does not seem to be evidence for continuous occupation over the entire site area. The collections probably represent a community of at least 4 households.

Site Area: 3.84 ha, including areas between loci of occupation; 0.04 ha, including only areas with definite occupation.

Classification: Dispersed hamlet.

Date: Surface survey observations and surface collections indicate a Late Toltec occupation.

TT-317

Natural Setting: The site is located at 2490 m, approximately 360 m north of TT-316 on the north edge of the ridge overlooking the Barranca de Huixcoloco. The land slopes gently to the north to the barranca drainage. The site area has shallow soil depths of approximately 5 to 10 cm, being located in a very badly eroded area.

Modern Utilization: The area is not under cultivation and was observed to be badly eroded in 1964 and 1968.

Archaeological Remains: This site is defined on the basis of a collection taken from mound Number 227 in Aztec site TA-58. Not only Aztec but also Late Toltec ceramics occurred in the sample. The mound is probably Aztec in date, the Late Toltec occupation having been obscured by both the Aztec occupation and the severe erosion.

Site Area: 0.01 ha.

Classification: Isolated rural residence.

Date: The surface collection indicates a Late Toltec occupation.

TT-318

Natural Setting: The site is located at 2470 m, on the edge of the Barranca de Huixcoloco on the north of the ridge. The land slopes gently to the north. Soils are shallow, between 10 to 30 cm in depth, and partly eroded by a wash.

Modern Utilization: The area forms part of a terrace system for San Miguel Xolco. It was not cultivated in 1964 to 1968.

Archaeological Remains: In his survey in 1964, Parsons noted the presence of Late Toltec ceramics in association with this site area. Surface collections taken in 1968 support this observation. In addition to the Late Toltec materials there were Terminal Formative, Teotihuacan, and Aztec ceramics in the same collections. The collections were taken from mound Numbers 222, 223, and 225. The mounds are probably Aztec constructions which, along with the earlier occupations, have obscured the precise nature of the Late Toltec occupation. Pottery was light to moderate over most of the site area.

Site Area: 0.96 ha.

Classification: Compact hamlet.

Date: Surface survey notes and analyses of surface collections indicate a Late Toltec occupation.

TT-319

Natural Setting: The site is situated at 2510 m, approximately 640 m southwest of TT-318. The surface slopes to the west. Soil depths are approximately 25 cm.

Modern Utilization: In 1964, this area was under maguey cultivation. It is located within the Rancheria San Miguel Xolco.

Archaeological Remains: During survey in 1964 Parsons noted heavy rock and moderate pottery within this site area along with Late Toltec traces. Surface collections taken from the site area in 1968 had moderate quantities of Late Toltec ceramics. These materials probably represent one or two isolated Late Toltec residences.

Site Area: 0.64 ha.

Classification: Isolated rural residence.

Date: Surface survey observations and surface collections indicate a Late Toltec occupation.

TT-320

Natural Setting: The site is located at 2530 m, approximately 560 m south of TT-319. The surface slopes gently to the south in the drainage of the Barranca la Carmelita. Soil depth is approximately 25 cm.

Modern Utilization: The area of the site was in pasture and magueys in 1964 and 1968. Part of the site is situated on old maguey terraces.

Archaeological Remains: In his 1964 survey of TA-58, Parsons noted one mound, Number 242, and one concentration of modern pottery in this area. Surface collections that I took in 1968 revealed a moderate Late Toltec component in these 2 areas. Since the site has both Aztec and modern occupations and has been eroded to some degree by a wash running through it, it is probable that the Late Toltec occupation has been at least partially obliterated. No Late Toltec ceramics were noted as occurring in the areas between the 2 collections.

Site Area: 1.4 ha, including areas between the 2 collections; 0.02 ha, including only the areas collected.

Classification: Dispersed hamlet; possibly 2 isolated rural residences.

Date: Surface survey notes and the analyses of surface collections indicate a Late Toltec occupation.

TT-321

Natural Setting: The site is situated at 2560 m, approximately 960 m southwest of TT-315. The land slopes gently to the south into the drainage of the Barranca Mixcoac (which becomes San Lorenzo further to the west). This site is actually on a small southeast ridge bounded by the Barranca la Carmelita on the north and west and by Barranca Mixcoac on the south. There is a sharp drop between the 2400 and 2450 m contours from the top of the ridge to the south drainage. Soil depth ranges from 5 to 20 cm.

Modern Utilization: In 1964 and 1968, the area around this site was used for pasture and maguey cultivation. Some erosion had occurred within the site area.

Archaeological Remains: In his 1964 survey, Parsons noted mound Number 305 with light to moderate Aztec ceramics. A surface collection taken in 1968 indicated that there was a Late Toltec component to this mound. The mound had very little height and probably was Aztec in origin.

Site Area: 0.01 ha.

Classification: Isolated rural residence.

Date: The surface collection indicates a Late Toltec occupation.

TT-322

Natural Setting: The site is located at 2450 to 2550 m, approximately 560 m southwest of TT-320. The site area includes a relatively flat ridgetop sloping to the southwest and some moderately steep slopes down into the Barranca San Cristobal drainage. Soil depth were shallow ranging from 5 to 20 cm.

Modern Utilization: Most of the area included within TT-322 was in pasture and magueys during 1964 and 1968. A number of badly maintained terraces were noted along with some drainage ditches.

Archaeological Remains: I have grouped several widely spaced areas of Late Toltec occupation uder TT-322. On the basis of survey and collections in 1964 and 1968, I can state that there is no evidence for occupation in the intervening areas, except for Aztec and modern materials. Marino's Site 106 is an additional locality that is probably part of this same site.

TT-322a is situated on the ridgetop south of the Barranca la Carmelita. It is located within TA-71 and is identified on the basis of surface observations and surface collections which indicate a moderate Late Toltec occupation in 3 collections and traces of such occupation in several collections immediately adjacent. I have included only the area of the 3 collections with moderate Late Toltec ceramics in the site area. Parsons noted traces of such materials in this area in 1964. The site area is badly eroded. The remains noted during survey probably are those of Aztec mounds, the Late Toltec pattern having been badly obscured. The site probably reflects the remains of at least 3 rural households during Late Toltec. It is possible that other widely dispersed structures may have been in the same area.

TT-322b is located about 320 m south of TT-322a. It consists of Late Toltec ceramics identified in the collection taken at an area of moderate Aztec ceramics noted by Parsons. Although the main occupation is Aztec there are sufficient data to suggest a Late Toltec occupation in the form of single household.

TT-322c is located approximately 520 m west of TT-322b. It is located in a badly eroded area on the ridgetop with moderate to heavy concentrations of rock and Aztec ceramics noted. Two of the surface collections taken from this area in 1968 included Late Toltec ceramics in moderate quantities. Although the 2 areas collected are about 80 m apart, I have grouped them as TT-322c indicating a Late Toltec occupation of 2 households. It is possible that in this area the heavy later Aztec occupation has obscured the details of the Late Toltec site.

TT-322d was identified when a surface collection of Aztec mound Number 56 in Surface Survey Strip Number 5 during 1968 revealed a Late Toltec component. The site is situated approximately 150 m west of TT-322c. The main mound is probably of Aztec construction. There were no Late Toltec ceramics noted in the areas between TT-322c and TT-322d. This is probably an isolated rural residence.

TT-322e is located approximately 400 m northwest of TT-322d. Similar to that site, it is located on the slope leading from the ridgetop into the barranca drainage to the south. The site was defined on the basis of Late Toltec ceramics identified in the surface collection taken in 1968. This site was also located during the survey of that year. Undoubtedly the mound which was represented by heavy rock and ceramic debris is of Aztec origin. The Late Toltec occupation appears to be that of an isolated rural residence.

The sites located within TT-322 during the Late Toltec period consist of a series of widely spaced residences consisting at most of two to three structures each. They are located on the ridgetop and on the slopes leading to the south. The later Aztec occupation has quite obviously obscured the Late Toltec settlements.

Site Area: 41.6 ha, including all areas between Late Toltec loci of occupation; TT-322a = 0.48 ha; TT-322b = 0.01 ha; TT-322c = 0.8 ha; TT-322d = 0.01 ha; TT-322e = 0.01 ha.

Classification: Widely dispersed hamlet; possibly a series of isolated rural residences.

Date: Surface survey observations and surface collections indicate a Late Toltec occupation.

TT-323

Natural Setting: Situated at 2370 to 2380 m, approximately 1500 m northwest of TT-322, the site is on the lower slopes of the Oxtotipac hill, which has a moderate to gentle gradient at this location. The soils are about 20 to 25 cm in depth. The Barranca San Lorenzo on the south and the Barranca de Huixcoloco on the north delineate a ridge area which has as its most prominent feature the hill on which the modern town of Oxtotipac is located. This hill and the adjacent barranca drainages were a main focus of Late Toltec occupation in this area. The ridge and hill so defined belong to Zone 14, south piedmont and the southeast ridges.

Modern Utilization: This area was surveyed by students of Parsons in 1966 and by my colonial project in 1968. The area, in 1968 was planted with barley. Some of the lands within the site area were also used for pasture and magueys. The site enters the area of the town of Oxtotipac on the north and in this section there were some nopaleras.

Archaeological Remains: The materials grouped under TT-323 are based on surface surveys of TA-236 by Parsons' students in 1966 and surveys and collections which I directed in 1968 in Surface Survey Strip Number 7. Although there is Aztec occupation between the 3 areas identified as having Late Toltec occupation, there is no evidence of a general or continuous Late Toltec occupation through the total site area.

TT-323a is defined on the basis of Late Toltec ceramics in a surface collection taken from an area noted in survey as light Aztec and Terminal Formative. Both of those periods as well as traces of Early Toltec materials are represented in the collection.

The area of TT-323a also has abundant rock on the surface. It appears that any details of the Late Toltec occupation have been obscured by preceding and subsequent occupations.

TT-323b is defined on the basis of a surface collection taken within an area noted in TA-236 as having a light to moderate concentration of Aztec ceramics in association with an equally dense concentration of rock. The analysis of this collection indicated that it also included a Late Toltec component, and light Terminal Formative ceramics. The site was probably an isolated Late Toltec residence.

TT-323c had been noted in TA-236 as having light to medium Teotihuacan and Aztec ceramics with a trace of Late Toltec. Analysis of the collection indicated an occupation from Terminal Formative through Aztec. Early as well as Late Toltec ceramics were present in the collection. The area from which the collection was taken also had a moderately heavy rock concentration. It is probable that the Late Toltec component represents a single isolated residence.

Site Area: 22.4 ha, including all areas between the 3 Late Toltec loci; 0.03 ha, if only the actual site areas are included.

Classification: Isolated rural residence; possibly a dispersed hamlet.

Date: Surface collections indicate a Late Toltec occupation in these 3 areas.

TT-324

Natural Setting: The site is located at 2360 m, approximately 800 m west of TT-323. The site is on the south bank of the Barranca San Lorenzo. It is located on the northern edge of the south piedmont (Zone 14). The land is quite level with a gentle slope to the north. Soil depth in this area is about 25-30 cm.

Modern Utilization: In 1966 and 1968, the area was in pasture and maguey. Some drainage ditches are found in this area.

Archaeological Remains: This site was identified through the analysis of a surface collection taken from Mound Number 217 in 1968. Accompanying the Aztec ceramics was a moderate quantity of Late Toltec pottery. The mound, with moderate rock rubble and ceramics is probably Aztec in origin. There were also traces of Late Toltec ceramics noted in the fields adjacent to the mounds.

Site Area: 0.01 ha.

Classification: Isolated rural residence.

Date: Surface survey observations and surface collection analysis indicate that there was a Late Toltec occupation.

TT-325

Natural Setting: The site is located at 2340 to 2350 m, approximately 1500 m northwest of TT-322. The land is almost flat in this area with a gentle slope to the south into the drainage of the Barranca San Lorenzo. Soil depth was estimated as being 30 to 50 cm.

Modern Utilization: During survey in 1966 the site area was planted in maize.

Archaeological Remains: TT-325 includes 2 areas of Late Toltec occupation. Although the areas between TT-325a and TT-325b have light Aztec ceramics and rock debris there is no evidence of continuous Late Toltec occupation through the same section.

TT-325a is based on collections from mound Numbers 214 and 215, and on observations during survey that mound Number 214 had Late Toltec ceramics associated with it. Surface collections from both mounds indicated moderate Late Toltec occupation along with Aztec ceramics. The 2 mounds are undoubtedly Aztec in origin but have a Late Toltec component in association. Moderate rock rubble also occurs around both mounds. The Late Toltec site, obscured as it is by Aztec occupation, probably included 2 rural households.

TT-325b is located about 320 m southeast of TT-325 and was a moderate concentration of rock debris and ceramics within TA-236. A surface collection taken from this site in 1968 revealed a moderate Late Toltec occupation similar to TT-325a. It is probable that one rural household is represented here although the late occupations have obscured the Late Toltec site.

Site Area: 4.0 ha, including areas between the 2 loci of Late Toltec occupation; TT-325a = 0.02 ha; TT-325b = 0.01 ha.

Classification: Isolated rural residences; possibly a dispersed hamlet.

Date: Surface survey observations and surface collection analyses indicate a Late Toltec occupation.

TT-326

Natural Setting: The sites are situated at 2360 to 2380 m, approximately 1000 m north of TT-323 on the north side of the Oxtotipac hill where the slope adjoins the alluvial plain in the drainage of the Barranca de Huixcoloco. The area of the 3 sites is relatively level with a gentle slope to the north. The soil depth varies from 15 to 30 cm.

Modern Utilization: In 1968, the area of the site was planted in several crops including maize and peas. Some areas were left as pasture with maguey rows planted.

Archaeological Remains: I have included with TT-326 three areas which were noted during survey as having light to moderate concentrations of ceramics including Terminal Formative, Teotihuacan, and Aztec materials. Each of these areas was sampled and the collections studied.

TT-326a has indications of Terminal Formative, Late Toltec, and Aztec occupations with traces of Early Toltec occupation. The site was merely a ceramic concentration surrounded by areas of little or no occupation. It may represent a Late Toltec rural household. The area of ceramic distribution was very restricted.

TT-326b is located about 300 m to the east of TT-326a and was also a light to moderate ceramic concentration. The main occupation indicated by the surface collection was Terminal Formative. Late Toltec and Aztec occupations are also present but in reduced numbers of sherds. The Late Toltec occupation may be part of a slightly larger settlement since traces of Late Toltec ceramics occur in collections made in the field between TT-326b and TT-326c.

TT-326c is about 200 m to the east of TT-326b. As noted above, the intervening field has some traces of Late Toltec occupation. The collection taken in this area in 1968 indicated a good Terminal Formative and Teotihuacan occupation with moderate quantities of Late Toltec and Aztec materials also being present. As in the other cases mentioned here this area is a ceramic concentration with no mounding evident. TT-326b and TT-326c may form a slightly larger settlement with three or four Late Toltec rural households represented. TT-326a appears to be isolated from the other two areas. Earlier and later occupations have obscured the precise details of the Late Toltec settlement.

Site Area: 5.12 ha, including all areas between TT-326a and TT-326b; TT-326a = 0.01 ha; TT-326b and TT-326c = 2.56 ha.

Classification: Isolated rural residences; possibly a dispersed hamlet.

Date: Surface collections provide evidence for a Late Toltec occupation in these areas.

TT-327

Natural Setting: The site is located at 2390 to 2400 m, approximately 300 m south of TT-326 on the slopes of the Oxtotipac hill. The hillslope has a moderate gradient in the site area. The soil depth over the site varied from 15 to 25 cm.

Modern Utilization: TT-327 is entirely within houselots of the modern town of Oxtotipac. The area of the site was planted in maize, barley, habas, and maguey during survey in 1968.

Archaeological Remains: During survey in 1968 it was noted that there were light to moderate concentrations of Terminal Formative, Teotihuacan, and Aztec ceramics within the area of TT-327. Three surface collections were taken from this area. Subsequent analyses of the data indicated a heavy Terminal Formative occupation with traces of Teotihuacan and Early Toltec occupations in the site area. In addition there were moderate quantities of Late Toltec and Aztec ceramics in the collections. The Late Toltec site consists then of this area of sherd concentration. The precise details of the settlement have been obscured due to the long term occupation of the Oxtotipac hill.

Site Area: 1.44 ha.

Classification: Compact hamlet.

Date: The surface collections indicate a Late Toltec occupation.

TT-328

Natural Setting: Situated at 2440 to 2470 m, approximately 175 m south of TT-327, this site is located on the west slope and top of the Oxtotipac hill. The gradient ranges from moderate on the west to gentle on the east. Soil depth is extremely variable ranging from little or none in areas of erosion to depths over 30 cm. Average depth is about 20 cm.

Modern Utilization: The site is located within the community of Oxtotipac. Some areas were in pasture and magueys. Others were planted in maize, barley, habas, squash, and nopaleras in 1968.

Archaeological remains: I have included within TT-328 4 widely spaced loci of Late Toltec occupation along the main section of the Oxtotipac ridge and hill. Due in part to modern occupation, and in part to the complex occupation history of this area since Terminal Formative times, the details of the Late Toltec occupation are not clear. It is possible that the occupation was continuous throughout the postulated site area. However, collections taken at intervening areas do no more than indicate traces of such occupation. Thus the site area as a whole does not reflect total and complete occupation throughout its area.

TT-328a is located on the west slope of the hill. The collection taken from this area of moderate ceramic concentration indicates Terminal Formative, Teotihuacan, Late Toltec, and Aztec occupations. The ceramic concentration is an isolated section and may indicate the presence of one or two now destroyed Late Toltec households.

TT-328b is a houselot on the western edge of the hill. When the collection from this site was analyzed, there were indications of Terminal Formative, Teotihuacan, Early and Late Toltec, and Aztec occupations. The area of the collection had been observed during survey to have a light concentration of surface ceramics. This houselot collection probably indicates the prior presence of one or two Late Toltec households.

TT-328c is located just south of the modern plaza in Oxtotipac. The sample collected here indicates a continuous occupation from Terminal Formative to today. Both Early and Late Toltec ceramics were encountered. The area sampled was a modern houselot marked by a light to moderate concentration of surface ceramics. It was probably the locale of one or two Late Toltec households.

TT-328d was defined on the basis of two surface collections. Both of these collections revealed the presence of Terminal Formative, Late Toltec, and Aztec occupations in this area. They were taken in areas noted during survey as having light to moderate indications; collections probably represent a cluster of Late Toltec households widely spaced and about 2 in number.

The site of TT-328 is quite obviously defined on the basis of the clustering of a few examples of Late Toltec ceramics in the surface collections. The occupation appears to be that of scattered households. It is possible that this may be an artifice of both preservation and sampling. Given the very complex occupational history of this area, new sampling techniques might be profitably applied in any future research.

Site Area: 8.48 ha, including the areas between the collections noted above; TT-328a = 0.01 ha; TT-328b = 0.01 ha; TT-328c = 0.01 ha; TT-328d = 0.96 ha.

Classification: Dispersed hamlet.

Date: The surface collection data indicate a Late Toltec component in the samples noted above.

TT-329

Natural Setting: The sites are located at 2370 to 2400 m, approximately 560 m east of TT-326. The sites are located at the confluence of two branches of the Barranca de Huixcoloco flowing to the west, and slightly above the confluence to the east. The land surface in this area has a gentle slope to the drainages or is almost flat in parts. Depth of soil varies throughout the area of the sites. The area of TT-329a was badly eroded with

much tepetate exposed and soil depth varying from 0 to 10 cm. In the area of TT-329b the soil depth ranged between 15 to 25 cm. TT-329c was also in an eroded area with soils being from 5 to 15 cm in depth and TT-329d is in a field which had soil depths from 15 to 25 cm.

Modern Utilization: This is quite varied depending upon the condition of the soil. The area of TT-329a was uncultivated pasture with a severe erosion problem. In TT-329b, maize, barley, beans, and maguey were planted in 1968; some areas were being used for pasture. In addition, there was a nopalera associated with a houselot. TT-329c is an area in which similar crops were planted. In the field around TT-329d, maize and barley had been planted with part of the area being used for pasture. Parts of all the sites (except TT-329d) fall within modern communities in the area (Oxtotipac and Tlaltica).

Archaeological Remains: The areas of the sites were defined on the basis of the surface distribution of Late Toltec ceramics as noted in the survey and the analyses of the surface collections taken in 1968.

TT-329a was identified both through surface survey observations of light to moderate ceramic concentrations and through analyses of collections taken from the area. Occupation within the site dated primarily from the Terminal Formative, Late Toltec, and Aztec periods. Some collections had traces of Teotihuacan and Early Toltec ceramics but these were not present in large quantities. The distribution of the Late Toltec ceramics suggests a continuous occupation throughout the site area.

TT-329b revealed moderate quantities of ceramics on both sides of the barrancas and on the tongue of land in the center. Subsequent collections from these areas indicated a complete sequence of occupation from Terminal Formative through Aztec, including Early and Late Toltec. The Late Toltec is much more widely distributed throughout the site area and suggests a continuous occupation through the site. This is the same site as Marino's TT-98.

TT-329c possessed light to moderate surface ceramics. Surface collections, when analyzed indicated that here there was also a complete sequence of occupation from Terminal Formative to Aztec. Early and Late Toltec were represented in the collections and seem to be equally widespread through the site area. It is possible that this site may have been linked to TT-329b although there is a drop in ceramic density between the two.

TT-329d was located to the northwest of TT-329c and was first identified on the basis of light ceramic and rock debris concentrations. The surface collection indicated a moderate Late Toltec occupation along with an Aztec occupation and traces of Early Toltec ceramics. It probably was an isolated rural household.

Site Area: TT-329a = 4.16 ha; TT-329b = 4.64 ha; TT-329c = 3.04 ha; TT-329d = 0.01 ha.

Classification: TT-329a through TT-329c may represent 3 small nucleated villages. Although lacking in architecutral remains the densities of ceramics and stone within these 3 sites would support such an interpretation. TT-329d is an isolated rural residence.

Date: Observations from surface survey and analyses of surface collections indicate a Late Toltec occupation.

CONCLUSIONS

Settlement Patterns

Although the area surveyed in the southeastern piedmont of the Teotihuacan Valley represents only a fraction of that area and an even still smaller section of the Basin of Mexico as a whole it is significant in an understanding of the demographic and cultural processes operative after the fall of Teotihuacan and prior to the major Aztec expansions. It is one of the relatively few areas of the Basin of Mexico to have possessed an Early Toltec population. A number of aspects of the settlement patterns of the Late Toltec period suggest continuity not only with the later Aztec settlements but also with the previous Early Toltec communities. There are, as have been pointed out by others (*e.g.* Sanders 1965, Parsons 1974) and myself (Charlton 1973, 1975), some significant differences as well. The question of the nature of the expansion of Tula also enters the treatment of Late Toltec settlement patterns in the Basin of Mexico. All in all the post-Teotihuacan and pre-Aztec periods of the Basin of Mexico stand among the least understood cultural periods despite the amount of data available from recent survey.

Community Patterns

Erosion, Aztec occupation, modern occupation, and modern agricultural practices have obscured the internal patterns of all Late Toltec sites in the survey area. All information on structures and sites was obtained entirely from surface survey. No structures were excavated. The surface remains did not include any mounds with evidence of only Late Toltec utilization. Sites were defined primarily on the basis of sherd and rock distribution.

Structures

From the survey only inferences can be made about the structures within the Late Toltec sites. The information available suggests that they were small residential units similar to those of the later Aztec period. Non-residential units may also be present in the form of small pyramid bases of temples. These, too, seem to be similar to the later Aztec structures. The impression is one of very little specialized architecture present in the Late Toltec sites. The ceramics recovered in surface collections are consistent with this interpretation of Late Toltec sites in the southeast piedmont area of the Teotihuacan Valley as being primarily residential in nature.

Intra-site Patterns

Given the paucity of data on structures and the lack of definite differential distribution of ceramics and artifacts within the Late Toltec sites, it is difficult to say anything specific on the nature of the intra-site patterns except to note that internal variability would appear to be limited on the basis of the surface survey evidence and the analyzed surface collections. Other surveys in the Teotihuacan Valley have also noted the lack of internal variability within sites and the apparent lack of any overriding principle of settlement organization on the intra-site level (Charlton 1965).

Inter-site Patterns

The site complexity ranges from isolated rural residences (7), widely dispersed hamlets (3), dispersed hamlets (13), compact hamlets (5), small dispersed villages (1) to small nucleated villages (3). An examination of the distribution of these settlements indicates two major patterns. First, there is a tendency for the larger, more complex, and more densely occupied sites to occur close together in the western section of the survey area (TT-301, TT-309, TT-329a, TT-329b, TT-329c). Associated with these are a number of the different kinds of dispersed and smaller settlements also relatively closely arranged, (TT-300, TT-301, TT-305, TT-306, TT-308, TT-310, TT-324 to TT-328). This pattern might be interpreted as one of the local center(s) and proximate dispersed rural settlements of varying degrees of density and size. Second, to the southeast of this first band of settlement there is a second band composed only of rural settlements of varying degrees of density and dispersal, and situated at greater distances from each other than is the case for sites in the first band. This pattern might be considered as one of a rural hinterland of dispersed rural communities related to, and dependent upon, the more complex communities in the first band, but situated at greater distances due to ecological considerations, such as farming potential and techniques.

The basic overall inter-site pattern for the Late Toltec sites in this survey area is one involving a focal point of site complexity in the lower reaches of the Barranca de Huixcoloco and the adjacent ridgetop to the north, with a clustering of rural sites in the immediate area and a more distant band of rural sites further up the ridgetops to the southeast. This pattern is of some interest in terms of consideration of cultural continuity, or the lack thereof, between Early and Late Toltec sites. The lower reaches of the Barranca de Huixcoloco and the Oxtotipac hill immediately to the south were the focal points of the immediate post-Teotihuacan settlement. If this area had been a favorable microecological niche within the Teotihuacan Valley, during a time of reduced rainfall and the beginnings of an emphasis on settlement location with potential for permanent irrigation, floodwater irrigation, and possibly chinampa agriculture (Charlton 1973, 1975), then the maintenance of a small Early Toltec population in these barranca drainages on the edge of the Middle Valley alluvial plain would be expected and understood.

The transition from Early to Late Toltec in the Basin of Mexico has been explained in terms of the decline and dispersal of the population related to the integration of the area into the Tula sphere of influence or empire (Charlton 1973, 1975; Parsons 1974). In the north, there was a population buildup described as a reoccupation of lands abandoned at the fall of Teotihuacan (Charlton 1965) which was related to the proximity of this area to the major center of Tula (Parsons 1974).

It is obvious from any consideration of the available data on the post-Teotihuacan archaeology of the Basin of Mexico, that many complex events were occurring. It is thus difficult to generalize from one study in only a fraction of that area. However, I would suggest here, based on analogies with late eighteenth- and nineteenth-century population expansion within the survey area, that the Late Toltec period is one of increased population, probably as a result of local growth, and an expansion of that population from established centers into areas previously not utilized because of deficiencies in moisture. That is, the situation was one of local demographic recovery and population expansion during a period of climatic amelioration. Initial expansion was into lands immediately adjacent to the Early Toltec centers, lands which are relatively level and easy to cultivate. This also occurred during the nineteenth century (Charlton 1972). Subsequent expansion was into areas more difficult to cultivate and with less productive potential; the Late Toltec occupations were small and dispersed, and located in topographic settings suggestive of the

utilization of floodwater irrigation. This expansion is focused on the drainages of the Barranca de Huixcoloco and the Barranca San Lorenzo, the two drainages favored by the Early Toltec population. Occupation in the north is lighter. A reanalysis of the surface ceramics might reveal the presence of Atlatongo subphase materials alone in the Late Toltec sites in the higher elevations, thus tending to support the sequence of reoccupation. The population increase and settlement dispersal that began during the Later Toltec period provided the demographic base for the Aztec period, which continued expansion in population and settlements, and introduced a degree of nucleation unknown during the Early Toltec phase.

Zonal Patterns

The distribution of Late Toltec sites within the survey area is a result of historical and cultural ecological processes. The heavier distribution of sites, in general, and the complex and denser sites in the center and south of the survey area, is related to the Early Toltec focus on the drainages of the Barranca de Huixcoloco and the Barranca San Lorenzo as well as the greater productive potential of the southwest area due to its proximity to the Middle Valley alluvial plain. This is the area out of which the population spread in to the less productive north and east. In this movement, the distribution of the sites suggests the utilization of floodwater irrigation. The alignment of TT-312a, TT-312b, and TT-312c along a known drainage ditch, or floodwater canal, supports this interpretation as does the location of the sites between contour intervals 2400 and 2600 m, on barranca edges or in areas of the headwaters of barranca drainage systems.

Summary and Conclusions

As part of broad cultural developments in central Mexico during the Late Toltec period, the settlement patterns of the southeast piedmont of the Upper Teotihuacan Valley reflect broad trends of settlement dispersal, population increases in the north, cultural devolution from the Early Toltec Teotihuacan states, and the dominance of a new major center, Tula. Environmental amelioration may also be involved in a consideration of the Late Toltec phase with evidence indicating the increased utilization of lands dependent on rainfall moisture directly, or through floodwater irrigation. Although participating in these broad area-wide trends, the southeast piedmont survey area may also be viewed in a local developmental sequence with an emphasis on local population growth and dispersal outward from Early Toltec settlements. The settlement patterns are directly analogous to a similar population expansion and settlement spread during the late eighteenth century and the nineteenth century in the same area. In arriving at any overall pattern of cultural processes and ecological principles in the cycles of central Mexican civilizations, it is necessary to strike a balance between such local studies and area-wide studies. Multi-faceted complex developmental situations require the use of multi-faceted complex developmental models.

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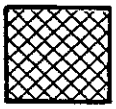
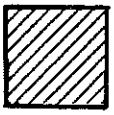
Key to Figure 2



- Areas surveyed between 1960 and 1969 by Sanders (1965), Parsons (1974) and Charlton (1972).



- Area surveyed by Millon and his associates (Millon 1973; Millon et al. 1973)

- Routes surveyed by Charlton in 1975 (Charlton 1976).

- Otumba Obsidian Source (Barranca de los Estetes, TA-79, and Cerro Soltepec)

Figure 1

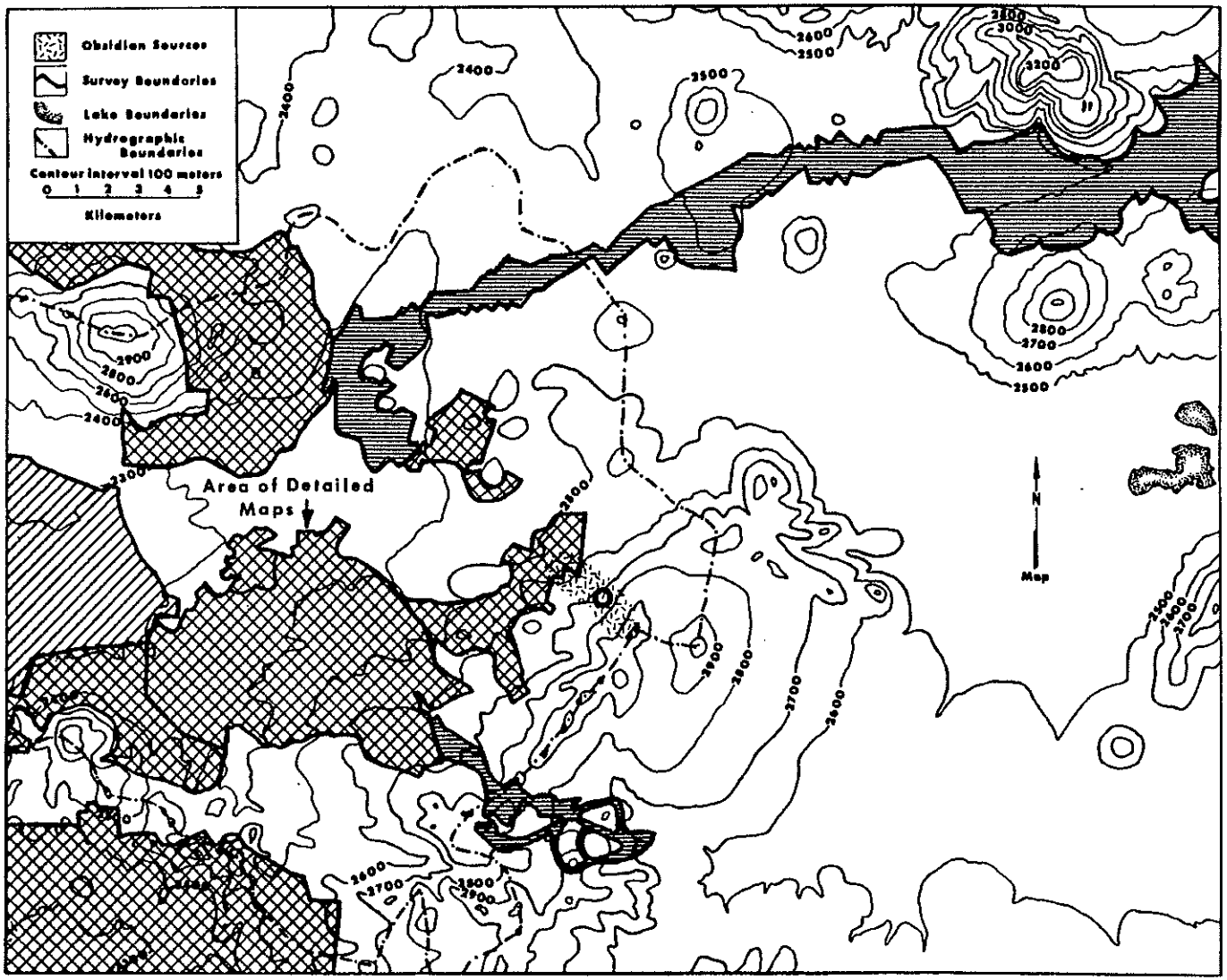


Figure 2

Areas Intensively Surveyed in the Eastern Teotihuacán Valley

- Sites With Continuous Late Toltec Occupation

 - Estimated Site Boundaries of Dispersed Sites

• - Late Toltec Component in Dispersed Sites

2350 - Contour Interval in Meters

325 - Site Number

a - Subdivision Within a Site

Figure 3

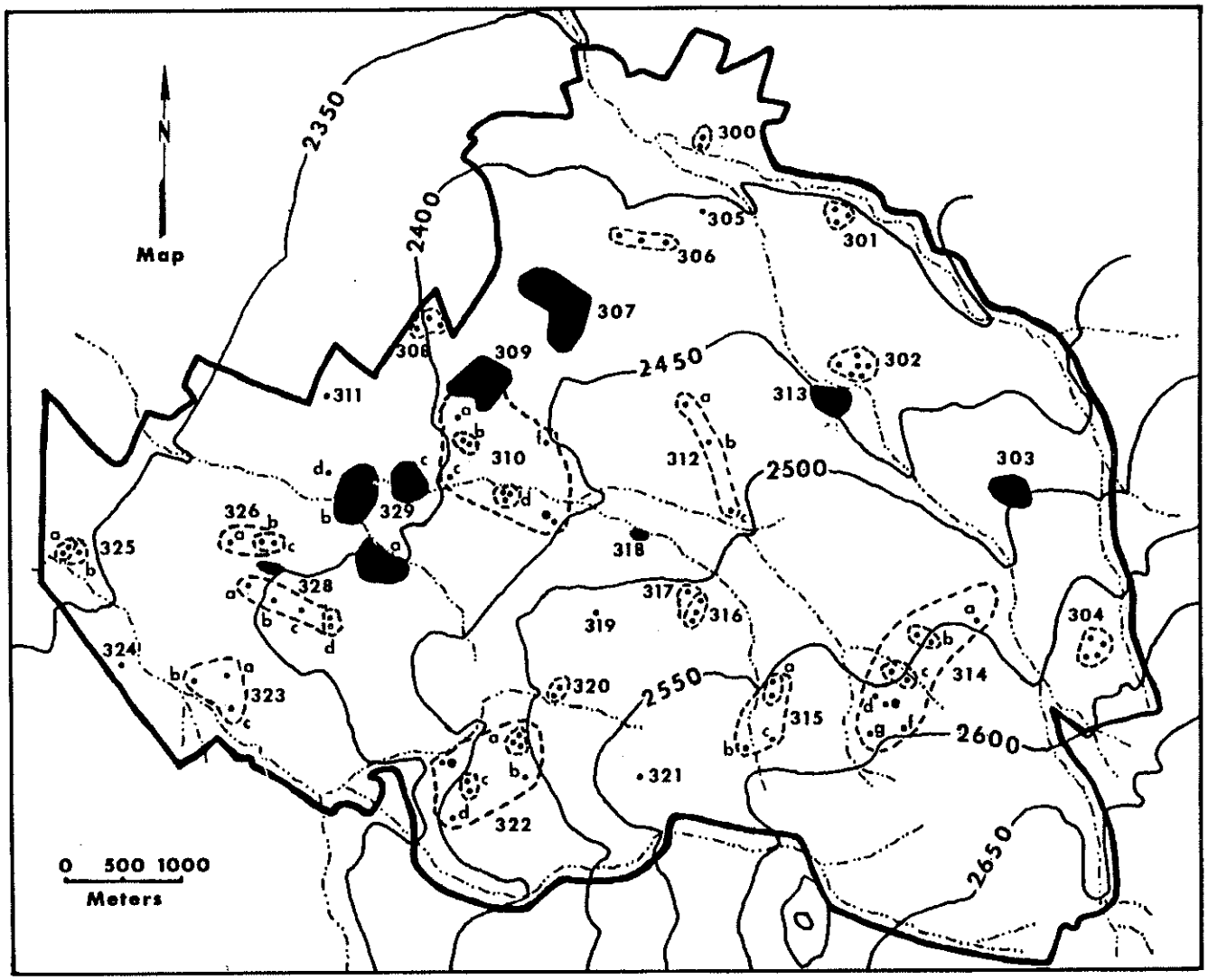


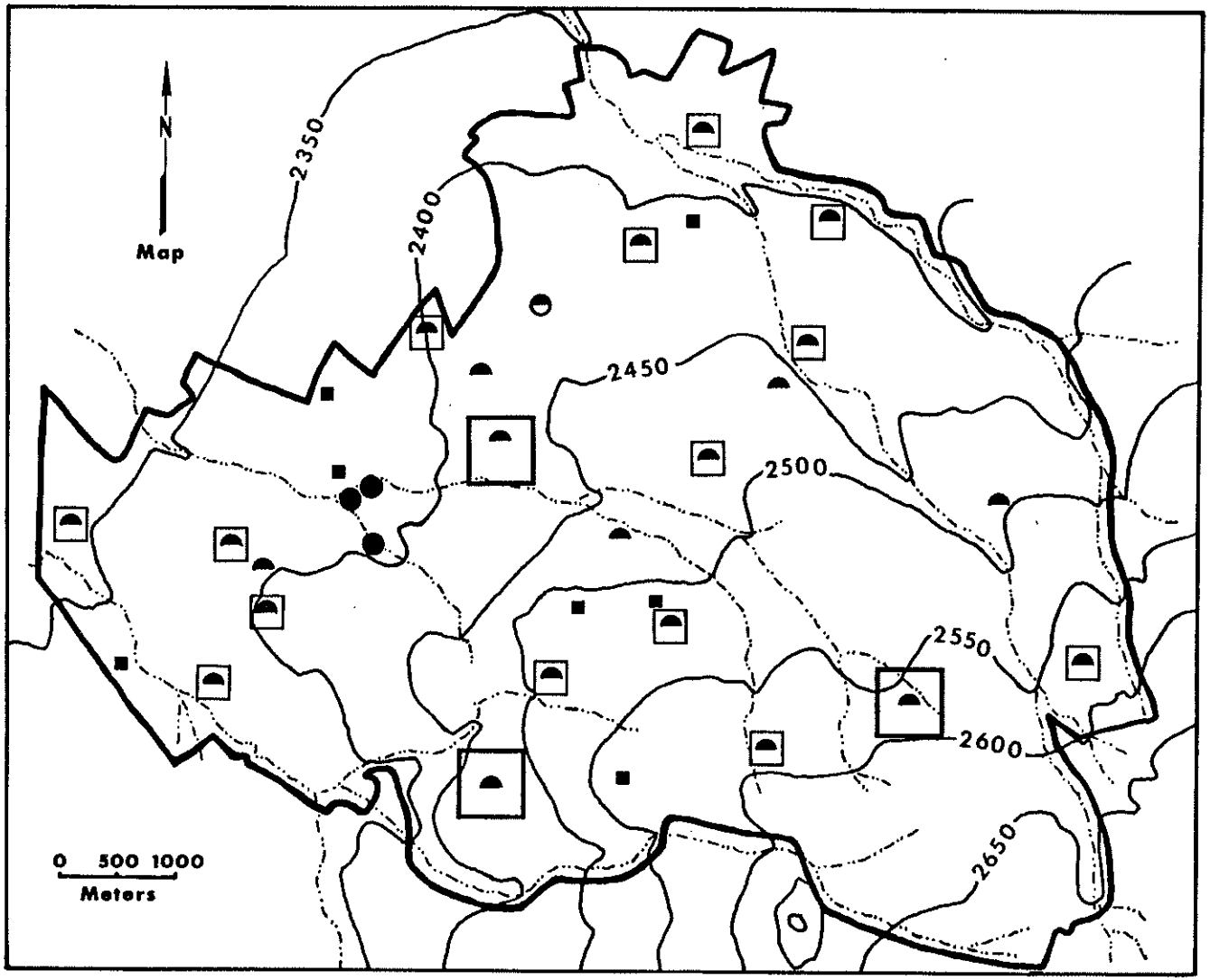
Figure 4

Upper Valley, Southeast Piedmont Late Toltec Settlements

- Small Nucleated Village
- Small Dispersed Village
- Compact Hamlet
- Dispersed Hamlet
- Widely Dispersed Hamlet
- Isolated Rural Residence

Figure 5

Figure 6



Upper Valley, Southeast Piedmont Late Toltec Settlement Types

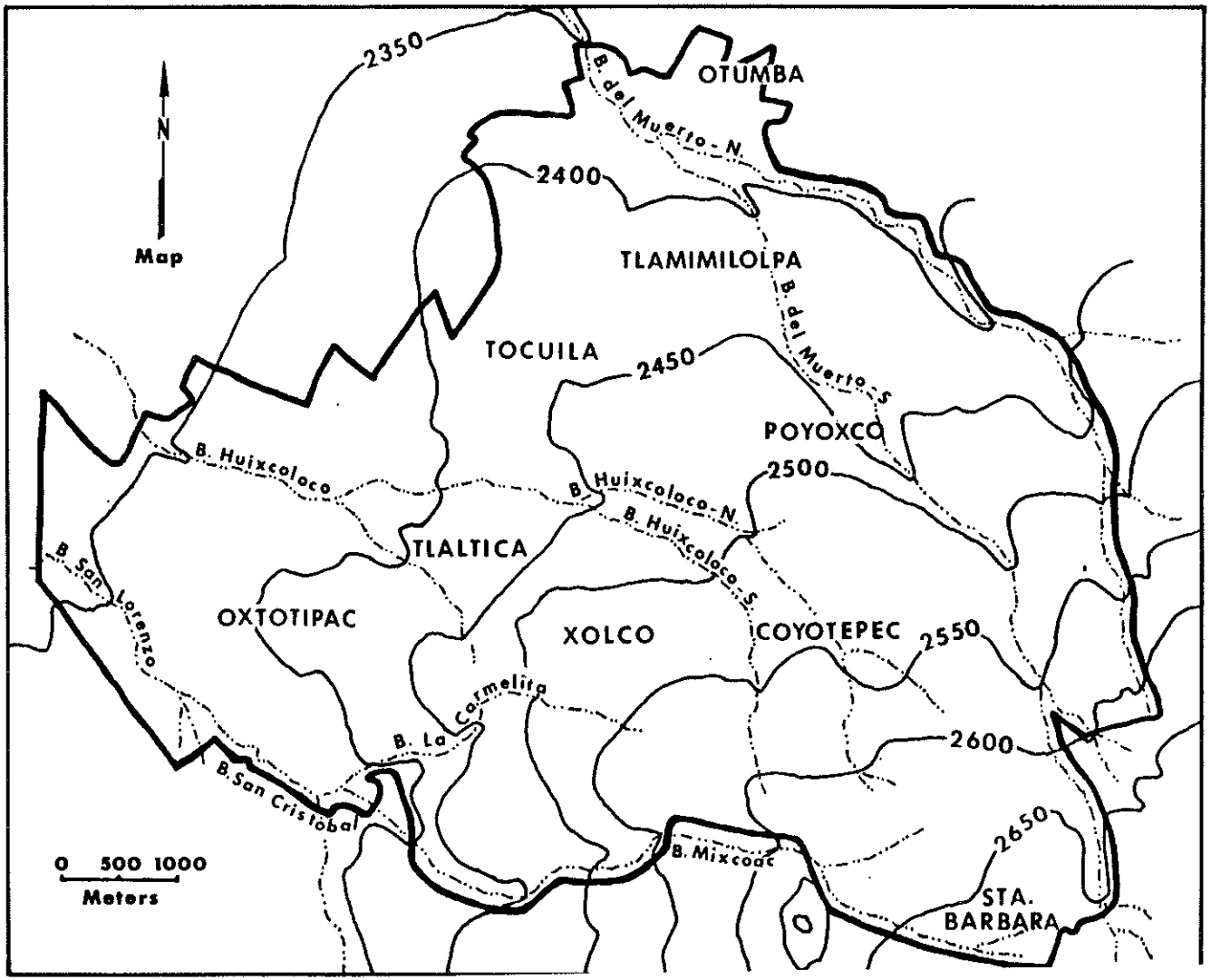


Figure 7

Upper Valley, Southeast Piedmont Survey Area

CHAPTER 10

FAUNAL REMAINS FROM ARCHAEOLOGICAL SITES IN THE TEOTIHUACAN VALLEY, MEXICO

by

Richard S. White, Jr.

TABLE OF CONTENTS

Page

LIST OF TABLES 579

LIST OF FIGURES 580

INTRODUCTION 581

DESCRIPTION OF SITES AND FAUNAS 581
- Late Formative Period 582
  - Tezoyuca (TF-101) 582
  - Cuanalan (TF-38) 583
- Teotihuacan Period 585
  - Maquixco (TC-8) 585
- Teotihuacan Period Sites Other than Maquixco 589
  - Venta de Carpio (TC-10) 589
  - Tenango (TC-49) 589
  - Mixcuyo (TC-5) 590
  - Tlatenco (TC-46) 590
- Post-Teotihuacan Period 592
  - Xometla (TT-21) 592
  - Oxtotipac (TT-82) 592

SUMMARY 596

BIBLIOGRAPHY 604

APPENDIX A—Zacatenco 606

LIST OF TABLES

Table		Page
1	Archaeological Sites in the Teotihuacan Valley with Faunal Remains	582
2	Faunal Remains from Tezoyuca	583
3	Faunal Remains from Cuanalan	583
4	Faunal Remains from Maquixco	586
5	Relative Numbers of Identified Bone Fragments from Maquixco	586
6	Pattern of Preservation of Dog and Deer Bone at Maquixco	588
7	Faunal Remains from Venta De Carpio	590
8	Faunal Remains from Tenango	590
9	Faunal Remains from Mixcuyo	591
10	Faunal Remains from Tlatenco	591
11	Teotihuacan Period Faunal Remains from La Nopalera	592
12	Faunal Remains from Xometla	593
13	Faunal Remains from Oxtotipac	593
14	Computations and Raw Data—Oxtotipac, Level 1	597
15	Computations and Raw Data—Oxtotipac, Level 2	599
16	Computations and Raw Data—Oxtotipac, Level 3	601
17	Oxtotipac, Mexico—Raw Counts and Percentages	603

LIST OF FIGURES

Figure		Page
1	Map of Teotihuacan Valley Showing Site Locations	610
2	Oxtotipac, Mexico—Graph of Frequency Values (values = percent of identified fragments)	611
3	Oxtotipac, Mexico—Graph of Frequency Values (values = percent of relative abundance, Perkin's $\bar{r}$)	612
4	Oxtotipac, Mexico—Graph of Frequency Values (values = Perkin's $\bar{r}$ converted to meat weight)	613

INTRODUCTION

The Teotihuacan Valley lies within the Central Mexican Plateau, in the Basin of Mexico, extending northeast from the edge of Lake Texcoco. The Teotihuacan Valley was the site of what may well have been the largest, densest Precolumbian population concentration in the New World. The city of Teotihuacan was the center of this concentration (Millon 1967) with numerous villages and hamlets scattered throughout the valley (Sanders 1965). It has been inferred, largely on the basis of population size and density, following a modified form of Wittfogel's argument (Price 1971), that Teotihuacan was supported by a hydraulic agricultural system based on maize cultivation. Much, if not all, of the concern with the subsistence systems of the Central Mexican area, and of Mesoamerica in general, has dealt specifically with this agricultural system.

Little attention has been given to the importance of animal protein in the diet of the Mesoamerican high civilizations. Flannery's (1968) work with the Tehuacan fauna published in preliminary form is an important exception. The present paper is also an attempt at generating data to fill the same void.[1]

For several reasons matters of theory will be largely ignored in this chapter. First, proper discussion of the theory underlying faunal analysis would increase the length by several times and, second, the faunal materials reported upon here are not sufficient for use as clear examples. The reader is referred to several recent summaries treating the theoretical and methodological aspects of faunal analysis: Chaplin (1971), Perkins (1973), and Zeigler (1972) can serve as introductions.

The data from two sites were large enough to allow the application of quantitative methods. In one case, that of Maquixco (TC-8) simple percentage comparisons were carried out; in the other case, that of Oxtotipac (TT-82), there was a large enough collection to allow the use of a newly developed quantitative method described by Perkins (1973). The present chapter represents the first use of this method on a New World faunal sample. A detailed explanation of the method will be found with the analysis of the Oxtotipac materials.

DESCRIPTION OF SITES AND FAUNAS

The reader is referred to Sanders' reports on the Teotihuacan Valley Project for a general description of the valley, the sites themselves, and of the general archaeological sequence (Sanders 1961, 1964, 1965, 1967; Sanders *et al.* 1975; see also the various site excavations described in Part 1 of this Volume). The sites dealt with are listed in Table 1, which provides a chronological and geographical description for each of the sites. The location of each of these sites is given in the map comprising Figure 1. Nine sites investigated by the Teotihuacan Valley Project have produced faunal material: two Late Formative sites, five Teotihuacan sites, and two Post-Teotihuacan sites.

---

[1]Editor's note: After the writing of this chapter, Starbuck wrote a doctoral dissertation on faunal remains from Millon's Mapping Project excavations in the City of Teotihuacan.

Table 1. Archaeological Sites in the Teotihuacan Valley with Faunal Remains

	Formative	Teotihuacan	Post-Teotihuacan
Upper Valley	---	---	---
Middle Valley	---	---	TT-82 Oxtotipac
Lower Valley	TF-38 Cuanalan	TC8 Maquixco TC-10 Venta de Carpio TC-5 Mixcuyo	TT-21 Xometla
Delta	TF-101 Tezoyuca	---	---
Cerro Gordo, North Slope	---	TC-46 Tlaltenco TC-49 Tenango	---

In the following pages, each site is briefly described, the faunal materials presented and interpretive comments made. Following the presentation for the sites in each time period are comments on the pattern evinced by those sites.

Late Formative Period

Tezoyuca (TF-101).

> The Tezoyuca type site (TF101) is located on top of a small isolated hill in the delta; a pyramid and a small area of very dense occupational debris are located on the top of the hill. . . .the great quantity of occupation refuse on and around the mound suggest an elite domiciliary function (Sanders 1965:95).

The site is located some 14 km south-southwest of the Pyramid of the Sun and about 8 km from Lake Texcoco. Table 2 lists the fauna recovered from this site.

The collection from Tezoyuca is small, and more significantly, every fragment was determinable. This indicates that only the larger, more complete bones were recovered and saved during excavation. By far the largest proportion of the bones (33 out of 49) or utilizable meat weight (approximately 90%) was provided by the deer with nearly all of the remainder accounted for by the dog. Six fragments of deer bone were evenly charred by fire; the sample is too small to determine if this was the result of the cooking technique employed. All of the animals present could have been taken within a short distance of the site; two species, the mud turtle and the duck, indicate the presence of water near the site, hardly surprising, given the deltaic location of Tezoyuca. None of the bones showed any butchering or skinning marks, but this might be accounted for by the small, and in most cases weathered, sample.

Table 2. Faunal Remains from Tezoyuca

Taxon	Number of Fragments
Emydidae (unidentified box turtle)	3
Kinosternon cf. sonoriense (Sonoran Mud Turtle)	4
Anatidae (unidentified duck)	1
Canis familiaris (domesticated dog)	6
Lagomorph (unidentified rabbit or hare)	1
Pappogeomys tylorhinus (pocket gopher)	1
Odocoileus cf. hemionus (Mule deer)	33
Total	**49**

Cuanalan (TF-38).

> The largest community of this time period (Cuanalan phase) is TF38, the type site at Cuanalan. It is located just within the alluvial plain in the lower valley. . . .The area covered by this dense settlement measures six hectares, so that the total population probably was between 250-300 people, a small village.
>
> One complete house and part of another were excavated. . . .The completely excavated house consisted of a single room four meters square. . .and a lean-to kitchen on the northern side (Sanders 1965:99).

The site is located about 11 km from the center of the city and about 4 km from the edge of Lake Texcoco. The fauna recovered is presented in Table 3.

Table 3. Faunal Remains from Cuanalan

Taxon	Number of Fragments
Kinosternon cf. sonoriense (Sonoran Mud Turtle)	1
Emydidae (unidentified turtle)	1
Chelonidae (unidentified sea turtle)	1
Canis familiaris (domesticated dog)	7
Odocoileus cf. hemionus (Mule deer)	1
Pappogeomys tylorhinus (pocket gopher)	3
Lepus sp. (Jackrabbit)	1
Equus sp. (horse, possibly fossil)	6
Total	**21**

Although only 21 identifiable specimens were recovered, eight forms were determined to be present. Surprisingly, only a single fragment attributable to deer was

recovered. This is undoubtedly due to the small sample size. As at Tezoyuca, all the animals could have been taken near the site, and deer and dog would have been the most important species in the diet. The presence of a sea turtle during the Formative period in the Valley of Mexico is of considerable interest. Not enough of the animal was recovered to allow a more specific identification; it cannot be determined from which coast the turtle might have come. Trade with both the Atlantic and Pacific coasts is indicated in shell material reported by Vaillant for Ticoman (1931) and for El Arbolillo (1935). The horse material recovered may either be fossil, derived from the Pleistocene sands which underlie the site, or may be later intrusive material. It would seem more likely that the material is fossil, since the preservation is similar to other known fossil material from the same area; intrusive horse material from nearby sites is preserved as chalky-white, soft bone, not at all like either the archaeological bone or the fossil material.

Other Formative period sites for which faunal materials have been reported include El Arbolillo and Ayotla (Tolstoy and Paradis 1970), Zacatenco (this paper), and Tlatilco (Lorenzo 1965). Flannery (cited in Tolstoy and Paradis 1970) has identified the faunal materials from El Arbolillo and Ayotla. While quantitative data are lacking, they do note that fish are totally lacking from both sites, and that aquatic animals (turtles and birds) are absent from the lower levels at El Arbolillo, the earlier of the two sites.

The formative faunas described here, along with those described elsewhere, all seem to fall into a pattern. One surprising fact is evident: Formative period sites, including those from the shores of Lake Texcoco, have not produced fish remains. Lake Texcoco does not seem to have been exploited for its food resources during Formative times. Animals which would have been common along the streams tributary to the lake, or common in the swampy lake edge were used. Tolstoy and Paradis (1970) suggest, and the present author agrees, that the people first occupying the Lake Texcoco area during Formative times and the Teotihuacan Valley during the Late Formative times, needed a certain period of adjustment to the local ecology and that during this period of adjustment a more generalized pattern of exploitation, which did not include fishing the lake, was followed. As the people became more familiar with their environment, this pattern was shifted to include use of the lake resources, although even at a much later time, during the Teotihuacan period, fish do not seem to have been an important foodstuff to the Teotihuacan Valley peoples.[2]

Kinosternon cf. sonoriense, the Soronan mud turtle, was recovered at both Cuanalan and at Tezoyuca. Guilday (1959:373) states that this turtle is inedible. The presence of this turtle at most Formative period sites for which we have data would argue that it was being used a food resource. Sahagun describes the natives stalking turtles, sneaking up on them and flipping them upon their backs to be retrieved at leisure (cited in Dibble and Anderson 1963:60). Although Martin del Campo, quoted in Dibble and Anderson (1963:59), identifies this turtle as *Kinosternon*, such an identification seems highly unlikely, given the usual small size and abundance of the mud turtle. It is more likely that the turtle being referred to by Sahagun was a larger species, perhaps a large *Pseudemys*, or even more likely the common snapping turtle, *Chelydra serpintina*, which may attain weights of 10 to 50 lbs. No remains of the snapping turtle were identified from the Teotihuacan faunas, nor have any been reported from other sites.

---

[2]Editor's note: Our recent excavations (1980) in a compound at Teotihuacan negate the statement. The sample referred to is one from Tlajinga 33 and my comment is based on a careful examination of floatation samples (by Randolph Widmer), a technique not yet developed when the Teotihuacan Valley Project was conducted. Apparently most fish taken were of extremely small size and this explains their virtual absence from our Teotihuacan Valley Project samples.

Teotihuacan Period

Maquixco (T-C8). This site has been described by Sanders in a preliminary report on the Teotihuacan Valley Project (1965) as well as in an interpretative summary presented before the *Onceava Mesa Redonda* held in Mexico City in 1966 (Sanders 1967).

> TC8 is a site located on the gently sloping North Piedmont of the Lower Valley at the base and on the flank of a small hill. . . .It is situated 1.5 km north of the edge of the alluvial plain and 5 km west of the Sun Pyramid (Sanders 1967:124).

The site consists of some 60 house mounds and at least one civic structure, a small pyramid. Three house units were excavated; only one, Mound 4, was completely uncovered. Sanders (1967:126) estimates the size of the village at 140 to 150 families totaling about 500 or 600 persons.

Mound 4 has been interpreted as an elite residence, based on its compact ground plan, the presence of *tablero-talud* architecture, and painted murals, and on the lack of a recognizable hearth, indicating the absence of a kitchen. Both of the other house units were somewhat larger than Mound 4 and differed in layout and architecture. Both contained hearth areas and large central patios.

Maquixco is thought to have been a maguey processing village; Sanders bases this interpretation on the large number of so-called maguey rasps chipped from obsidian (Sanders 1967:134).

Maquixco produced the second largest faunal sample of any of the sites excavated in the Teotihuacan Valley. There were 183 bones identifiable to at least the class or order level; and an additional 160 fragments were identified as simply large mammal, in this case almost surely deer. Thus the total sample for Maquixco amounted to 343 items, of which 53% were identifiable. Tables 4 and 5 present the data from the faunal analysis.

Visual inspection after preliminary tabulation led to the establishment of the following seven groups of primarily size categories, which might be considered as "food types." Group 1 consists of the deer (*Ordocoipleus sp.*), the American antelope (*Antilocapra americana*) plus all of the unidentifiable bone included in the large mammal category of Table 4. Group 2 consists of medium sized animals, the dog (*Canis familiaris*) and an unidentified large felid represented in the collection by a single phalange. Group 3 contains the rabbits and hares (*Sylvilagus sp.* and *Lepus sp.*). Group 4 consists only of the pocket gopher (*Pappogeomys tylorhinus*) known locally as the *tuza*. This groups was distinguished from the preceding groups on the basis of probable differences in difference in the method of collecting them. Group 5 contains the turkey (*Meleagris gallopavo*), whether domesticated or wild. Group 6 includes all other species of birds, in this case all members of the family Anatidae, the ducks, with the inclusion of a single example of a grouse (Phasianidae). Finally, Group 7 was established for the three fish bones of at least two species present in the collection.

The number of bones in each group has been expressed as a percentage of the total number of bones from the site (Table 5, column 2). Relative meat weight percentages were calculated by multiplying each of the percentages in the previous operation by an average meat-weight per individual, and expressing the result as a percentage (Table 5, column 3). Any result of less than 1% was listed simply as "less than 1%" rather than interjecting a false sense of accuracy into the computations.

Table 4. Faunal Remains from Maquixco

Taxon	Number of Fragments
Odocoileus sp. (white and/or black tailed deer)	47
Antilocapra americana (pronghorn)	4
Canis familiaris (domesticated dog)	73
Felidae, indeterminant (unidentified cat)	1
Sylvilagus sp. (rabbit)	8
Lepus sp. (jack rabbit)	7
Pappogeomys tylorhinus (pocket gopher)	14
Meleagris gallopavo (turkey)	14
Anatidae (ducks, etc.)	4
Phasianidae (grouse)	1
Aves indeterminate (birds)	10
Testudinid (turtle)	1
Teleost spp. (bony fishes)	3
Undetermined large mammal	160
Total	**347**

Table 5. Relative Numbers of Identified Bone Fragments from Maquixco

Group[a]	Sample Size	% of Total	% Total Meat[b]
1. Large mammal	211	61	93
2. Medium mammal	74	21	6
3. Lagomorphs	15	4	<1
4. Pocket gopher	14	4	<1
5. Turkey	14	4	<1
6. Wild birds	15	4	<1
7. Fish	3	1	<1
Total	**346**		

[a]See text for a description of the groups.
[b]Computed on the basis of utilizable meat weight per individual.

The large mammals of Group 1 contributed 93% of the meat weight represented, in spite of the fact that the remains of dogs were also extremely common. Dogs provided potentially only 6% of the meat for consumption, while all the other animals represented only 1% of the total meat weight. It is interesting to note that a society based largely upon a monocrop agricultural system should base their meat protein intake upon a single animal; it would seem that the trend towards specialization characteristic of increasing socioeconomic and sociotechnic complexity affected even the meat procurement and consumption systems. In addition, the increasing reliance upon deer probably accompanies the increase in agricultural activities; deer often constitutes a "weed" in crop fields. Thus,

as more and more time is spent in the fields, it becomes increasingly economical (in the sense of more return for less expenditure) to simply harvest the deer as they wander into the fields.

The dogs were clearly domesticated and were undoubtedly killed from a locally abundant stock. There does appear to be an overrepresentation of cranial material, mandibles and maxillae compared to other skeletal elements (Table 6). The cranium appears to have been broken in order to get at the brains; it would seem that subsequent to such butchering the teeth and jaws were saved and kept around the house. Very few of such bones were worked, the exceptions being a few perforated carnassial teeth.

The sample of turkey bone obtained was too small to allow a determination as to whether domesticated or wild birds were present. Both male and female birds of all ages seem to be represented, suggesting at least, that the birds were domesticated. Given that domesticated birds would have been heavier than wild ones, one could anticipate changes in the bone structure of the weight-bearing aurticular surfaces, particularly the tibio-tarsus and tarso-metatarsus. If this were so, then perhaps the question of identifying domesticated animals could be approached through the method described by Drew *et al.* (1971). A much larger sample is needed, especially of known wild and domestic animals, before such an investigation can be undertaken.

The pocket gophers recovered may to some degree represent intrusive elements in the fauna; such animals are extremely common at the site today. It does seem probable that at least some were collected to be eaten. That pocket gophers constitute a potential food source is noted by Villa (1959), who reports that a *tucero* could catch ten or more of the animals a day. Since there is no evidence of charring or burning of the bones recovered, nor are there any butchering marks on the bones, it must be concluded that if the animals were indeed eaten that they were prepared in such a way as to preclude the bones being burned. Stewing in a pot, for example, might disarticulate the bones but would leave them relatively unaltered. Pocket gophers would have been very common in the agricultural fields and around the residences; they certainly must be considered as potential if not an actual food source.

Three fish vertebrae were recovered from Maquixco. At least two species are represented; they are not further identifiable except to note that they are freshwater, bony fishes. The lack of fish bones from Maquixco, and indeed from all of the Teotihuacan period faunas confirms the pattern identified for the Formative period sites mentioned earlier (see previous editor's note). Although the lake today is saline and supports a reduced fish fauna, the further back in time one moves the less saline the lake would have been, and the richer the fish fauna. Mayer-Oakes' excavations at El Risco, a Teotihuacan-Post-Teotihuacan site on the shore of Lake Texcoco failed to recover any fish bone (Mayer-Oakes 1959:373). Fish are known to have been used in Aztec times; Sahagun describes fish being taken in the lake and sold in the market place (cited in Dibble and Anderson 1961:80). The fishing methods described are remarkable for their variety; nets, snares, fishhooks, fishweirs, spears, and the fisherman's hands are all mentioned by Sahagun (cited in Dibble and Anderson 1961:80). The lack of fish bone from sites in the Teotihuacan Valley and from the Texcoco region is, therefore, an anomaly and should be kept in mind as other faunas are investigated, and particularly when other sites are excavated. Fine screening, screen washing or floatation may perhaps yield samples of fish bone for analysis.

The distribution of faunal remains within the site is of interest. In terms of the amount of bone recovered, the three house mounds produced roughly comparable amounts;

Table 6. Pattern of Preservation of Dog and Deer Bone at Maquixco

Element	Odocoileus	Canis
Skull		
vault	--	--
basicranium	---	---
maxilla	1	5
mandible	3	5
loose teeth	---	10
Vertebrae		
atlas	---	1
axis	---	---
cervical	---	2
thoracic	1	---
sacrum	---	---
lumbar	2	---
caudal	---	---
Foreleg	3	2
scapula	2	7
humerus	2	7
radius	---	3
ulna	2	4
carpals	---	---
first phalange[a]	2	---
second phalange	1	---
ungual phalange	---	---
phalange, indet.	---	6
Hindleg		
pelvis	1	3
femur	---	2
tibia	2	3
fibula	---	---
astragalus	3	---
calcaneum	1	1
metapodial[b]	4	1
Ribs	4	---

[a]Includes phalanges from both manus and pes.
[b]Includes both metacarpals and metatarsals.

distribution within each mound unit differed. House Mound 4, which according to Price (field notes and personal communication) had no definable kitchen area, showed no significant concentration of bone material when all faunal remains were mapped out on a plan view of the site. The other two mound units showed high concentrations of bone in just those areas identified as kitchens by the presence of hearths. Thus, Sanders' suggestion that Mound 4 served an elite domiciliary function gains some support from the distribution of the faunal remains. It is possible that no food was prepared within House 4; food prepared elsewhere may have been brought into the house for consumption. The bone refuse at Mound 4 can be termed "consumptive" refuse as opposed to "perparative" refuse. The two types of bone material should be identifiable independently in terms of the

pattern of preservation, that is, which bones of the skeleton are present, patterns of butchering, size of fragments, etc.

Daly (personal communication) has suggested that preparative refuse normally will be found at some distance from consumptive refuse; the distance that separates the two loci can be taken as indicative of the degree to which these two activities are locality-specific. In addition, the distance between the locality at which an animal is killed and the locality at which it is prepared and consumed is by definition the degree to which the Schlepp Effect is manifest (Daly 1969:149). Combining an analysis of preparative and consumptive refuse with other room-use data, such as that introduced by Longacre (1970) for Carter Ranch sould provide detailed information on use-specific localities.

In summary, then, the following comments can be made concerning the diet of the inhabitants of Maquixco. Most of the meat consumed was provided by the white-tailed or black-tailed deer (*Odocoileus virginianus* or *O. hemionus*), which were probably taken in the corn fields or around the maguey stands as a concomitant to farming activities. Other animals were available and were ocasionally used; such food would have been critical at times when the agricultural system failed because of environmental fluctuations such as delayed onset of rainfall or early frosts. Food was butchered at the individual houses; it is likely that each household provided its own meat and that there were no full-time hunters or butcherers. Other animals occasionally utilized were probably also incidentally procured and hunting them was likely not a regularly scheduled activity.

Teotihuacan Period Sites Other than Maquixco

Four Teotihuacan sites, in addition to Maquixco have produced faunal remains. These collections are all much smaller than the collection from Maquixco, and are comparable in size to the Formative collections.

Venta de Carpio (TC-10). This site is located 100 m from the Aztec period shorelines of Lake Texcoco, and was presumably even closer to the water's edge during Teotihuacan times, although Sanders (1965:8) has suggested that the shoreline of the lake had remained relatively stable during the ceramic occupation of the area. Sanders has also suggested that the site served as a salt-making station (Sanders 1965:109). The fauna recovered and submitted for identification consists of 71 fragments, of which 36 (51%) are identifiable to at least the ordinal level (Table 7).

Although the site is located on the shore of Lake Texcoco, we again note the lack of fish bone in the sample. The single horse bone is most probably later intrusion.

Tenango (TC-49). Tenango was a large nucleated village located on the Cerro Gordo, North Slope. On the basis of limited excavation, Sanders reports that the layout and architecture resemble that at Maquixco, but at Tenango were more poorly done with the rooms being generally smaller (Sanders 1965:116). The site was heavily reworked during Aztec and modern times; the presence of horse in the fauna is undoubtedly the result of such later occupation. The sample from Tenango consists of 69 fragments of which 45 (65%) were identifiable. If the 26 fragments of horse bone are discounted, the Teotihuacan period sample becomes 43 items. The small size of this sample precludes further discussion (Table 8).

Table 7. Faunal Remains from Venta De Carpio

Taxon	Number of Fragments
Odocoileus sp. (white or black tailed deer)	1
Pappogeomys tylorhinus (pocket gopher)	11
cf. Anas sp. (duck)	1
Aves indet. (unidentified birds)	7
Rodentia indet. (unidentified rodents)	7
Reptilia indet. (unidentified reptiles)	8
Equus sp. cf. caballus (European [?] horse)	1
Unidentified large mammal	35
Total	**71**

Table 8. Faunal Remains from Tenango

Taxon	Number of Fragments
Odocoileus sp. (white or black tailed deer)	2
Canis familiaris (dog)	12
Pappogeomys tylorhinus (pocket gopher)	2
Meleagris gallopavo (turkey)	1
Lagomorph sp. (rabbit or jackrabbit)	1
Aves indet. (unidentified bird)	1
Equus sp. cf. caballus (European [?] horse)	26
Undetermined mammal	24
Total	**69**

Mixcuyo (TC-5). When first discovered, this site was thought to be unique among the sites known from the Teotihuacan Valley, as it consisted of several hundred semi-lunar terraces on the slope of the hill. Later survey and excavation determined that these *trincheras* structures were the result of a short-lived and unsuccessful olive growing venture in historic times. The Teotihuacan period occupation noted is underneath, and not associated with the terraces. Mixcuyo is located well back from the edge of the alluvial plain, and is fairly close to the city of Teotihuacan (Sanders 1965:108-109).

Only 31 fragments of bone were submitted to the writer for analysis; an additional 24 fragments are recorded as having been discarded in field, providing a total sample of 55 items. The sample is too small to allow for more detailed treatment (Table 9).

Tlatenco (TC-46). Sanders provides little data on this site other than to note that it is one of the largest villages encountered, and that it is located on the Cerro Gordo, North Slope. Only 12 specimens were submitted to the writer, and their identifications are listed in Table 10.

Table 9. Faunal Remains from Mixcuyo

Taxon	Number of Fragments
Odocoileus sp. (white or black tailed deer)	3
Pappogeomys tylorhinus (pocket gopher)	1
Aves indet. (unidentified bird)	4
Unidentified small mammal	1
Unidentified large mammal	22
Discarded in the field	24
Total	**55**

Table 10. Faunal Remains from Tlatenco

Taxon	Number of Fragments
Aves indet. (unidentified bird)	8
Equus caballus (European horse)	3
Odocoileus sp. (white or black tailed deer)	1
Total	**12**

A number of other Teotihuacan period faunas have been reported form areas close to the Teotihuacan Valley. Mayer-Oakes' excavations at El Risco produced *Canis sp.*, *Kinosternon sp.*, *Pappogeomys cf. merriami*, and a unidentified bird (Guilday 1959:373, Appendix in Mayer-Oakes). Ticul Alvarez's analysis of the bone remains from the cave of La Nopalera in Hidalgo for the Teotihuacan period are summarized in Table 11. This fauna is much more extensive than any other reported for a Teotihuacan period site, with the exception of the materials reported by Flannery (1967) for the Tehuacan caves. Cave faunas, even those from caves which were occupied by man, are often more accurate reflections of the local animal population since the action of predators such as owls who also inhabit the cave causes accumulations of the remains of animals not normally used by man.

There are not at this time enough carefully documented faunal collections available for the Teotihuacan period (nor indeed for any time period in Mesoamerica) to discern regional variations or changes through time of the adaptive strategy involved with the procurement of animal protein.

Table 11. Teotihuacan Period Faunal Remains from La Nopalera[a]

Taxon		% of total indentified fragments
Sylvilagus sp.	rabbit	24.6
S. floridanus	cottontail	1.9
S. cunicularis		10.7
Lepus cagottis	jackrabbit	4.3
Spermophilus mexicanus		2.4
S. Variegatus		*0.6*
Sciurus sp.	tree squirrel	0.3
Thomomys umbrinus	pocket gopher	0.2
Pappogeomys sp.	pocket gopher	3.4
Peromyscus sp		present
Sigmodon sp.		present
Neotoma albigula		5.9
Canis sp.	coyote or dog	7.1
Taxidea taxus	badger	0.9
Mephitis marcoura	skunk	0.2
Lynx rufus	bobcat	0.6
Tayassu tajacu	peccary	3.7
Odocoileus sp.	deer	14.9
Odocoileus virginianus	white tailed deer	4.9
Odocoileus hemionus	black tailed (mule) deer	4.8
Antilocapra americana	pronghorn antelope	3.7
Ovis/Capra	sheep/goat	0.7
Aves	birds	2.6
Reptilia	reptiles	1.6
Total number of identifiable bones — 534		

[a]Adapted from Alvarez (1968:Table 2).

Post-Teotihuacan Period

Xometla (TT-21). Xometla (TT-21) "...is a huge, sprawling site located on the eastern piedmont of the lower valley between the two modern villages of Xometla and Tepetitlan" (Sanders 1965:123). The site consists of over 100 mounds over an area of 1200 m by 400 m. Sanders estimates a population of between 1250 and 2500 persons for the site. Table 12 presents the faunal remains indentified from this site. Preservation of the material recovered here is clearly different from the material at other sites, leading to the speculation that these bones may be very recent in deposition.

Oxtotipac (TT-82). This site is located at the southern edge of the Teotihuacan Valley piedmont in the foothills of the Patlachique Range, at the site of present-day Oxtotipac (Fig. 1). This is included within Sanders' (1970:78) Middle Valley zone whose specialized resources include good quality potter's clay and gravel for architectural purposes. This site itself is located on the side of a low hill of volcanic gravel known locally as *tezontle*. A number of caves were dug into the fill in Teotihuacan period times and were later used as living quarters during the Oxtotipac subphase and later.

Table 12. Faunal Remains from Xometla

Taxon	Number of Fragments
Equus sp. (European horse)	3
Unidentified large mammal	2
Discarded in the field	3
Total	8

The site, when excavated, was physically stratified; a prepared clay floor was encountered at a depth of about 40 cm, above which the fill was dark, dusty, and contained most of the cultural material. Below the clay floor the deposit consisted of loose gravel with occasional artifactual material to a depth of over 1 m. The deposit was excavated in arbitrary 25 cm levels, with adjustment made to conform to stratification. Several features were located and excavated with the resultant material kept separate in the present analysis (the above data from Sanders 1961, and personal communication).

Sanders has provided the following data on stratigraphy based on analysis of the ceramic materials. Level 1 contained a mix of about 50% Oxtotipac phase ceramics and 50% Aztec, Colonial and modern material. Level 2 produced mostly Oxtotipac ceramics, and deeper levels were also Oxtotipac. Gross identification of the Oxtotipac material is presented in Table 13.

Table 13. Faunal Remains from Oxtotipac

Taxon[a]	Number of Fragments
Testudinid indet. (turtle, possibly Kinosternon)	
Serpentes indet. (unidentified otalid snake)	
Meleagris gallopavo (turkey)	
Undetermined strigid (owl)	
Undetermined anatid (duck)	
Unidentified cracid (quail, possibly *Collinus*)	
Lepus sp. (jackrabbit)	
Sylvilagus sp. (rabbit)	
Pappogeomys cf. tylorhinus (pocket gopher)	
Unidentified large sciurid (squirrel or ally)	
Canis familiaris (dog)	
Odocoileus sp. (white or black tailed deer)	
Ovis/Capra sp. (sheep/goat—immature and fetal individuals)	
Bos taurus (European domestic cow)	
Equus caballus (European horse)	
Total	728

[a]In addition, items of uncertain provenience were examined.

During the past two years, the writer has been associated with the Faunal Research Group of the Department of Anthropology of Columbia University under the leadership of Dexter R. Perkins, Jr. Perkins and his associates, including a statistician, have been concerned with developing methods of handling quantitative data derived from faunal collections, and have been using a method that they have informally called the Relative Importance (RI) method. This method has been developed for, and so far used only on, faunal materials from the Old World. This paper marks the first attempt to apply the method to a New World fauna.

Perkins (1973) has outlined the method used in calculating the RI for each species at a site; since his publication is rather obscure, not being available in this country, I will outline the method in some detail here in presenting the Oxtotipac analysis.

The calculation of the relative importance of each species involves estimating the percentage contribution of each to the diet, either in terms of the number of individuals or in terms of meat weights. It is important to note that this method avoids ascribing any absolute value to either the number of animals or the amount of meat represented at a site. Additionally, this method involves a way of removing over- and under-represented bones from each species, factors which can be due to differential preservation or to cultural factors such as the use of specific bones for non-dietary purposes.

The first step in this method is to list the frequency of occurrence of each element for each species by stratigraphic context. Exactly what constitutes an element is determined by the material itself, and is not necessarily a complete bone. In this case, any recognizable fragment of a bone has been recorded as a separate occurrence of that bone, no matter how small the fragment. Perkins (1973 and personal communication) has pointed out that unless there exists excellent reason to believe otherwise, each fragment must be considered to have come from a different bone and each bone to have come from a different animal (note that this is the logical end product of Grayson's [1974] maximum distinction method for estimating the Minimum Number of Individuals [MNI]). Grouping fragments or bones as is done in the MNI methods, can be done only under certain specific conditions which, in practice, are seldom met (Perkins 1973).

Next, the relative number of elements present is computed by dividing the observed frequency for each element by the number of elements expected per individual animal. This corrects for two possible sources of error: the differing number of the various types of bones within a single individual (a cow has many ribs but only two humeri) and the fact that different species have different numbers of bones in homologous structures (there are more bones in a pig's foot than in a cow's foot). I have found it best to discount ribs and vertebrae other than the atlas and the axis, since there are a large number of each in a given skeleton, since most of them cannot be exactly placed without a great expenditure of time and energy, and I have found that even very small pieces of such bones are usually identifiable as being from a rib or from a vertebrae, while comparitively small fragments of, for example, the humerus are not so easily attributable. The value obtained by dividing the observed by the expected frequencies is here termed "r" and expressess the relative abundance of that element when compared with the other elements of that species. The final step in this part of calculation is to list all the r values obtained for the given species and to eliminate values which seem either too high or too low. Visual inspection is important here; the values tend to cluster and extreme values are easily identified. If all the values for a given species cluster then one can either proceed with the analysis without eliminating any values, or one can make a simple quartile division, keeping only the median two quarters for the next step. Reference to Table 14, for example, will show that the values obtained for deer in Level 1 at Oxtotipac range from 0.5 to 19.0. If, however,

we eliminate the two smallest and the two largest values of r, we have a much tighter range: 1.0 to 3.5. It is important that all r values for each species be presented in a faunal report so that the accuracy in eliminating over- and under-represented values can be assessed.

Next one adds all the r values for a given species in a given level, and divides by the number of r values so added. The resultant value, which can be expressed as $\bar{r}$ (I am here naming "Perkins' 'r'"). This value, an average of the r values for the particular species, can be expressed a percentage of all such $\bar{r}$ values for that level of the site. In the case cited above (refer to Table 14) we find that the $\bar{r}$ value for deer in Level 1 is 1.45. This computes at 22.8% of the total of all $\bar{r}$ values for that level. Deer have thus been shown to constitute 22.8% of the number of animals represented by the bones in Level 1.

One final computation can be made. If we take either the $\bar{r}$ values for each species, or the percentage computed for each species from $\bar{r}$, multiply by an estimated meat weight per individual animal, a relative value which we can term $\bar{r}w$ results. Each $\bar{r}w$ value can then be expressed as a percentage of the sum of all such $\bar{r}w$ values for that level of the site. In our example above (Table 14) in which deer constitituted 22.8% of the individual animals present, deer accounts for 87% of the meat weight represented and which was potentially available for consumption.

We have thus derived two formulae (modified after Perkins 1973):

$$RI = (\bar{r}/\Sigma\bar{r}) \times 100 \qquad (1)$$

gives the percentage importance of a given species to the total number of individuals of all species present at a given site in a given level, and

$$RI(w) = (\bar{r}w/\Sigma\bar{r}w) \times 100 \qquad (2)$$

gives the relative importance of each species as a percentage of the total meat weight potentially available. Again it must be noted that these values are all relative, and that no absolute measure of the number of animals or the amount of meat represented has been calculated. One of the reasons for avoiding such numbers is that various attempts have been made to derive either the length of occupation or the numbers of occupants from such data. Guilday (1959) has presented a convincing argument against such calculations.

Perkins (1973) has stated that this method worked well with samples as small as 1000 bones. Uerpmann (personal communication) believes it to be the most accurate method when used on small samples. One of the advantages of this method over the standard MNI method is that a large portion of the faunal material from any one species, and hence from the site collection as a whole, is used in the calculations. MNI computations use only a single bone for a given species; RI computations utilize several bones at least.

Having detailed the method of analysis, a brief discussion of the data from Oxtotipac is in order here. Tables 14 to 17 contain the raw data and computations for each level of Oxtotipac, as well as graphs plotting the data. The four most common animals from the deposits at Oxtotipac—deer, dog, rabbit, and pocket gopher—were selected to be compared level by level using Perkins' r, and are presented in Figures 2 to 4.

It is apparent that the major part of the animal protein represented came from deer. Dog supplied a smaller amount, while rabbits and pocket gophers accounted for relatively little of the available meat.

The patterns shown by each level are consistent, with rabbit showing an appreciable increase in Level 1. Still, deer is by far the most important element in the fauna and the basic pattern holds.

SUMMARY

This chapter has detailed the analysis of faunal material from nine archaeological sites in the Teotihucan Valley of Mexico. A basic pattern involving the exploitation of those animals most common in the disturbed ecological conditions of intensive agriculture was established by Teotihuacan period times, emphasizing the procurement of deer, rabbit, pocker gopher, and occasionally dog. Earlier exploitative strategies, those during the Formative period, seem to have undergone considerable change before the establishment of the Teotihuacan period pattern. Evidence from elsewhere in the Basin of Mexico suggests that the intital inhabitants of the Early and Middle Formative may not have been familiar with the resources offered by the aquatic environment of Lake Texcoco. Resources centered on the riverine environment do seem to have been heavily exploited. The complete absence of fish bone from archaeological faunas, perhaps attributable in some cases to recovery technique, is especially noteworthy. Indeed, there is a general paucity of fish bone even during Teotihuacan period times. The only evidence for heavy exploitation of fish as a food resource comes with the ethnohistoric data cited earlier (see editor's note).

A final comment regarding the nature of archaeological research design can be made here. The faunas discussed are small, and large bones are over-represented, suggesting that little effort was expended in recovering bone material. Had the research design included the careful collection of faunal samples, involving fine screening and water washing, much more significant data could have been recovered.

Table 14. Computations and Raw Data—Oxtotipac, Level 1

Taxon	Bone*	f	e	f/e=r	r̄ (computations)
Odocoileus	1st phalange	16	—	—	
	2nd phalange	9	—	—	
	3rd phalange	8	—	—	
	vertebrae	13	—	—	
	axis	—	1	—	
	cervical	2	—	—	
	thoracic	3	—	—	
	lumbar	3	—	—	
	rib	28	—	—	
	sternum	1	—	—	
	hyoid	1	—	—	
	astragalus	1	2	0.5	
	humerus	1	2	0.5	
	atlas	1	1	1.0	
	calcaneum	3	2	1.5	
	radius	3	2	1.5	n = 8.0
	scapula	3	2	1.5	Σr = 14.5
	pelvis	3	2	1.5	r̄ = 1.81
	tibia	3	2	1.5	
	femur	5	2	2.5	
	metapodial	14	4	3.5	
	mandible	20	2	10.0	
	skull	19	1	19.0	
Canis	vertebrae	7	—	—	
	metapodial	2	4	0.5	
	radius	1	2	0.5	
	femur	1	2	0.5	n = 7.0
	ulna	2	2	1.0	Σr = 5.5
	axis	1	1	1.0	r̄ = 0.79
	atlas	1	1	1.0	
	astragalus	2	2	1.0	
	mandible	5	2	2.5	
	skull	7	1	7.0	
Lagomorpha	vertebrae	2	—	—	
	metapodial	3	16	0.19	
	humerus	1	2	0.5	
	scapula	2	2	1.0	
	ulna	2	2	1.0	n = 9.0
	mandible	6	2	3.0	Σr = 27.5
	radius	7	2	3.5	r̄ = 3.06
	pelvis	7	2	3.5	

Table 14. Continued

Taxon	Bone*	f	e	f/e=r	r̄ (computations)
	tibia	8	2	4.0	
	skull	5	1	5.0	
	femur	12	2	6.0	
Pappogeomys	scapula	1	2	0.5	n = 4.0
	mandible	2	2	1.0	Σr = 5.5
	skull	2	1	2.0	r̄ = 1.38
	pelvis	4	2	2.0	
Meleagris gallopavo		2			
Strigid unident		1			
misc. bird		6			
turtle		1			
Sciuridae		1			
small rodent		5			
sheep/goat		21			
fragments, mostly large mammal		142			
Total fragments		**426**			

*Bones listed in rank order of r values.

taxon	f	f/Σfx100	r̄	r̄/Σr̄x100	r̄(w)	r̄(w)/Σr̄(w)x100
deer	282	63.75	1.81	25.71	181.00	69.96
dog	36	8.45	0.79	11.22	15.80	6.10
Lagomorph	55	12.90	3.06	43.46	61.20	23.65
Pappogeomys	9	2.15	1.38	19.60	0.69	0.27
bird	9	2.15				
domesticates	28	6.55				
other	6	——				
Totals	**426**	**100.00**				

Table 15. Computations and Raw Data—Oxtotipac, Level 2

Taxon	Bone*	f	e	f/e=r	r̄ (computations)
Odocoileus	1st phalange	2	—	—	
	2nd phalange	8	—	—	
	3rd phalange	6	—	—	
	tarsal-carpal	4	—	—	
	vertebrae	18	—	—	
	ribs	18	—	—	
	pelvis	1	2	0.5	
	humerus	1	2	0.5	
	ulna	1	2	0.5	
	mandible	2	2	1.0	
	sternum	1	1	1.0	n = 6.0
	radius	2	2	1.0	Σr = 7.5
	calcaneum	2	2	1.0	r̄ = 1.25
	metapodial	6	4	1.5	
	sacrum	2	1	2.0	
	femur	8	2	4.0	
	skull	4	1	4.0	
Canis	vertebra	1	—	—	
	ribs	8	—	—	
	metapodial	1	4	0.25	
	scapula	1	2	0.5	
	pelvis	1	2	0.5	n = 7
	ulna	1	2	0.5	Σr = 5.25
	radius	1	2	0.5	r̄ = 0.75
	humerus	2	2	1.0	
	mandible	4	2	2.0	
	skull	4	1	4.0	
Lagomorpha	vertebral	4	—	—	
	fragment	1	—	—	
	metapodial	1	8	0.125	
	humerus	1	2	0.5	
	ulna	1	2	0.5	
	radius	1	2	0.5	n = 7
	pelvis	1	2	0.5	Σr = 6.0
	skull	1	1	1.0	r̄ = 0.86
	tibia-fibula	3	2	1.5	
	scapula	3	2	1.5	

Table 15. Continued.

Taxon	Bone*	f	e	f/e=r	r̄ (computations)
	femur	6	2	3.0	
	mandible	9	2	4.5	
Pappogeomys	vertebra	1	—	—	
	scapula	1	2	0.5	n = 2
	femur	2	2	1.0	Σr = 1.5
					r̄ = 0.75
	skull	5	1	5.0	
Meleagris	scapula	1			
Strigidae	humerus	1			
Anatid	scapula	2			
Sciuridae		4			
large mammal, unident.		61			
sheep/goat		3			
lagomorph, small		10			
Total fragments		**234**			

*Bones listed in rank order of r values.

taxon	f	f/Σfx100	r̄	r̄/Σr̄x100	r̄(w)	r̄(w)/Σr̄(w)x100
deer	134	57.25	1.25	34.62	125.00	37.96
rabbit	32	10.25	0.86	23.80	1.72	1.21
dog	24	13.40	0.75	20.70	15.00	10.55
Pappogeomys	9	3.85	0.75	20.70	0.39	0.27
bird	4	1.71				
domesticates	3	1.28				
other	18	7.70				
Totals	**224**	**95.34**				

Table 16. Computations and Raw Data—Oxtotipac, Level 3

Taxon	Bone*	f	e	f/e=r	r̄ (computations)
Odocoileus	tarsal-carpal	1	—	—	
	vertebrae	5	—	—	
	cervical	1	—	—	
	thoracic	6	—	—	
	ribs	5	—	—	
	mandible	1	2	0.5	
	ulna	1	2	0.5	
	metapodial	4	4	1.0	n = 7
	scapula	2	2	1.0	Σr = 1.29
	atlas	1	1	1.0	r̄ = 0.183
	sternum	2	1	2.0	
	skull	3	1	3.0	
Canis	vertebrae	3	—	—	
	rib	1	—	—	
	calcaneum	1	2	0.5	
	astragalus	1	2	0.5	n = 5
	pelvis	1	2	0.5	Σr = .70
	axis	1	1	1.0	r̄ = 0.14
	femur	2	2	1.0	
Lagomorpha	vertebrae	2	—	—	
	metapodial	1	8	0.125	n = 1 Σr = 0.125 r̄ = 0.125
Pappogeomys	mandible	3	2	1.5	n = 1 Σr = 1.5 r̄ = 1.5
bird		1			
sheep/goat		3			

*Bones listed in rank order of r values.

Table 16. Continued

taxon	f	f/Σfx100	r̄	r̄/Σr̄x100	r̄(w)	r̄(w)/Σr̄(w)x100
deer	49	6.20	1.29	35.63	129.00	89.53
dog	10	14.50	0.70	19.33	14.00	9.72
Lagomorph	3	4.35	1.25	3.45	0.25	0.17
Pappogeomys	3	4.35	1.50	41.43	0.75	0.52
bird	1	1.45				
domesticates	3	4.35				
Totals	**69**	**100**				

Table 17. Oxtotipac, Mexico—Raw Counts and Percentages[a]

Level	Dog		Deer[b]		Rabbit		Poppogeomys		Bird		Sheep-Goat		Other		Total
1	36	(8.45)	282	(63.75)	55	(12.9)	9	(2.15)	9	(2.15)	28	(6.55)	6	(1.41)	425
2	24	(10.71)	134	(59.82)	32	(14.27)	9	(3.85)	4	(1.79)	3	(1.34)	18	(8.04)	224
3	10	(14.5)	49	(69.0)	3	(4.35)	3	(4.35)	1	(1.45)	3	(4.35)	—	—	69
4	—	—	1	(100)	—	—	—	—	—	—	—	—	—	—	1
5	—	—	1	(100)	—	—	—	—	—	—	—	—	—	—	1
6[c]															
7	1	(12.5)	5	(62.5)	2	(25.0)	—	—	—	—	—	—	—	—	8
Totals	**71**		**472**		**92**		**21**		**14**		**34**		**24**		**728**[d]

[a]Number is raw count of fragments. Value in parentheses is percentage for that level.

[b]Deer count equals specifically identified specimens plus unidentified large mammal.

[c]No bone from level 6 was included in the sample submitted.

[d]In addition, bones from stratigraphically uncertain provenience were examined.

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APPENDIX A—Zacatenco

The Zacatenco materials, heretofore unpublished, are cited in this report because they are in many ways important for comparative purposes, especially for the Formative period. The collection recovered by Vaillant (1930) was kindly made available to the writer by Dr. Gordon Ekholm of the American Museum of Natural History. In that the Zacatenco collection is small, and consists primarily of large fragments, it can be surmised that much material was discarded in the field or never collected (an unfortunate parallel with the Teotihuacan Valley collections). Nonetheless, the Zacatenco site was of significance to Vaillant's original formulation of the Formative period of the Basin of Mexico, and remains so in spite of recent major revisions of the chronology (Tolstoy and Paradis 1971). From the standpoint of the Teotihuacan Valley, Zacatenco represents a phase where evidence from the valley sequence itself is especially scanty; chronologically and typologically it equates approximately with Altica. The comparative information from Zacatenco is also important in functional terms. Zacatenco was a primarilly agricultural community, located in a lakeshore situation but with easy access to a variety of inland ecological niches; as such, it may have been quite comparable in its way of life with a number of contemporary communities in the Teotihuacan Valley.

During the Zacatenco-Altica phase, Teotihucan Valley seems to have supported a comparatively small population, probably of shifting cultivators (Sanders 1965). In spite of the apparent absence of site stratification anywhere in the Basin of Mexico during this period, it is possible to discern nuclear and marginal areas on the basis of relative population densities. The Teotihuacan Valley, in these terms, was marginal while the demographic centers of the Basin lay elsewhere, including the area of Zacatenco. It is thus an interesting comparison to include the Zacatenco fauna as an appendix to this report. A period poorly represented in the Teotihuacan sequence is thereby treated; the Vaillant collection comes from an area which was nuclear at a time when the Teotihuacan Valley was marginal; yet the overall mode of life in Zacatenco can probably be reconstructed as generally comparable to that which has been postulated for the Teotihuacan Valley.

All specimens discussed in this section are referred to by their original field numbers; they are in the collections of the Department of Anthropology, The American Museum of Natural History. Identifications are of the element represented and the taxon. In the case of the canids, more detailed metrical observations are included, and, for the deer, estimations of age at death based on tooth wear patterns are also provided.

Field No	Element	Taxonomic indentification and comments
120	partial skull	*Pappogeomys sp.*, pocket gopher
325	humerus	*Lepus sp.*, Jackrabbit
650	pelvis	*Lepus sp.*, Jackrabbit
——	femur	*Lepus sp.*, Jackrabbit
947	right mandible	*Canis familiaris*
235	skull & skeleton	*Canis familiaris*, juvenile individual
512	skull & skeleton	*Canis latrans mexicanus*, see below
299	right mandible	*Canis familiaris*
789	left mandible	*Canis familiaris*
323	right mandible	*Canis familiaris*
667	ulna	*Canis sp.*
308	humerus	*Canis sp.*
1244	humerus	*Canis sp.*
701	ulna	*Canis sp.*, juvenile individual
213	fibula	*Canis sp.*
793	radius	*Canis sp.*, butcher marks on distal end
756	left mandible	*Canis familiaris*
——	skull & skeleton	*Canis familiaris*, young individual—some epiphyses unsealed
375	metapodial	*Odocoileus virginianus*, white tailed deer
375	radius	*O. virginianus*
375	axis	*O. virginianus*
375	humerus	*O. virginianus*
375	calcaneum	*O. virginianus*
——	radius	*O. virginianus*
734	humerus	*O. virginianus*
667	distal humerus	*O. virginianus*
667	distal humerus	*O. virginianus*, showing butchering marks
226	sacrum	*O. virginianus*
152	humerus	*O. virginianus*, juvenile
323	humerus	*O. virginianus*
341	vertebra	*O. virginianus*
509	sacrum	*O. virginianus*
756	vertebra	*O. virginianus*
407	astragalus	*O. virginianus*
407	tibia	*O. virginianus*
407	scapula	*O. virginianus*
1229	calcaneum	*O. virginianus*
——	vertebra	*O. virginianus*
509	posterior part of skull	*O. virginianus* antlers broken off
650	posterior part of skull	*O. virginianus* antlers broken off
491	posterior part of skull	*O. virginianus* immature
509	left maxilla with teeth	*O. virginianus* immature
718	right ramus	*O. virginianus* 2-1/2 years old
195	right ramus	*O. virginianus* 3-1/2 years old
173	right ramus	*O. virginianus* 4-1/2 years old
195	left ramus	*O. virginianus* -2 years old

Field No	Element	Taxonomic indentification and comments
157	3 fragments carapace	Unidentified turtle
157	1 fragment plastrom	Unidentified turtle
——	posterior peripheral	*Geochelone sp.*? Large land turtle
——	distal part of costal	*cf. Trionychid*?
——	complete carapace & plastron	*Pseudemys sp.*

Measurements of Canid Materials from Zacatenco

#512 Skull and Skeleton (skull reconstructed by R. White)

Width of palate at M1	54.5	mm
Width of palate at C	33.0	mm
Orbit to I1	70.5	mm
Occipital length	159.5	mm
M2-M1 length	15.5	mm
M2-C length	72.0	mm
M2-I1 length	85.0	mm
P4 length	18.0	mm
Auditory meatus-I1	131.0	mm

Note: Presence of acute angle at zygo-maxillary suture indicates that this specimen represents *C. latrans* rather than the dog, *C. familiaris*.

Canis familiaris mandibles:

Jaw No.	M2-I1	M3-C	M3-P1	M3-P2	M3-P3	M3-P4	M3-M1	M1-L	M2-W	M2-L	Depth at M1
323	---	---	---	---	---	43.5	34.0	---	---	---	---
756	---	---	72.0	69.0	58.0	46.0	34.0	21.5	6.0	8.0	24.0
789	83.0	77.0	62.0	58.0	50.0	39.0	38.0	---	---	---	19.0
947	---	---	---	71.5	51.0	46.0	35.0	---	---	---	24.5
299	79.0	74.0	62.0	58.0	50.0	41.0	31.0	20.5	5.5	8.0	17.0
N+	2	2	2	4	4	5	5	2	2	2	4
$\bar{x}$	81.2	75.5	65.3	64.1	52.3	43.1	32.4	21.0	5.75	8.0	21.1

Canis familiaris humeri:

Field no	Length	Distal Width
512	---	27.5
308	130.5	25.5
1244	128.0	25.0
$\bar{x}$	129.3	26.0

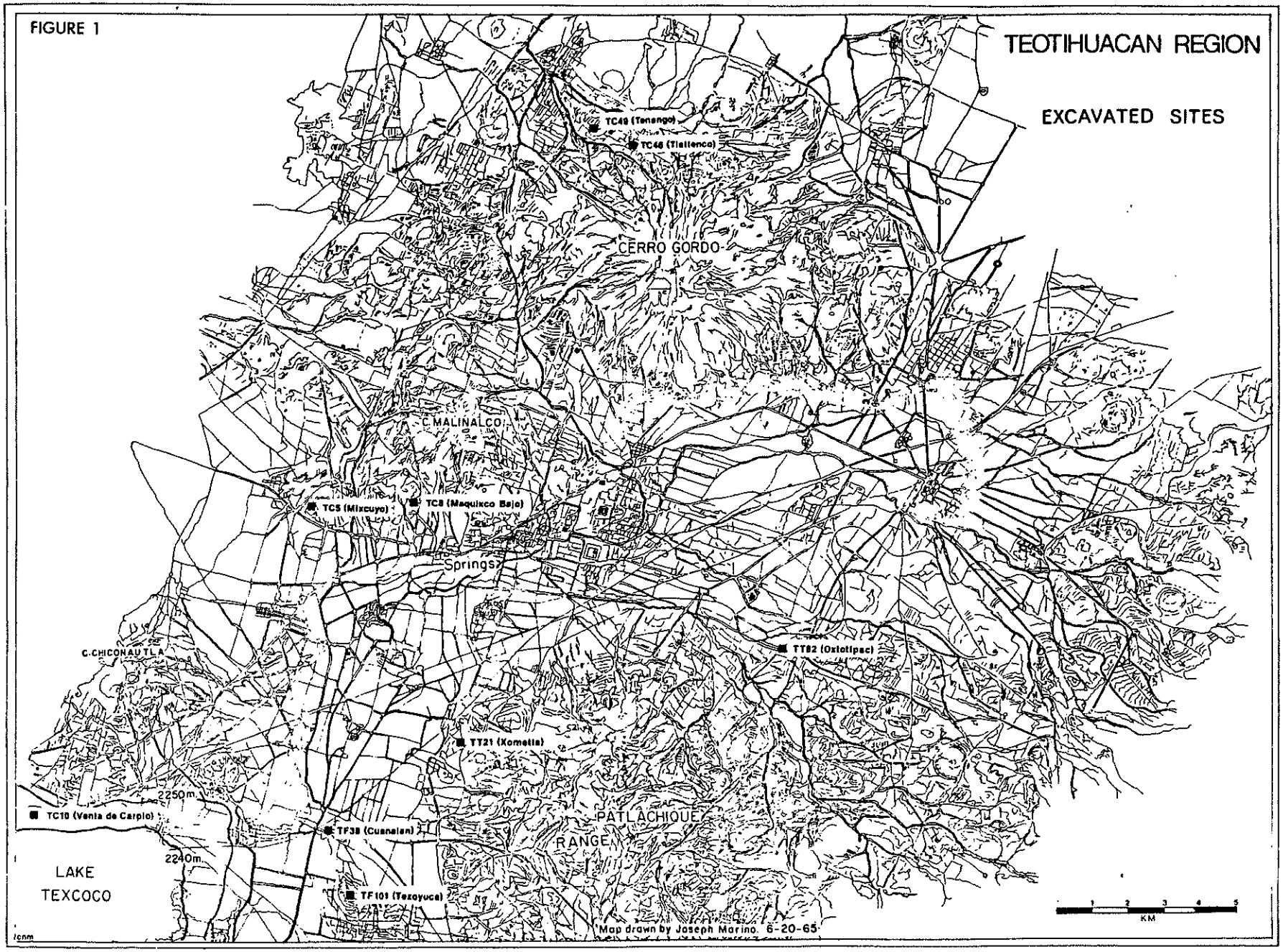


FIGURE 1
TEOTIHUACAN REGION
EXCAVATED SITES
TC49 (Tenango)
TC48 (Tlatlenco)
CERRO GORDO
C. MALINALCO
TC5 (Mixcuyo)
TC8 (Maquixco Bajo)
Springs
C. CHICONAUTLA
TT82 (Oxtotipac)
TT21 (Xometla)
2250m
TC10 (Venta de Carpio)
TF38 (Cuanalan)
PATLACHIQUE
RANGE
2240m
LAKE
TEXCOCO
TF101 (Tezoyuca)
Map drawn by Joseph Marino. 6-20-65
KM

Figure 1

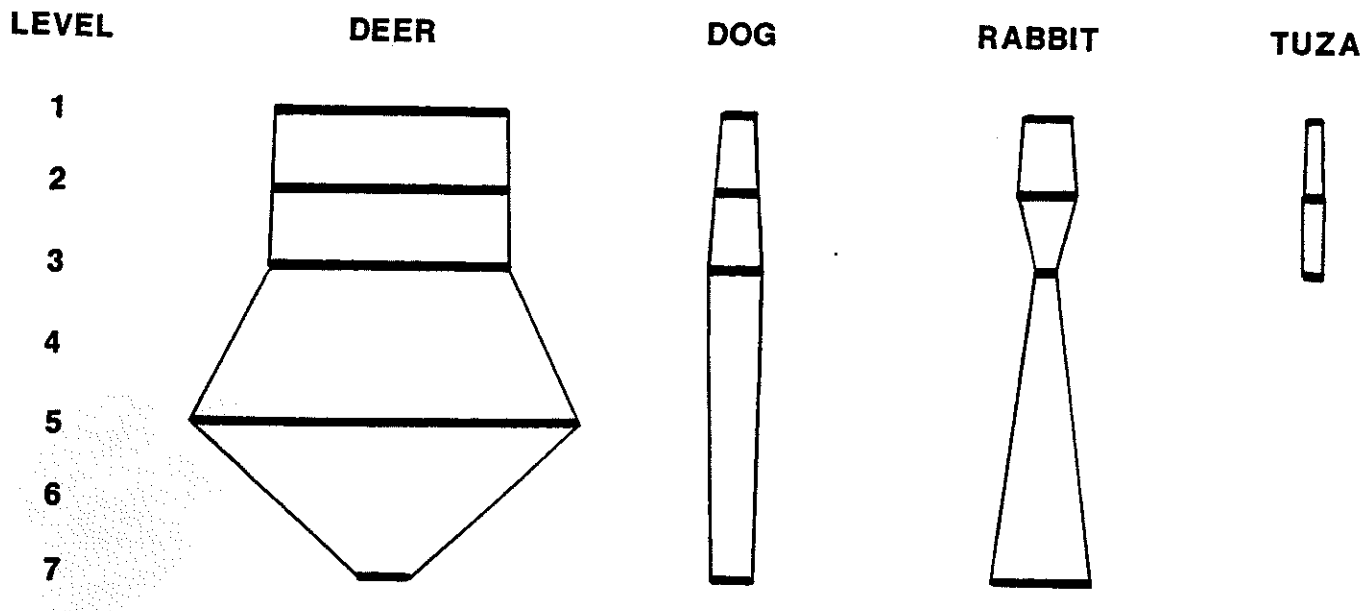


Figure 2

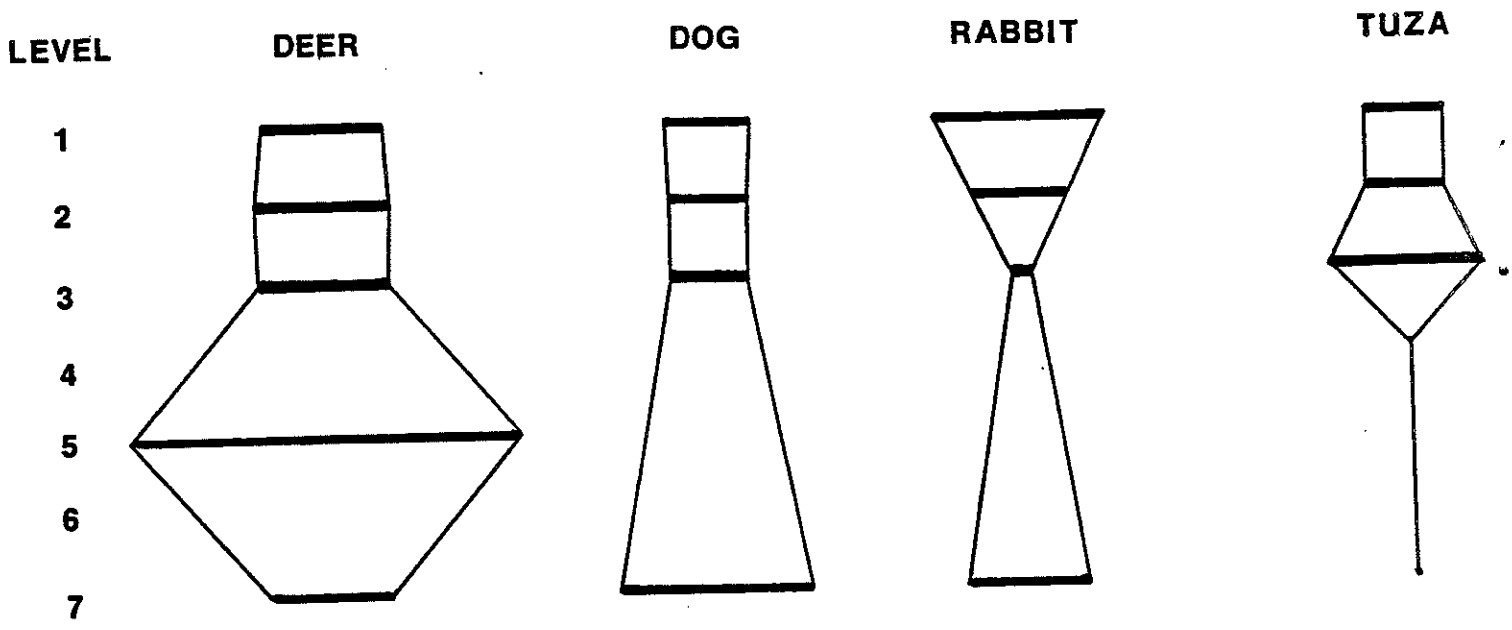


Figure 3

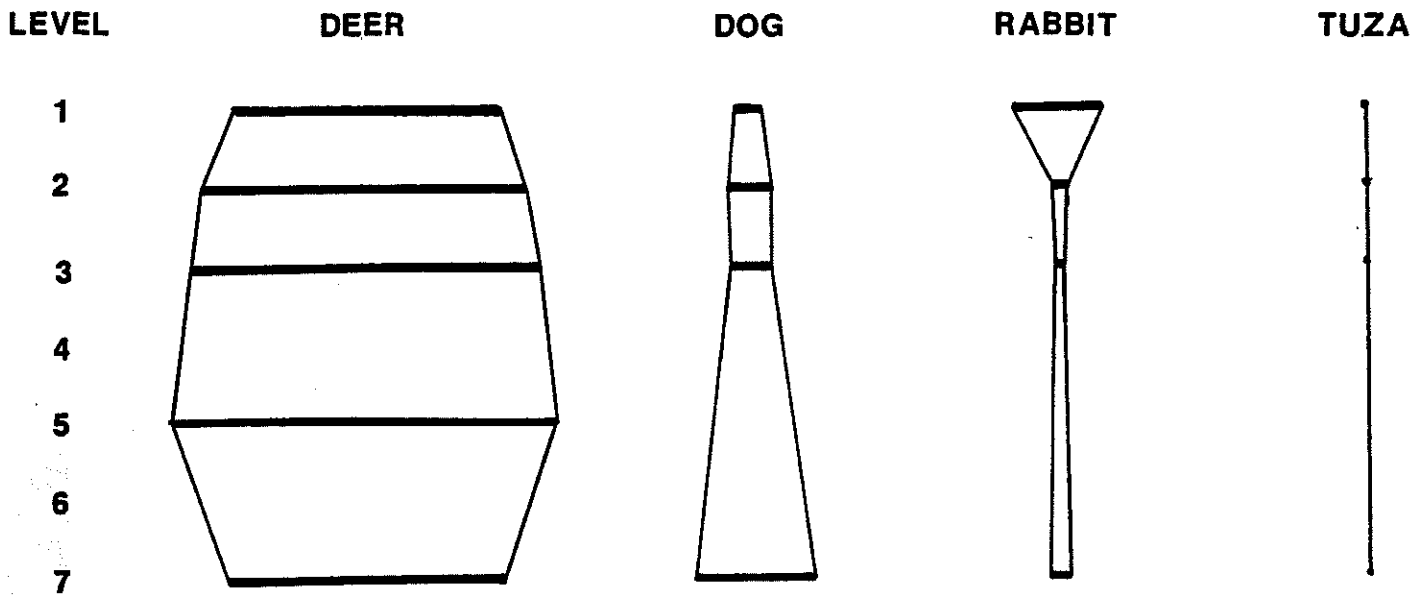


Figure 4

CHAPTER 11

APLASTIC ANALYSIS OF TOLTEC CERAMICS

by

Ronald Corbyn

TABLE OF CONTENTS

Page

INTRODUCTION 617
Purpose and Scope 617
Methodology 617

ANALYSES 618
Late Toltec Ceramics From the Teotihuacan Valley 618
Coyotlatelco Red/Buff From Tula 618
Early Toltec Ceramics From Cuanalan East 618

SUMMARY 620

CONCLUSIONS 620

APPENDIX A—Aplastic Analysis Data 622

APPENDIX B—Categories and Sample Numbers 638

INTRODUCTION

Purpose and Scope

The primary purpose of this paper is to compare the aplastics of selected samples of Late and Early phase Toltec sherds. Another purpose is to structure a more valid approach to aplastic studies in the hope that it will emphasize the importance of the studies to pottery typology. A total of 142 sherds for thirty-nine pottery types was studied. During the study an effort was made to spend a limited amount of time with each aplastic, sherd, or group of sherds; however, no constant search for unique aplastic inventories was attempted.

Methodology

Most of the Late Toltec phase ceramics studied were from the large surface sample collected at TT-14 (Appendix A). A number of the sherds came from Koehler's excavated sample from Maquixco Bajo and nine were from Tula. All but five sherds (Coyotlatelco Red/Buff from Tula) of the Early phase were taken from the Cuanalan East excavation.

An average of three or four sherds was taken from each type for study. Due to limitations of focus with the microscope, sherds were usually kept approximately below three centimeters in width (unavoidably, a bias toward body sherds). There was no intention to select for either rim or body sherds.

A binocular microscope, pinpoint lamp, and polarizing microscope were used. First, a selected sample was broken along an edge, and then examined under the binocular microscope for aplastics. If a seeming important aplastic could not be identified then it was isolated, crushed, and placed in a mounting medium on a glass slide. Next, the aplastic was examined under the petrographic microscope where identification was rendered more probable.

To avoid some degree of bias of a sherd aplastic assemblage was difficult in view of the fact that often a sherd's aplastics were few and small causing selective identification. Since, for example, grains of magnetite, hematite, augite, hornblende, and basalt resemble each other at smaller sizes—rather than take a chance at inaccurate identification (with obvious consequences)—unless specifically identified (ex. epidote—commonly the case), they were lumped under "other mafics." (Other lighter-colored minerals undoubtedly were undifferentiated on occasion for the same reason, causing, for example, a common clear mineral, such as quartz, to be named at the expense of others, such as nepheline and clear feldspars.

Aplastic identification was also rendered more difficult with higher-fired sherds. In many instances, in the analyses, inclusions in the sherds were so badly disintegrated from firing effects that they were totally unidentifiable under the binocular microscope.

The original descriptions and identifications of materials left an extremely long list, such that if retained, patterns might not show up; therefore, the aplastics were lumped genetically to a tolerable point (Appendix A). Unfortunately, due to late recognition or

early unretained recognition, exact aplastics distribution in the total sample is uncertain (Table 1) and, if known, might have contributed to differentiation of the pottery.

ANALYSES

Late Toltec Phase Ceramics From the Teotihuacan Valley

The most commonly occuring aplastics of the types are quartz, epidote, mafics, obsidian, quartzite, and fine-grained materials (Appendix A). Of secondary frequency are salt-lined vesicles*, and of tertiary frequency—mica, olivine*, specular hematite, and pumice. Most of the quartz is angular and roughly the first half (to the orange slip ware) fell from 0.1 to 0.5 mm in size and the other half above 0.5 mm. Epidote, with cleavage-controlled weathering, is consistent from 0.2 to 0.4 mm. Mafics, consistently subangular, are also consistent at 0.1 mm and below. Obsidian varies from angular to subangular and averages 0.3 mm. Quartzite, most commonly rounded, is well represented in the types and averages about 1.0 mm. Fine-grained material is usually rounded and averages about 0.5 mm. In only two types (Red Burnished bowls and Mazpan Red/Buff) did mica occur in the Toltec materials.

Coyotlatelco Red/Buff from Tula

Of the five Coyotlatelco sherds analyzed, quartz, mica, mafics, obsidian, pumice, and carbonized material are represented (Appendix A). There is nothing unusual about this assemblage in relation to the aplastics of the other two styles, except that the presence of mica and the size of obsidian (0.2 mm and below) perhaps corresponds best to the Cuanalan East pattern.

Early Toltec Phase Ceramics from Cuanalan East

Quartz, mica, epidote, mafics, obsidian, quartzite, and fine-grained material are the most common aplastics (Appendix A). Mica aplastics 0.2 mm and below (except Red-Lip Brown ladles and pipes), are numerous in a number of the types of this phase (*e.g.*, incised, stamped, White-Slipped, and Coyotlatelco Interior-Design). Epidote, 0.2 mm and below in size, also has the same type span. Obsidian becomes smaller, with most grains below 0.2 mm in size. Quartzite is more varied in shape (from subangular to rounded). Of secondary frequency are hematite, specular hematite, white friable material, chert, salt-lined vesicles, and occurrence of iridescent mineral grains, basalt, granitic-like rock, carbonized material*, and plant impressions*.

*Not recorded consistently.

Table 1. List of Aplastics

Identified	Equalities	Uncertain Distribution in Sample
quartz	frosty and clear, crystalline with black inclusions	gray translucent rock
		vitrified areas
feldspar*		vesicular rhyolitic glass
mica	muscovite, biotite	opaline-textured material
epidote		clay inclusions
olivine*		chlorite
mafics	paramagnetic, magnetite	
hematite*		
specular hematite		
obsidian	black or orange vitreous material	
pumice*	tuff	
quartzite	all colors, hematite-veined, grainy quartz	
fine-grained material	ferruginous, clastic, pottery	
white, friable material	calcined	
white, soft material		
chert	chalcedony	
felsite		
granitic-like rock		
basalt		
salt-lined vesicle*	vug	
iridescent material		
yellow, grainy material		
plant impressions*		
carbonized material*	grass skeleton	

*Indicates that the aplastic's occurrence (and description) was recorded in Appendix A but was not consistently described through the total sample.

SUMMARY

Overall patterns of the common aplastics for the Mazapan and Cuanalan Xometla samples indicate: Quartz, the most common aplastic, is generally angular and averages about 0.5 mm in size. Both quartz and epidote are the major aplastics in the slips of almost all sherds. The occurance of mica (0.2 mm and smaller) is almost exclusively limited to incised, stamped, White-Slipped, and Coyotlatelco Interior-Design from Cuanalan East. Epidote, the next most common aplastic, suddenly changes from 0.3 to 0.5 mm in the Mazapan styles to 0.2 mm and less, in the Cuanalan East, Xometla basins, incised, stamped, ladles, White-Slipped, and Residual Red/Buff. On the other hand, the Coyotlatelco Red/Buff jars and undecorated Monochrome Brown bowls from the same samples have aplastics in the 0.2 to 0.4 mm range. Mafics, across the chart, are subangular and 0.1 mm and below in size. Obsidian in the Cuanalan material becomes smaller, and quartzite becomes more generally subangular and less consistently 0.5 mm and above. As a rule, the fine-grained materials (which could include anything from siltstone to sherd) are most commonly rounded or amorphous, with sizes above 0.3 mm and averaging about 0.7 mm. In the Cuanalan material the appearance of aplastics such as iridescent material, yellow grainy material (from one sherd), granitic-like rock, and one basalt fragment in the sherds again betrays a difference.

CONCLUSIONS

The change in sizes and/or shapes of epidote, obsidian, and quartzite; the appearance of mica in nine types; and the sporadic occurrence of new types of aplastics in the Cuanalan, Early phase material suggest only a tentative basis for distinction from Late Toltec phase materials because of uncertainties surrounding the number of sherds required for a representative sample and the inevitable ascription of subjectivity to the use of a binocular microscope. With samples of nearly matching composition from relatively close geographic areas, the use of the aplastic size and shape criterion for differentiation is precarious unless all of the surface and form types are represented within each style. If not, obviously the size and shape criterion could be duplicated within the type.

The five Coyotlatelco sherds from Tula that were analyzed may or may not be representative, but if they are, the one-column conclusions about the character of the aplastics fit the Cuanalan scheme somewhat better. If possible, further work with Coyotlatelco pottery at Tula should be done with all the Coyotlatelco types represented for purposes of cross-checking and to eliminate averaging of the aplastics of an unnecessarily large sherd sample.

Quartz, epidote, quartzite, mafics, as major constituents of stream sand, could easily have been collected together, then ground to desired size (in this study, an average of about 0.3 mm). Quartz, being the most common, would suffer most from grinding, explaining its dominant angularity. Epidote, essentially angular from the start and less common than quartz, would also fracture upon grinding, to a more angular, lustrous condition (as observed in nearly all of the sherds). Quartzite is larger than the other minerals; however, the retention of its size could be explained by its inherent toughness along with its size of occurrence in the sherds. The occurrence of the fine-grained

along with its size of occurrence in the sherds. The occurrence of the fine-grained materials is puzzling—perhaps because several sources may be indicated. Probably most of these inclusions can be traceable to stream sand of clastic composition (claystone and siltstone with sand admixture). Obsidian may also have occurred in stream sands along with olivine and the smaller unidentifiable mafics.

The clay source undoubtedly includes the prenamed minerals in smaller sizes due to the homogeneous nature of the rock outcrops of the area; but this is mere speculation for even larger sand grains can occur in number in clay. More positive contributions toward the segregation of pottery styles can be made by checking the nature of the local outcrops and collecting rock and clay samples for laboratory study.

APPENDIX A—Aplastic Analysis Data

Early Toltec Phase

Wide Band Red/Buff (RC3-6)

Materials in Cross-Section:

1. *Quartz*—angular, 0.4 mm
2. *Quartzite* (pink, buff, white, grey)—subangular to rounded, 0.8 mm
3. *Epidote*—0.2 to 0.4 mm
4. *Vitreous black rock* (obsidian?)—rounded, 0.2 mm
5. *Ferruginous clastic? rock*—rounded, 1.0 mm
6. *Gray, translucent rock* (vitreous, elongate)—angular, 0.3 x 1.0 mm
7. *Magnetite* (reduced specular hematite?)—tabular, 0.2 mm
8. *Other mafic*—subangular, 0.1 mm

Materials on Surface:

1. *Specular hematite*—angular, 0.2 to 0.3 mm
2. *Epidote*—same
3. *Other mafics*—same

Wide Band Red/Buff (RC 1-2)

RC 1 (TT-21-51)—conical leg; thin-section made (by Carl Bebrich) of slice from leg into body; soil sample taken from leg cavity and put into vial labeled RC 1; November, 1968

RC 2 (TT-14-A)—wedge leg; thin-section made (by Carl Bebrich) of a slice from leg into body; soil sample taken from leg cavity and put into vial labeled RC 2; November 1968

Red-Purple Slip (RC 7-10)

Materials in Cross-Section

1. *Frosty-quartz*—subangular, 1.0 mm
2. *Clear quartz* (perhaps same quartz)—angular, 0.2 to 0.3 mm
3. *Epidote*—0.2 x 0.4 mm
4. *Olivine*—0.1 to 0.2 mm
5. *Magnetite*—rounded, 0.2 mm
6. *Pink, clastic rock* (fine-grained, soft)—subangular, 0.1 mm
7. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Epidote*—same
2. *Quartz*—same
3. *Other mafics*—same

Toltec Brown (RC 37-46)

Materials in Cross-Section:

1. *Quartzite*—subrounded, 0.8 to 1.0 mm
2. *Quartz*—angular, 0.3 mm
3. *Ferruginous clastic rock*—amorphous, 0.6 mm
4. *Olivine crystals*—0.2 mm
5. *Salt-lined vesicles*
6. *Epidote*— 0.2 x 0.4 mm
7. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Olivine*—same
2. *Quartz*—same
3. *Epidote*—same
4. *Other mafics*—same

Tula Water-Colored Polished White (RC 21-24)

Materials in Cross Section:

1. *Quartz*—rounded, 0.4 mm
2. *White quartzite*—rounded, 0.5 mm
3. *Ferruginous spots*—amorphous, 0.3 mm
4. *Fine-grained material* (pottery?)—angular, 0.5 mm
5. *Obsidian*—rounded, 0.4 mm
6. *Epidote*—0.2 x 0.4 mm
7. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Epidote*—same
2. *Quartz*—same

Burnished Brown Bowls (RC 11-18)

Materials in Cross-Section:

1. *Quartz*—subangular, 0.2 mm
2. *Quartzite*—rounded, 0.8 - 0.9 mm

3. *Epidote*—0.2 x 0.4 mm
4. *Magnetite*—rounded, 0.1 to 0.2 mm
5. *Fine-grained material with rounded red inclusion*—rounded, 0.8 mm
6. *Obsidian*?—subangular, 0.1 to 0.2 mm
7. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Epidote*—same
2. *Quartz*—same
3. *Other mafic*—same

Toltec Red/Buff

Materials in Cross-Section:

1. *Quartz*—subangular to angular, 0.2 to 0.4 mm
2. *Quartzite*—rounded, 1.0 mm
3. *Epidote*—0.2 x 0.4 mm
4. *Obsidian*—subangular, 0.3 to 0.4 mm
5. *Fine-grained, ferruginous material*—amorphous, 1.0 mm
6. *Pottery*? (reduced core)—angular, 1.0 mm
7. *Opaline-textured, hard material* (chalcedony?) with included crystal-subangular, 0.8 mm
8. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Epidote*—same
2. *Quartz*—same
3. *Other mafics*—same

Tula Water-Colored Polished White-White (RC 19-20, 25-26)

Materials in Cross-Section:

1. *Quartz*—subangular to angular, 0.2 to 0.3 mm
2. *Epidote*—0.2 to 0.4 mm
3. *Crystaline quartz* (blank inclusions)—angular, 1.0 mm
4. *Ferruginous spots*—amorphous, 0.5 mm
5. *Obsidian*—rounded, 0.3 mm
6. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Quartz*—same
2. *Epidote*—same
3. *Other mafics*—same

Narrow Band Red/Buff (RC 37-39)

Materials in Cross-Section:

1. *Quartz*—angular, 0.3 mm
2. *Quartzite*—rounded, 1.0 mm
3. *Obsidian*—subangular, 0.3 mm
4. *Epidote*—0.2 x 0.4 mm
5. *Black, orange vitreous inclusion*—rounded, 1.0 x 2.0 mm
6. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Quartz*—same
2. *Epidote*—same
3. *Other mafics*—same

Dark Brown Slip (RC 32-36)

Materials in Cross-Section:

1. *Quartz*—angular, 0.4 mm
2. *Quartzite*—subangular, 3.0 mm
3. *Epidote*—0.3 x 0.5 mm
4. *Obsidian*—subangular, 0.8 mm
5. *Clay inclusions* (unreduced-two clays?)—round, 0.9 mm
6. *Fine-grained, ferruginous material*—round, 0.5 mm
7. *Grass impression*—parallel striations
8. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Epidote*—same
2. *Quartz*—same
3. *Other mafics*—same

Red Burnished Bowls (RC 43-45)

Materials in Cross-Section:

1. *Ferruginous fine-grained material*—round, 0.5mm
2. *Obsidian*—angular, 0.2 mm
3. *Paramagnetic black material*
4. *Epidote*—0.2 x 0.4 mm
5. *Salt-lined vesicles*
6. *White, calcined? material*—subangular, 0.2 mm
7. *Quartz*—angular, 0.3 mm

8. *Quartzite*—rounded, 1.0 mm
9. *Biotite*—0.7 mm
10. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Quartz*—same
2. *Epidote*—same
3. *Other mafics*—same

Orange Cream (RC 40-42)

Materials in Cross-Section

1. *Quartz*—angular, 0.3 mm
2. *Quartzite*—rounded, 1.0 mm
3. *Obsidian*—subangular, 0.3 mm
4. *Epidote*—0.2 x 0.4 mm
5. *Black, orange vitreous inclusions*— rounded, 1.0 x 2.0 mm
6. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Quartz*—same
2. *Epidote*—same
3. *Other mafics*—same

Orange Slip (RC 47-49)

Materials in Cross-Section

1. *Obsidian*—angular, 0.2 mm
2. *Quartzite*—rounded, 1.0 mm
3. *Felsite*?—subangular, 1.0 mm
4. *Epidote*—0.2 x 0.4 mm
5. *Quartz*—angular, 0.3 mm
6. *Quartzite with epidote*—subangular, 1.5 mm
7. *Other mafic*—subangular, 0.1 mm

Materials on Surface:

1. *Quartz*—same
2. *Epidote*—same
3. *Other mafics*—same

Comals (RC 46)

Materials in Cross-Section

1. *Quartz*—angular, 0.5 mm
2. *Quartzite*—rounded, 1.0 mm
3. *Epidote*—0.2 x 0.4 mm
4. *Salt-lined vesicles*
5. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Quartz*—same
2. *Epidote*—same
3. *Other mafics*—same

Red/Buff Jars

Materials in Cross-Section:

1. *Quartzite* (grainy quartz)—rounded, 1.0 mm
2. *Obsidian*—angular, 0.3 mm
3. *Quartz*—angular, 0.5 to 1.0 mm
4. *Fused area* (black rim-crystalline core)—1.0 mm
5. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Epidote*—same
2. *Quartz*—same
3. *Other mafics*—same

Red/Buff Jars—Coarse Ware (RC 50-51)

Materials in Cross Section

1. *Obsidian*—subangular, 0.3 mm
2. *Quartz*—subangular, 1.0 mm
3. *Epidote*—0.2 x 0.4 mm
4. *Salt-lined vesicles*
5. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Quartz*—same
2. *Epidote*—same
3. *Obsidian*—same
4. *Other mafics*—same

Burnished Orange (RC 57-59)

Materials in Cross-Section

1. *Quartz*—angular, 0.3 to 1.0 mm
2. *Quartzite*—rounded, 0.3 mm
3. *Quartzite*—rounded, 1.0 mm
4. *Epidote*—0.2 x 0.4 mm
5. *Obsidian*—angular, 0.4 mm
6. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Quartz*—same
2. *Epidote*—same
3. *Other mafics*—same

Painted Rim Jars (Coarse Red/Buff or Black Jars—Flat and Flaring) (RC 54-56)

Materials in Cross-Section:

1. *Obsidian*—angular, 0.5 mm
2. *Quartzite*—angular, 0.4 mm
3. *Quartzite*—rounded, 1.0 mm
4. *Quartz*—angular, 0.8 mm
5. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Epidote*—0.2 x 0.4 mm
2. *Quartz*—same
3. *Obsidian*?—same?
4. *Other mafics*—same

Note: there probably was epidote in the cross-section, however, I did not recognize any—RC.

Figurines (RC 63-65)

Materials in Cross-Section:

1. *Tuff*?—rounded, 2.0 mm
2. *Glass*—subangular, 1.0 mm
3. *Epidote*—0.2 x 0.4 mm
4. *Quartz*—angular, 0.3 mm
5. *Quartzite*—rounded, 0.4 mm
6. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Epidote*—same
2. *Quartz*—same
3. *Other mafics*—same

Basins (RC 60-62)

Materials in Cross-Section:

1. *Quartzite*—subangular, 0.8 mm
2. *Quartz*—angular, 1.0 mm
3. *Ferruginous inclusions*—1.0 mm
4. *Epidote*—0.2 x 0.4 mm
5. *Salt-lined vesicles*
6. *Quartzite* (hematite inclusions)—rounded, 1.0 mm
7. *Obsidian*—subangular, 0.3 mm
8. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Quartz*—same
2. *Epidote*—same
3. *Other mafics*—same

Mazpan Red/Buff (RC 130-132)

Materials in Cross-Section:

1. *Quartz*—angular, 1.0 mm
2. *Obsidian*—angular, 0.3 mm
3. *Quartzite*—subangular, 0.8 mm
4. *Pink quartzite*—subrounded, 0.5 mm
5. *Epidote*—0.2 x 0.4 mm
6. *Clorite or biotite*—0.2 mm
7. *Other mafics*—Subangular, 0.1 mm

Materials on Surface:

1. *Epidote*—same
2. *Quartz*—same
3. *Other mafics*—same

Support Forms (RC 66-68)

Materials in Cross-Section:

1. *Tuff*?—rounded, 1.0 mm
2. *Quartzite*—subangular, 1.0 mm
3. *Quartz*—angular, 0.1 mm
4. *Epidote*—0.2 x 0.4 mm
5. *Obsidian*—subangular, 1.0 mm
6. *Other mafics—subangular, 0.1 mm*

Materials on Surface:

1. *Epidote*—same
2. *Quartz*—same
3. *Other mafics*—same

Miscellaneous Sherds— Tula (RC 69-77)

Materials in Cross-Section:

1. *Obsidian*—subangular,, 0.1 mm
2. *Quartz*—subangular, 0.4 mm
3. *Quartzite*—?, 0.1 mm
4. *Chert*—angular, 0.2 mm
5. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Quartz*—same
2. *Epidote*—1.5 x 0.3 mm
3. *Other mafics*—same

Note: Epidote not recognized in cross-section although it is probably there.

Coyatlatelco Tula

(RC 78-82)

Materials in Cross-Section:

1. *Tuff*—subangular, 1.0 mm
2. *Vitrified* area (dark rim around light core)—0.3 mm
3. *Mica*—0.1 mm
4. *Epidote*—0.1 x 0.3 mm
5. *Quartz*—subangular, 0.3 mm
6. *Obsidian*—subangular, 0.2 mm
7. *Carbonaceous* material—(approximately 0.2 mm)

8. *Quartzite*—round, 1.0 mm
9. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Obsidian*—same
2. *Quartz*—same
3. *Other mafics*—same

Note: This pottery does not seem as weathered as RC 1-68, also mica shows up for the first time.

Cuanalan, Early Toltec Phase

Basin Bodies (RC 87-90)

Materials in Cross-Section:

1. *Quartz*—angular, 0.5 mm
2. *Hematite*—amorphous, 0.4 mm
3. *Igneous rock inclusion*?—angular, 1.5 mm
4. *Quartzite or felsite*—subangular, 0.8 mm
5. *Obsidian*?—subangular, 0.1 mm
6. *Epidote*—0.1 x 0.2 mm
7. *Mica*—0.3 mm
8. *White friable material*—rounded, 0.5 mm
9. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Obsidian*—subangular, 0.1 mm
2. *Epidote*—0.1 x 0.2 mm
3. *Mica*—0.2 mm
4. *Other mafics*—same

Incised, Stamped, White Slipped (RC 83-86)

Materials in Cross-Section:

1. *Quartz*—subangular, 0.5 mm
2. *Hematite*—subangular, 0.7 mm
3. *Friable white inclusion*—subangular, 0.4 mm
4. *Plant impressions*
5. *Mafics*—angular, 0.1 mm
6. *Quartzite*—subrounded, 0.5 mm
7. *Vug* (lined)—0.2 mm
8. *Epidote*—0.1 x 0.2 mm
9. *Iridescent inclusions*?—0.1 mm
10. *Other mafics*—aubangular, 0.1 mm

Materials on Surface:

1. *Unidentifiable mafics*—angular, 0.1 mm
2. *Mica?*—0.1 mm
3. *Other mafics*—same

Vessel Handles and Supports—Supports (RC 94-96)

Materials in Cross-Section:

1. *Mica*—0.2 mm
2. *Ferruginous clay lump*—round, 0.4 mm
3. *Quartzite*—subangular, 0.4 to 1.3 mm
4. *Epidote*—0.1 x 0.2 mm
5. *Obsidian?*—0.2 mm
6. *Plant impressions*
7. *Quartz*—angular, 0.3 mm
8. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Mica*—same
2. *Specular hematite*—angular to rounded, 0.2 to 2.0 mm
3. *Epidote*—same
4. *Obsidian*—same
5. *Other mafics*—same

Note: Sherd RC 95 is a base support that has crystals and grains of epidote, olivine, obsidian, and specular hematite adhering to the concave surfaces.

Vessel Handles and Supports—Handles (RC 91-93)

Materials in Cross-Section:

1. *Pink quartzite*—round, 0.4 mm
2. *Mica*—0.2 mm
3. *Clay lump*—rounded, 0.4 mm
4. *Chert or quartzite*—angular, 0.5 mm
5. *Ferruginous clay lump*—round, 0.4 mm
6. *White soft material* (gypsum?)—subangular, 0.4 mm
7. *Quartz*—angular, 0.3 mm
8. *Quartzite* (hematite-veined)—subangular, 0.4 to 1.3 mm
9. *Epidote*—0.1 x 0.2 mm
10. *Obsidian?*—0.2 mm
11. *Black, semi-vitreous material* (basalt?)—subrounded, 1.1 mm
12. *Plant impressions*
13. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Quartz*—same
2. *Epidote*—same
3. *Obsidian*?—same
4. *Other mafics*—same

Note: No mica seen on surface.

Red Lip Brown Ladle (RC 98)

Materials in Cross-Section

1. *Soft, round, white material* (calcined)
2. *Quartz*—subrounded, 0.5 mm
3. *Mica*—0.5 mm
4. *Ferruginous fine-grained material*—oblong, 0.5 mm
5. *Other mafics*—subangular, 0.4 mm

Materials on Surface:

1. *Mica*—same
2. *Quartz*—same
3. *Other mafics*—same

Red Lip Brown Censer Handle (RC 97)

Materials in Cross Section:

1. *Obsidian*—subangular, 0.1 mm
2. *Quartz*—angular, 0.5 mm
3. *Quartzite*—rounded, 0.2 mm
4. *Plant impression*
5. *Mica*—0.1 mm
6. *Epidote*—0.1 x 0.2 mm
7. *Quartz*—subrounded, 0.9 mm
8. *Other mafics*—subangular, 0.1 to 0.5 mm

Materials on Surface:

1. *Obsidian*—same
2. *Quartz*—both
3. *Epidote*—same
4. *Other mafics*—same

Red Lip Brown Pipe (RC 99)

Materials in Cross-Section:

1. *Quartz*—angular, 0.7 mm
2. *Obsidian*?—angular, 0.2 mm
3. *Epidote*—0.1 x 0.2 mm
4. *Other mafics*—angular, 0.1 mm

Materials on Surface:

1. *Epidote*—same
2. *Quartz*—same
3. *Other mafics*—same

Red Banded Lip, Red Interior and Exterior (RC 100-103)

Materials in Cross-Section:

1. *Quartzite*—rounded, 0.5 mm
2. *Quartz*—angular, 0.4 mm
3. *Mica*—0.05 mm
4. *Plant impressions*
5. *Epidote*—0.1 x 0.2 mm
6. *Pink Quartzite* (with pale, green crystals included within)—subangular, 1.0 mm
7. *Ferruginous material*—amorphous, 0.2 mm
8. *Vitreous, yellow sacchoaroidal material*—amorphous, 0.3 mm
9. *Gray quartzite*—angular, 0.6 mm
10. *Grass skeleton*—0.2 x 0.5 mm
11. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Mica*—same
2. *Epidote*—same
3. *Quartz*—same
4. *Other mafics*—same

Coyatlatelco, Interior Design (RC 108-111)

Materials in Cross-Section:

1. *Quartz*—subangular, 0.6 to 1.0 mm
2. *Plant impressions and carbonized plant material*
3. *Epidote*—0.2 x 0.4 mm
4. *Fine-grained material with round inclusion* (sherd texture)—2.0 mm
5. *Quartzite*—subangular, 1.0 mm
6. *Ferruginous inclusions*
7. *Fine-grained ferruginous inclusion*—rounded, 1.0 mm

8. *Quartz-bearing igneous rock* (calcined granite?)—rounded, 2.5 mm
9 *Other mafics*—angular, 0.1 mm

Materials on Surface:

1. *Epidote*—same
2. *Quartz*—same
3. *Mica*—same
4. *Other mafics*—same

Note:Three sherds from the box had specular hematite in the red paint (one with an excessive amount) in addition to the above studied samples.

Coyatlatelco Exterior Design (RC 104-107)

Materials in Cross-Section:

1. *Quartz*—angular, 0.5 mm
2. *Obsidian* (with rounded quartzite inclusions)—angular, 0.5 mm
3. *Plant impressions*
4. *Quartzite*—subrounded, 0.9 mm
5. *Vesicular rhyolitic? glass shards*—0.1 x 0.9 mm
6. *Epidote*—0.2 x 0.4 mm
7. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Epidote*—same
2. *Quartz*—same
3. *Other mafics*—same

Straight-Sided Brown Bowls Pronounced Flare Rims (RC 115-117)

Materials in Cross-Section:

1. *Quartz*—angular, 0.7 to 1.0 mm
2. *Pink quartzite*—subrounded, 0.3 to 1.0 mm
3. *Quartzite*—subangular, 0.1 mm
4. *Other mafics*—0.1 x 0.2 mm

Materials on Surface:

1. *Epidote*—0.2 x 0.4 mm
2. *Other mafics*—same

Note: Although no Epidote was seen in cross-section, it probably was present.

Censer Fragments (RC 112-114)

Materials in Cross-Section:

1. *Quartz*—angular, 0.5 mm
2. *Epidote*—0.4 mm
3. *Fine-grained, quartz-bearing inclusion* (sherd)—subangular, 1.0 mm
4. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Epidote*—same
2. *Quartz*—same
3. *Other mafics*—same

Note: Two censer fragments had portions painted blue.

Jar Rims (RC 121-123)

Materials in Cross-Section:

1. *Quartz*—angular, 0.5 mm
2. *Ferruginous fine-grained material*—oblong, 0.2 x 0.5 mm
3. *Epidote*—0.2 x 0.4 mm
4. *Obsidian*—angular, 0.2 to 2.0 mm
5. *Quartzite*—subrounded, 1.0 mm
6. *Other mafics*—0.1 mm

Materials on Surface:

1. *Epidote*—same
2. *Quartz*—same
3. *Other mafics*—same

Red Banded Ladles (RC 118-120)

Materials in Cross-Section:

1. *Pink quartzite*—subangular, 1.0 mm
2. *Grey quartzite*—subangular, 0.8 mm
3. *Chalcedony*—subrounded, 0.3 mm
4. *Epidote*—0.2 mm
5. *Quartz*angular, 0.5 mm
6. *Fine-grained beige material*—rounded, 0.1 mm
7. *Plant impressions*
8. *Obsidian*—angular, 0.1 mm
9. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Epidote*—same
2. *Quartz*—same
3. *Other mafics*—same

Straight-Sided Brown Bowls, Light Flare Rims (RC124-126)

Materials in Cross-Section:

1. *Fine-grained material, quartz inclusions* (sherd?)—rounded, 0.8 mm
2. *Obsidian*—angular, 0.2 mm
3. *Epidote*—0.2 x 0.4 mm
4. *Quartzite*—subangular, 0.5 to 0.8 mm
5. *Vesicular glass shards*—0.1 to 0.3 mm
6. *Other mafics*—subangular, 0.1 mm

Materials on Surface:

1. *Epidote*—same
2. *Quartz*—same
3. *Other mafics*—same

Jar Bodies (RC 127-129)

Materials in Cross-Section:

1. *Olivine crystals*—0.5 mm
2. *Epidote*—0.4 mm
3. *Quartzite*—subangular, 1.0 mm
4. *Quartz*—angular, 0.5 mm
5. *Obsidian*—angular, 0.3 mm
6. *Plant impressions*
7. *Biotite*—0.4 mm
8. *Feldspar*—angular, 0.4 mm
9. *Other mafics*—, subangular, 0.1 mm

Materials on Surface:

1. *Olivine*—same
2. *Epidote*—same
3. *Quartz*—same
4. *Obsidian*—same
5. *Other mafics*—same

Note: These types may be mixed—also carbonized plant remains in RC 127.

APPENDIX B—Categories and Sample Numbers

Late Toltec Phase
- Wide Band Red/Buff
  - RC 1 (TT-21-51)
  - RC 2 (TT-14-A)
  - RC 3 (TT-14-A)
  - RC 4 (TT-14-A)
  - RC 5 (TT-14-A)
  - RC 6 (4516/1)
- Toltec Brown
  - RC 133 (?)
  - RC 134 (TT-14-A)
  - RC 135 (TT-14-A)
  - RC 136 (4520)
  - RC 137 (TT-14-A)
  - RC 138 (4506)
  - RC 139 (TT-14-A)
  - RC 140 (TT-14-A)
  - RC 141 (TT-14-A)
  - RC 142 (4503)
- Red-Purple Slip
  - RC 7 (TT-25, Rd #20)
  - RC 8 (TT-14-A)
  - RC 9 (TT-14-A)
  - RC 10 (TT-14-A)
- Burnished Brown Bowls
  - RC 11 (4518)
  - RC 12 (4516)
  - RC 13 (?)
  - RC 14 (TT-14-A)
  - RC 15 (TT-14-A)
  - RC 16 (TT-14-A)
  - RC 17 (4519)
  - RC 18 (4518)
- Toltec Red/Buff
  - RC 27 (TT-14-A)
  - RC 28 (TT-14-A)
  - RC 29 (TT-14-A)
  - RC 30 (TT-14-A)
  - RC 31 (TT-14-A)
- Dark Brown Slip
  - RC 32 (4503)
  - RC 33 (?)
  - RC 34 (4510)
  - RC 35 (4509/8)
  - RC 36 (4501)
- Narrow Band Red/Buff
  - RC 37 (TT-14-A)
  - RC 38 (TT-14-A)
  - RC 39 (TT-14-A)

Orange Cream
- RC 40 (TT-17-A)
- RC 41 (TT-14-A)
- RC 42 (TT-14-A)

Red Burnished Bowls
- RC 43 (TT-14-A)
- RC 44 (TT-23-A)
- RC 45 (TT-14-A)

Comals
- RC 46 (TT-14-A)

Orange Slip
- RC 47 (4503)
- RC 48 (4509/7)
- RC 49 (4515)

Red/Buff Jars—Coarse Ware
- RC 50 (4518)
- RC 51 (4508)

Red/Buff Jars
- RC 52 (TT-21-82)
- RC 53 (TT-21, Md-51)

Painted Rim Jars (Coarse Red/Buff or Black Jars—Flat and Flaring Rims)
- RC 54 (TT-21, Md-51)
- RC 55 (TT-23-A)
- RC 56 (TT-14-A)

Burnished Orange
- RC 57 (4515)
- RC 58 (4519)
- RC 59 (4518/2)

Basins
- RC 60 (TT-14-A, Maz. Ev. Lip)
- RC 61 (TT-14-A, Maz. Ev. Lip)
- RC 62 (TT-14-13)

Figurines
- RC 63 (TT-21-99)
- RC 64 (TT-21, Tl #37)
- RC 65 (TT-14-A)

Support Forms
- RC 66 (TT-14-A)
- RC 67 (TT-14-A)
- RC 68 (TT-14-A)

Mazapan Red/Buff
- RC 130 (TT-14-A)
- RC 131 (TT-14-A)
- RC 132 (4508)

Tula Water-Colored Polished White
- RC 21 (TT-14, 3/4501)
- RC 22 (TT-14, 4503)
- RC 23 (TT-14, 4519)
- RC 24 (TT-14, 4518)

Tula Water-Colored Polished White-White
- RC 19 (TT-14, 4504/11)
- RC 20 (TT-14, 11/1056)
- RC 25 (TT-14-A)
- RC 26 (TT-14-A)

Miscellaneous Sherds—Tula
RC 69 (1002)
RC 70 (?)
RC 71 (?)
RC 72 (?)
RC 73 (1002)
RC 74 (?)
RC 75 (?)
RC 76 (1002)
RC 77 (?)

Coyatlatelco—Tula
RC 78 (?)
RC 79 (1002)
RC 80 (?)
RC 81 (1002)
RC 82 (?)

Cuanalan, Early Toltec Phase
Incised, Stamped, White Slipped
RC 83-86 (unnumbered)
Basin Bodies
RC 87-90 (unnumbered)
Vessel Handles
RC 91-93 (unnumbered)
Vessel Supports
RC 94-96 (unnumbered)
Red Lip Brown Ladle
RC 98 (unnumbered)
Red Lip Brown Censer Handle
RC 97 (unnumbered)
Red Lip Brown Pipe
RC 99 (unnumbered)
Red Banded Lip, Red Interior and Exterior
RC 100-103 (unnumbered)
Coyatlatelco Exterior Design
RC 104-107 (unnumbered)
Coyatlatelco Interior Design
RC 108-111 (unnumbered)
Censer Fragments
RC 112-114 (unnumbered)
Straight-Sided Brown Bowls—Pronounced Flare Rims
RC 115-117 (unnumbered)
Red Banded Ladles
RC 118-120 (unnumbered)
Jar Rims
RC 121-123 (unnumbered)
Straight-Sided Brown Bowls—Light Flare Rims
RC 124-126 (unnumbered)
Jar Bodies
RC 127-129 (unnumbered)

CHAPTER 12

NON-CERAMIC ARTIFACTS FROM OXTOTIPAC, XOMETLA, AND CUANALAN EAST

by

William T. Sanders

TABLE OF CONTENTS

Page

INTRODUCTION 643

TYPES OF RAW MATERIAL 643

ARTIFACTS FROM OXTOTIPAC 645
- Basalt Artifacts 645
- Tezontle Artifacts 648
  - Artifacts of Uncertain Function 649
  - Plastering Tools 651
- Ground Stone Tools—Material Unknown 656
- Miscellaneous Stone Tools 660
- Stone Ornaments 663
- Pumice Artifacts 668
- Building Debris 671
- Miscellaneous Artifacts 671
- Shell and Bone Artifacts 671

ARTIFACTS FROM XOMETLA 675
- Basalt Artifacts 675
  - Manos 675
  - Large Shallow Mortars 677
  - Slab Metates 677
  - Probable Plastering Tools 677
  - Bark Beater 680
  - Miscellaneous Artifacts 680
- Tezontle Artifacts 680
  - Plastering Tools 680
  - Miscellaneous Artifact 682
- Miscellaneous Artifacts 682

ARTIFACTS FROM CUANALAN EAST 684

OBSIDIAN ARTIFACTS FROM OXTOTIPAC, XOMETLA, AND CUANALAN EAST 687

INTRODUCTION

The excavation of the Oxtotipac cave recovered a very rich assemblage of ground and chipped stone artifacts. The Xometla excavation yielded a numerically and qualitatively much poorer, but still substantial, sample, and only a few items were recovered at Cuanalan East. To date none of this material has been analyzed by an archaeologist competent in lithic analysis. The large collection of obsidian has been turned over to Joseph Michels, who is preparing a special monograph on the entire obsidian assemblage of the Teotihuacan Valley project. The remainder of lithic material is, as yet, not assigned to a lithic specialist for analysis.

In this brief report the intent is to give the reader a cursory knowledge of the lithic industry for the Toltec sites. In the case of obsidian, this will be confined to a few photographs to illustrate the range of artifact types. With respect to the balance of the artifacts some detailed information is presented, along with photographic reproductions.

TYPES OF RAW MATERIAL

The Basin of Mexico is a relatively young geological region and has been the scene of considerable recent volcanism. As a result there is a great range of surface rocks in terms of texture, and the prehispanic population took advantage of this range. For ground, polished, and pecked stone tools various textural classes of volcanic rock, from very fine grain, almost slatey material, to extremely coarse, porous, spongy scoria served for a great variety of uses. Basalt was generally used for grinding stone, woodworking tools (a very rare artifact), polishing stones, maguey pulpers, hammers, bark beaters (a very rare artifact), and for plastering tools. The coarser textured scoria, locally referred to as Tezontle, was used for stuccoing tools, curtain holders in doorways, and for a number of artifacts of undetermined functions. Tezontle was also heavily used for wall construction, both in the Classic Period city and on rural sites for all time periods. Basalt was occasionally used in the Classic city for stairways and retaining walls of terraces, in very special situations, and was also used for monumental sculpture.

Chipped stone tools were manufactured primarily from obsidian but basalt was also used, primarily for the production of large, massive, scrapers; white quartz, and occasionally chert were used on a very small scale for points and scrapers, tools that were more commonly manufactured of obsidian.

With this brief introduction we will present a description of the artifact collection from the three sites. In many cases the function of the artifact is relatively secure, but as the reader will note we have a considerable collection of artifacts for which the function is completely unknown to the writer, and a number of types in which the designated function must be considered as tentative. For this reason we have presented a great number of photographs as illustration for most of the artifacts.

Plate 1

ARTIFACTS FROM OXTOTIPAC

Basalt Artifacts

These are all artifacts made from volcanic rock that is typically dense, heavy, and characterized by very small air holes (in the denser examples such holes are not visible to the naked eye). Virtually all of the artifacts are various shades of gray, primarily light gray, in color.

1. Oval shaped, grooved hammer (Plate 1,a). *Dimensions*: 5.5 cm long, 3.5-4.5 cm wide, 3.0-3.5 cm thick.

2. Grooved, slab-shaped hammer (Plate 1,b). *Dimensions*: 10.0 cm long, 8.0-70.0 cm wide, 4.2-4.5 cm thick.

3. Mortar rim (Plate 1,c). *Dimensions*: the floor of the basin is 5.0 cm thick, total height of the rim is 8.5 cm.

4. Mortar rim (Plate 1,d). *Dimensions*: the floor of the basin is 7.0 cm thick, total height of the rim is 12.0 cm.

5. Probably a grinding stone (Plate 1,e). Tear drop shaped artifact, with a flat lower side, rounded or keeled profile. *Dimensions*: 12.5 cm long, 8.0 cm maximum width, 3.5 cm thick.

6. Same as (5) but more irregular in shape (Plate 1,f). *Dimensions*: 9.7 cm long, 6.5 cm maximum width, 3.1-4.3 cm thick.

7. Fragment of a mano (Plate 1,g).

8. Small fragment of dark gray artifact (Plate 1,h). Highly polished, very dense fine grained basalt. Function of artifact uncertain.

9. Probably a grinding tool (Plate 1,i). Rectangular tool, with a convex, sloping upper surface; flat base. *Dimensions*: 2.0-3.5 cm thick, base 9.0 cm^2.

10. Probably a piece of a non-expanded end mano (Plate 1,j). Is somewhat rectanguloid in shape but does taper, has a rectanguloid cross-section. *Dimensions*: the fragment is 11.5 cm long (not a complete artifact), 7.3-8.5 cm wide, 3.0-5.0 cm thick.

11. Piece of a bevelled end, flat sided object, possibly a wood-working tool but more probably is just a piece of metate rim (Plate 2,a). *Dimensions*: 4.2-5.0 cm thick, and broken on all three sides.

12. Rectangular object (Plate 2,b). *Dimensions*: 5.5-6.0 cm thick, 8.5 cm wide, length uncertain.

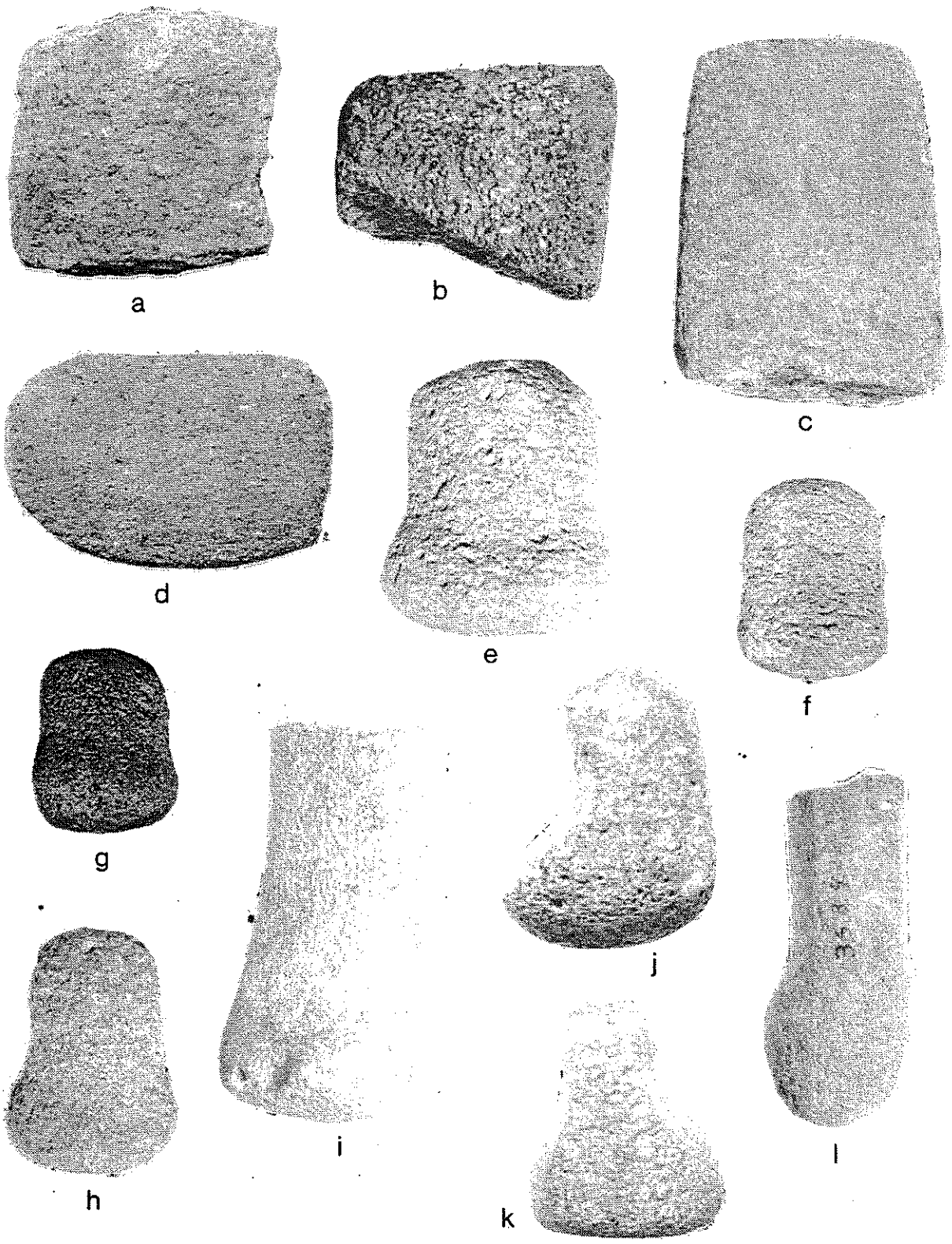
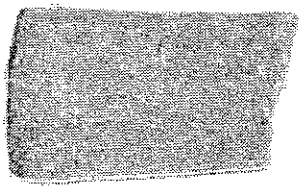


Plate 2



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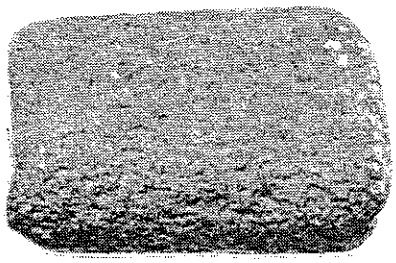

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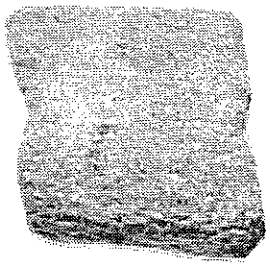

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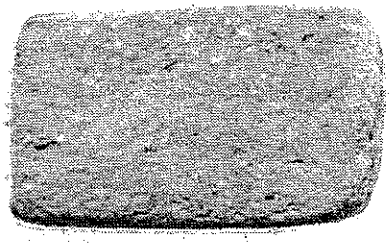

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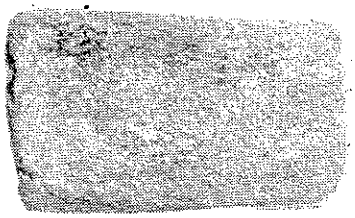

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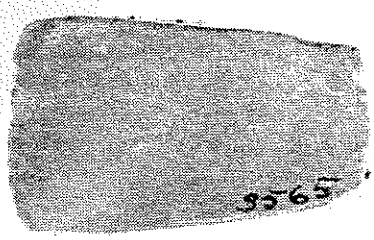

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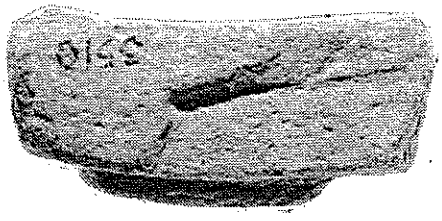

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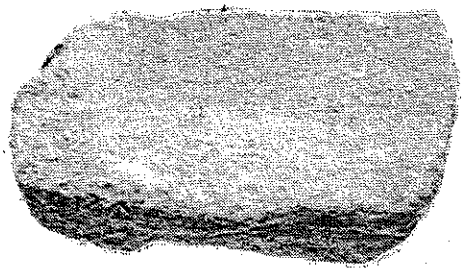


i

Plate 3

13. Piece of very wide, slab-like mano or very narrow metate (Plate 2,c). *Dimensions*: 7.5-8.5 cm wide, 3.5-5.0 cm thick, 12.0 cm long.

14. Possible fragment of a raised lip metate (Plate 2,d).

15. Probable fragment of an expanded end mano or possibly a pestle (Plate 2,e). It could in fact be a fragment of a broken mano that was reused as a pestle as well. *Dimensions*: 8.3 cm long, 3.8-4.5 cm in cross-section.

16. Bell shaped pestle (Plate 2,f). *Dimensions*: 3.7-4.3 cm long, 4.0 cm in cross-section diameter at the smaller end, 4.8 cm in cross-section diameter at the wider end.

17. Bell shaped pestle (Plate 2,g). *Dimensions*: 6.2 cm long, 4.0 cm in cross-section diameter at the smaller end, 4.8 cm in cross-section diameter at the larger end.

18. Bell shaped pestle (Plate 2,h). *Dimensions*: 4.0-4.5 cm in cross-section diameter at the smaller end, 5.0-5.5 in cross-section diameter at the larger end, 8.0 cm long.

19-23. Typical ends of expanded end manos (Plates 2,i to 2,l).

24-28. Pieces of the mid-section of manos (Plates 3,a to 3,e).

29. Very fine grained tabular and tear drop shaped celt (Plate 3,f). Possibly not basalt. *Dimensions*: very slab-like in appearance with a thickness of only 1.2 cm. In plan view the artifact is 9.5 cm long, the butt end is 4.0 cm wide, and the bit end is 5.7 cm wide. It has a double bit. The texture is very dense, very fine textured, and dark gray in color.

30. Small tabular celt fragment (Plate 3,g). This artifact is similar to 29 but much smaller in size. It is only 1.0 cm thick, 3.2 cm wide, and is at least 4.8 cm long, but it is broken at one of the ends. It is also manufactured of a very dark gray dense material that may or may not be basalt.

31. Small very well made rectangular metate (Plate 3,h and 3,i). Manufactured of a dark gray basalt. The fragment has a large low rectangular leg. The floor of the metate is 4.0 cm thick, the rest of the dimensions are not available for measurement.

Tezontle Artifacts

The term *tezontle* is used in Central Mexico for spongy, porous volcanic detritus, usually very light in weight, although there is considerable variation in density, and hence weight of the material so labeled. In fact the full range of artifacts we have labeled as tezontle, grade, at the denser, heavier range, into what we have called basalt, since some basalt is relatively spongy with large numbers of air holes. What we have obviously is a continuum of volcanic materials from very light material which is full of air holes to extremely dense compact material in which the air holes cannot be seen with the naked

eye. Artifacts labeled as basalt are usually gray in color whereas tezontle artifacts tend to be orange or reddish, although there is considerable overlapping into the gray shades in the case of the tezontle tools. In other words, the color tends to range very much the way the density does with considerable overlapping.

Tezontle was and is used extensively for building materials in the valley, as fill for floors, platforms, and walls. It is also trimmed into roughly shaped rectangular forms as facings for doorways and terraces. It was processed into a great variety of artifacts, the function of which, in some cases, is problematical. The major characteristics of tezontle what would seem to relate to function are its rough surface, light weight, and precise form. Each artifact will be briefly described below; probable or possible functions will be suggested for some of them.

Artifacts of Uncertain Function

1. Artifact with a flat base and arched upper surface (Plate 4,a). *Dimensions*: base 5.6 x 4.0-5.6 cm, maximum height of the arched upper surface 2.2 cm. *Texture and Color*: fine grain, light gray.

2. Fragment of rectangular slab-like object (Plate 4,b). The corners of this and succeeding artifacts that we are calling rectangular, are somewhat rounded. *Dimensions*: 1.5 cm thick, 2.5 cm wide, 4.0 cm long (because this is a fragment, this is only a partial length). *Texture and Color*: fine grain, reddish gray.

3. Complete, rectanguloid slab object (Plate 4,c). *Dimensions*: 1.4 cm thick, 6.2 cm long, 3.8 cm wide. *Texture and Color*: fine grain, light gray.

4. Almost complete, slab-like artifact with an oval plan (Plate 4,d). *Dimensions*: 2.0 cm thick, 9.2 cm wide, 10.0 cm long. *Texture and Color*: spongy dark gray, extremely rough surface, and light in weight.

5. Complete rectangular slab shaped artifact (Plate 4,e). *Dimensions*: 2.5-2.7 cm thick, 9.4 cm long, 6.7-7.0 cm wide. *Texture and Color*: medium density, dark gray.

6. Complete, rectangular slab artifact (Plate 4,f). Modifications of thickness dimensions suggest hafting. Artifact has a flat under surface and a slightly arched upper surface. If it were hafted, in all probability the flat side is the functional side of the artifact. *Dimensions*: 2.5 cm thick, 5.8 cm long, 4.3 cm wide. *Texture and Color*: fine grain, light gray.

7. Complete, rectangular slab artifact (Plate 4,g). *Dimensions*: 2.0-2.3 cm thick, 6.0 cm long, 3.8-4.2 cm wide. *Texture and Color*: fine grain, dark gray.

8. Complete, low hemisphere shaped artifact (Plate 4,h). This artifact has a flat under surface and an arched upper surface, but with a much lower arch than artifact (1). In plan the flat lower surface is ovoid. *Dimensions*: 2.0-2.3 cm thick, 6.0 cm long, 3.8-4.2 cm wide. *Texture and Color*: fine texture, light gray.

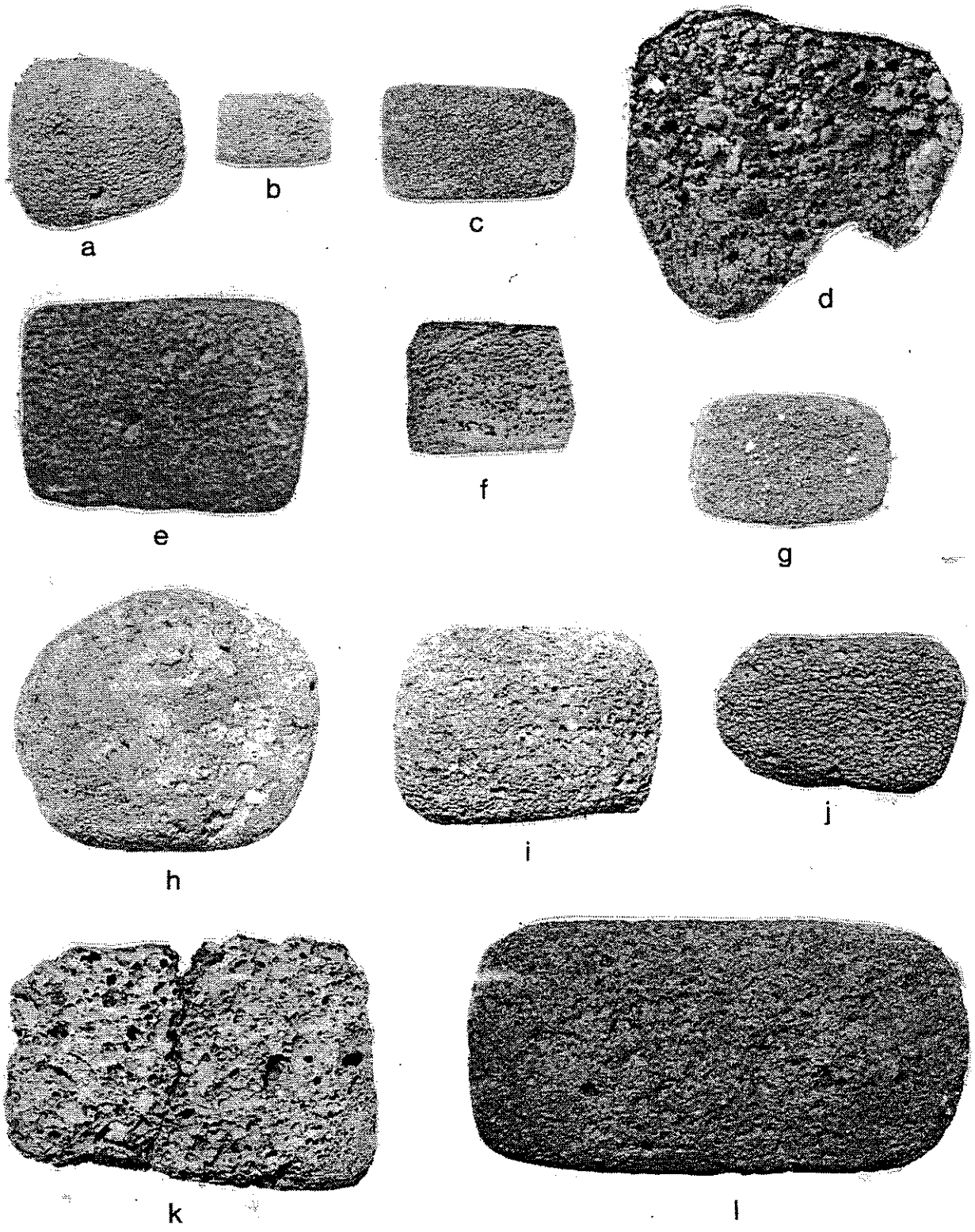


Plate 4

9. Complete rectangular slab shaped artifact (Plate 4,i). This has a slightly convex upper surface and a flat lower surface. *Dimensions*: 2.5-3.1 cm thick, 8.5 cm long, 6.0-6.5 cm wide. *Texture and Color*: medium fine, reddish.

10. Complete rectangular slab artifact (Plate 4,j). *Dimensions*: 2.0 cm thick, 8.0 cm long, 4.6 cm wide. *Texture and Color*: medium texture, reddish.

11. Rectangular slab artifact, almost complete (Plate 4,k). *Dimensions*: 3.0-3.5 cm thick, 11.0 cm long, 6.7-8.0 cm wide. *Texture and Color*: very spongy, rough surface, reddish.

12. Rectangular slab artifact (Plate 4,l). This artifact has a slight convexity to both the upper and lower surfaces. *Dimensions*: 3.2-3.5 cm thick, 16.8 cm long, 8.5 cm wide. *Texture and Color*: very fine texture and dark gray.

13. Irregular, ball shaped artifact (Plate 5,a). *Dimensions*: 5.2 x 3.8 cm. *Texture and Color*: fine texture, light reddish gray.

14. Irregular, ball shaped artifact (Plate 5,c). *Dimensions*: 3.7 x 4.0 cm. *Texture and Color*: fine texture, reddish

15. Mortar-like object (Plate 5,b). In section, one rim of the mortar is much higher than the other, and the depressed area is very shallow. In plan it has a trianguloid shape. *Dimensions*: 6.0 cm high at the highest point of the rim, 3.0 cm high at the floor of the basin, 4.5 cm high at the lowest rim point; basal dimensions 8.5 x 12.5 cm. The depressed section is only about half the dimension of the basal area. *Texture and Color*: medium density, dark gray.

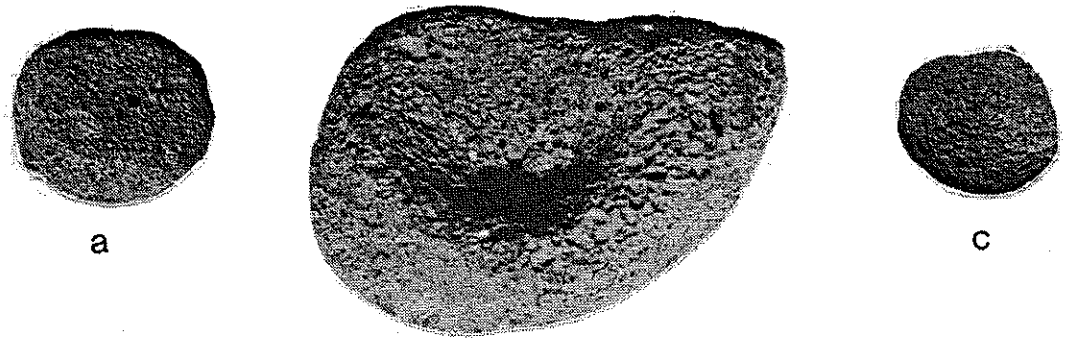
16. Fragment of a curtain holder (Plate 5,d). This is a perforated, rectangular, slab shaped artifact. *Dimensions*: 2.3-2.5 cm thick, 7.0 cm long, 5.0 cm wide. The hole has a diameter of 1.5 cm. *Texture and Color*: medium texture, light gray.

17. Curtain holder (Plate 5,f). This is an irregular, rectangular, and slab-like perforated artifact. *Dimensions*: 3.0-4.0 cm thick, 5.5-6.0 cm wide, 8.2 cm long. The hole is 1.5 cm in diameter. *Texture and Color*: fine texture but very light weight almost like pumice, reddish in color.

18. Tabular rectangular artifact (Plate 5,e). *Dimensions*: 1.0 cm thick, 2.8 cm wide, 5.0 cm long. *Texture and Color*: fine texture, reddish.

Plastering Tools

All of the artifacts described below refer to a type, common at Classic period Teotihuacan, which have been identified as plastering tools. Because no lime plaster was noted on their surfaces, and because they have a relatively rough surface, more probably they were used to apply the thick under-coat of stucco, the major constituents of which was clay texture soils and tezontle gravel. All these artifacts are characterized by a rectangular, slab-like lower section (the under surface of which was presumeably used to apply the stucco), and a smaller, higher handle-like upper segment. The proportion of the



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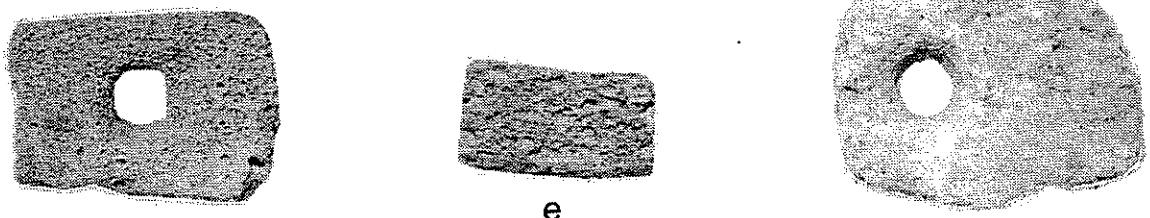

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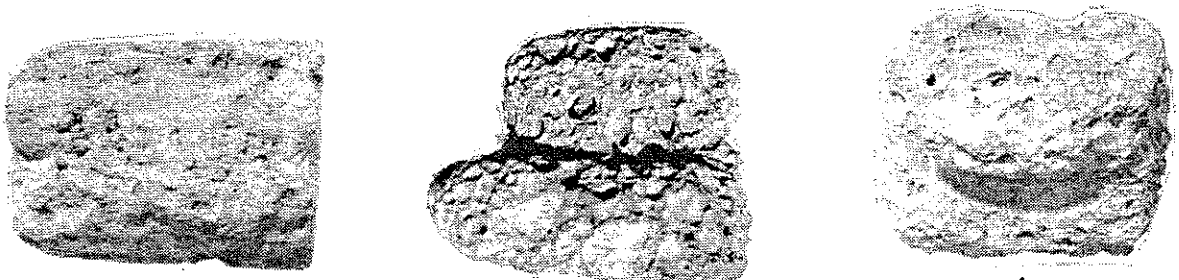

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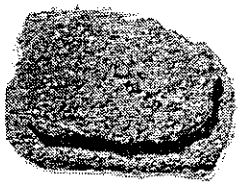
j k

Plate 5

a

b



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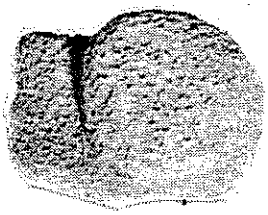

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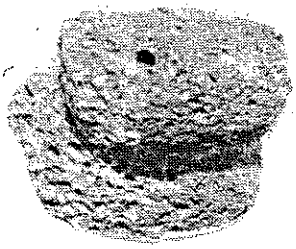

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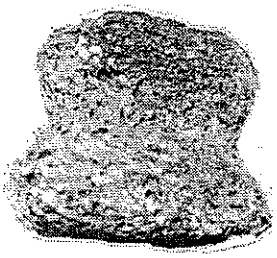

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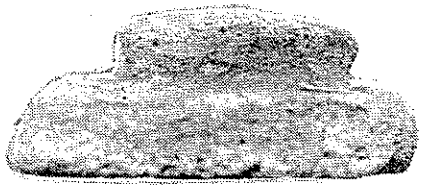

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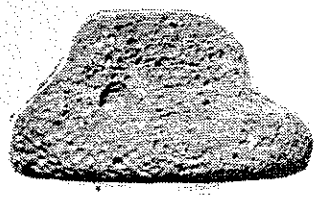

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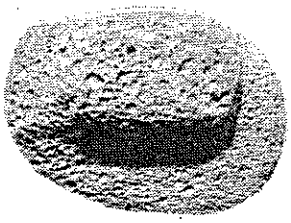

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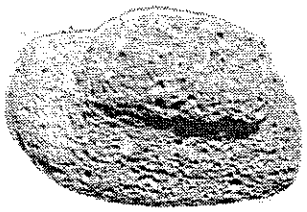

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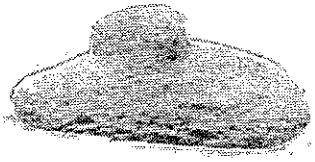

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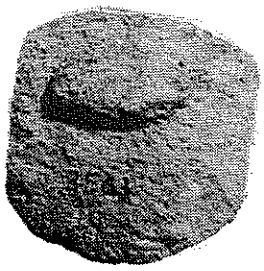

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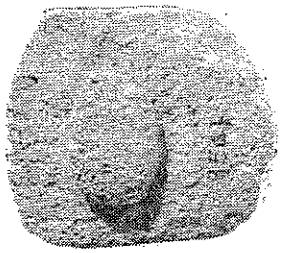


p

Plate 6

inferior to the superior section varies considerably, however, in height and plan, as does the total size of the artifact and its texture. Generally the texture tends to be finer, the artifact denser and heavier than most tezontle artifacts. In a number of cases, the artifact appears a terraced pyramid, and, in other cases, it has a shoe-like appearance with a projecting heel. Several have a form comparable to a bark beater. The following individual artifacts were collected:

1. Shoe shaped (Plates 5,h and 5,i). *Dimensions*: a maximum height of the artifact from the base to the upper part of the handle is 5.8 cm; the basal or flat lower surface measures 6.5 x 7.5 cm. The handle portion, in plan view, is about half the size of the basal area. *Texture and Color*: very spongy, rough surface, light gray in color.

2. Shoe shaped, with a slightly projecting heel (Plates 5,j and 5,k). In this case the handle, in plan view, occupies only about one-sixth of the dimension of the base and is located asymetrically with respect to the central point of the base. *Dimensions*: the base is 7.6 cm wide, at one end, tapering to 6.3 cm at the other end, and has a length of 12.0 cm. The total height of the artifact is 5.0 cm but the upper portion of the handle is broken. The rectangular basal portion is 2.5 cm high. *Texture and Color*: medium texture, dark to light gray.

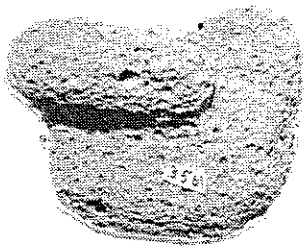
3. "Bark beater" form (Plates 6,a to 6,c). *Dimensions*: the total height of the artifact is 2.5 cm, about half of which is the basal height and the other half the handle. The base measures in plan view 4.5 x 6.5 cm, the handle 3.0 x 5.0 cm. *Texture and Color*: fine texture, dark to light gray.

4. Shoe shape but with a very projecting heel (Plates 6,d and 6,e). The handle is very high and placed in the center of the artifact. *Dimensions*: total height is 5.0 cm of which two-thirds is handle, the base is 6.5 x 4.0-4.5 cm. The handle in plan view is about as wide as the base but only half as long. *Texture and Color*: fine texture, light gray.

5. Pestle shape form (Plates 6,f and 6,g). *Dimensions*: 5.5 cm high, about half of which is handle, half base. The basal section measures 6.5 x 4.5 cm and, in plan view, the handle occupies about two-thirds of the area of the base. *Texture and Color*: medium texture, dark gray.

6. Terraced pyramid form with two terraces (Plates 6,h to 6,j). Handle is placed in the center of the artifact. *Dimensions*: total height is 4.0 cm, about 60% of which is the base, about 40% the handle. The base measures 8.2 x 9.8 cm. In plan view the handle occupies approximately one-third of the surface area of the base. *Texture and Color*: fine texture, light gray.

7. Terraced pyramid form with two terraces (Plates 6,k to 6,m). Handle is about in the middle of the artifact and the upper surface of the upper terrace is sloping. *Dimensions*: total height is 4.2 cm of which about half is handle, half base. The base is trianguloid in shape and measures 5.2 cm at one end, 4.0 cm at the other and is 7.4 cm in length. The handle occupies approximately half of the surface area of the base in plan view. *Texture and Color*: fine texture, light gray.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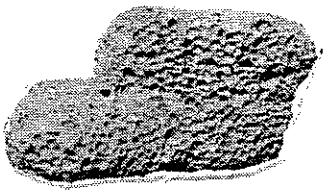
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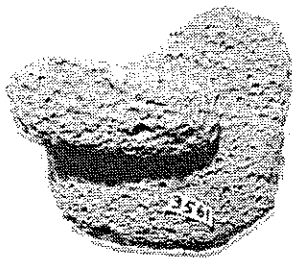
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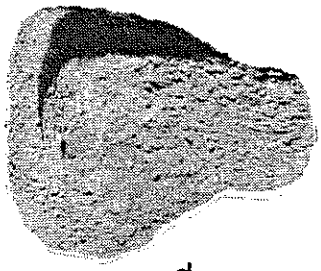
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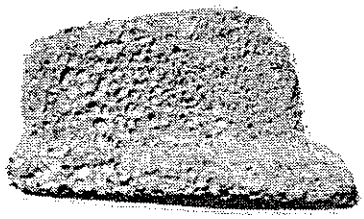
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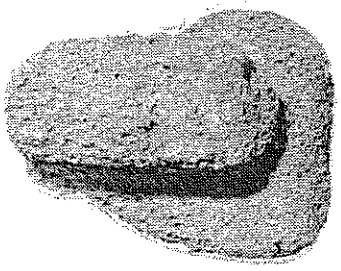
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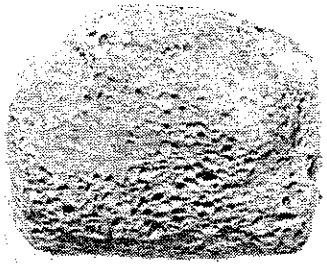
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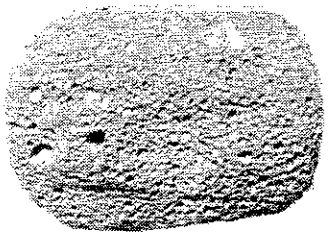
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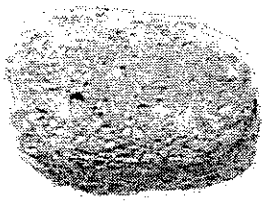
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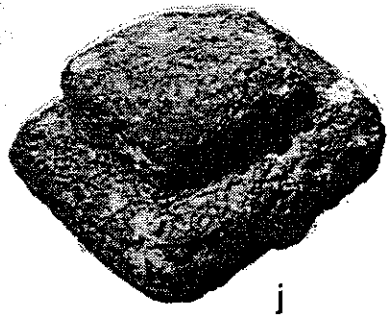
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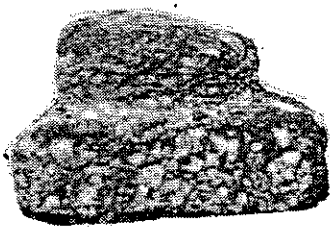
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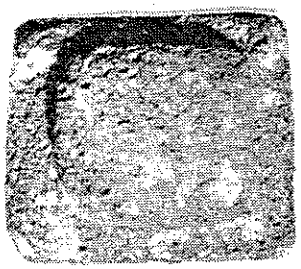
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Plate 7

8. Terrace pyramid form with two terraces (Plates 6,n to 6,p). Handle is in the center of the artifact. *Dimensions*: 2.7 cm high, the upper terrace is asymetrical in height with one side twice as high as the other and there is a definite convexity to the surface of the upper terrace. The base measures 6.2 x 7.0 cm and the handle occupies approximately one-fourth of the surface area of the base in plan view. *Texture and Color*: very fine texture, light gray.

9. Shoe form without a projecting heel (Plates 7,a to 7,c). *Dimensions*: height 3.7 cm, about half of which is base, half is handle. The base is irregular and forms an asymetrical oval measuring 6.0 x 6.5 cm. The handle occupies about one-fourth of the surface area of the base in plan view. *Texture and Color*: medium texture, reddish.

10. Pyramidal form with two terraces (Plates 7,d to 7,f). The upper terrace is considerably higher than the lower and has a sloping upper surface. *Dimensions*: the total height is 4.0-4.7 cm, of which three-fourths is the handle or upper terrace. The handle is almost centrally placed and about half the size of the lower terrace in size in plan view. The diameter of the base measures 7.0 x 8.0 cm. *Texture and Color*: very fine texture, dark gray in color.

11. Dome shaped artifact; it has a slight shoulder and lacks the well defined division into two parts that most of these artifacts have (Plates 7,g and 7,h). It appears generally as a truncated half dome in profile. *Dimensions*: the maximum height of the arched upper surface is 4.8 cm, the shoulder at one end is 3.5 cm high and the base measures 6.2 x 8.2 cm. *Texture and Color*: fine texture, dark gray.

12. This is a broken artifact with only a preserved rectangular basal portion (Plate 7,i). *Dimensions*: 3.0 cm high, basal dimensions 5.7 x 8.0 cm. *Texture and Color*: fine texture, dark gray.

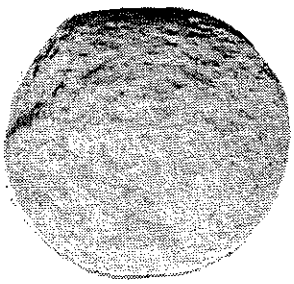
13. Pyramidal form with two terraces (Plates 7,j to 7,l). The terraces are about equal in height. The upper surface of the upper terrace is sloping. *Dimensions*: the total height of the artifact varies from 4.3 to 4.7 cm, the height of the lower terrace is 2.5 cm. The basal dimensions are 6.4 x 7.4 and the upper terrace is about two-thirds of the surface area of the lower terrace. *Texture and Color*: very fine texture, light gray.

Ground Stone Tools—Material Unknown

These are all ground stone artifacts mostly made from heavy dense rock that does not seem to be specifically basalt. I suspect that, in fact, it is some kind of very fine grain basalt but the identification remains uncertain. The others are of sandstone.

1. Ovoid slab-like artifact (Plate 8,a). This artifact has an elongated oval shaped flat basal surface and a convex upper surface. The base is well polished, probably from use so the artifact is probably some kind of polishing stone. There are a number of pitted areas on the upper convex surface that almost look like an attempt to show a human face.

a



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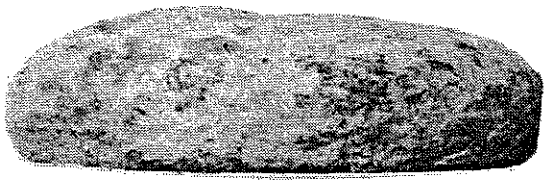

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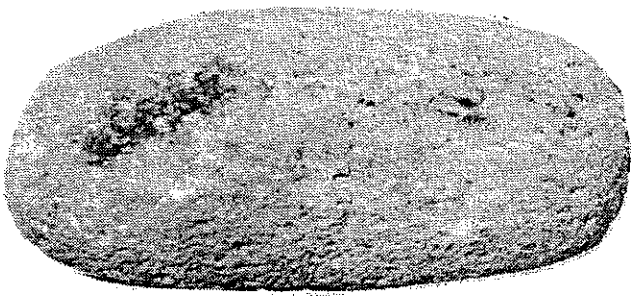

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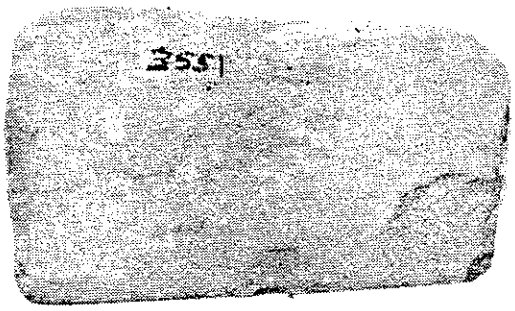

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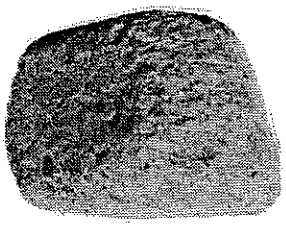

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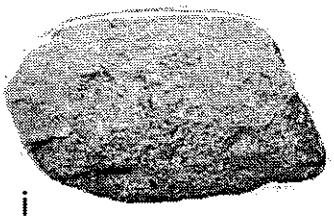

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Plate 8

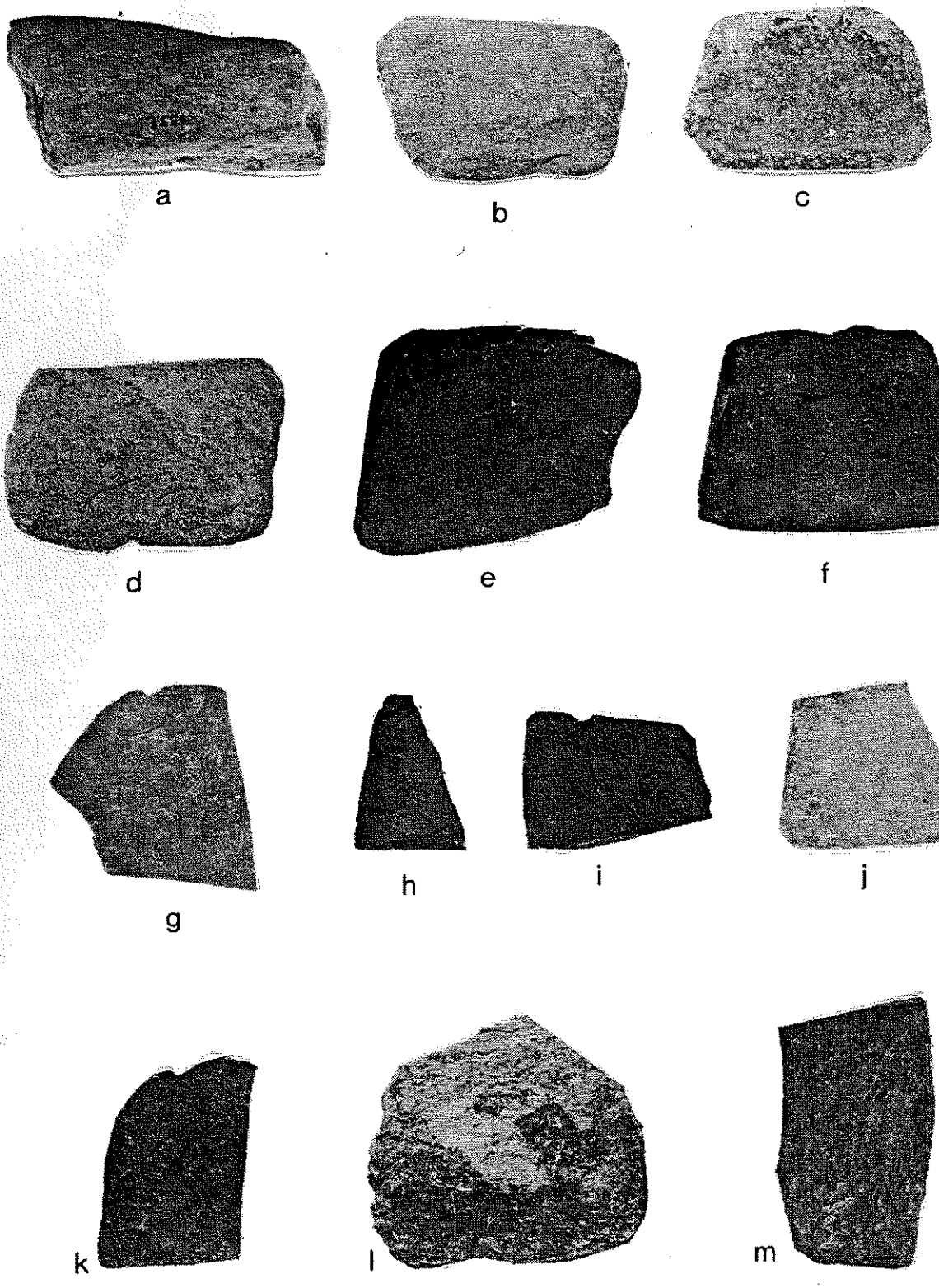


Plate 9

Dimensions: 3.6 cm high at the center of the convex upper surface, the basal surface measures 12.6 x 7.6 cm. *Texture and Color*: heavy dense texture but with a rough surface, with the exception of the polished base, whitish to dirty gray in color.

2. Irregular rectanguloid slab shaped artifact (Plates 8,c and 8,d). The basal surface is slightly convex, the upper surface is slightly concave. Both sides show evidence of polishing. *Dimensions*: 4.6 cm thick, 7.5 x 15.5 cm in basal dimension. *Texture and Color*: dense, but rough surface except for the lightly polished areas, whitish to dirty gray in color.

3. Rounded natural pebble with one flatter and polished surface, probably used as a polishing stone (Plate 8,b). *Dimensions*: 7.0 x 6.5 cm in diameter. *Texture and Color*: dense but with a rough surface, whitish to dirty gray in color.

4. Ovoid natural pebble with a very light polish on one side (Plate 8,e). This side is somewhat flattened so it also was probably a polishing stone. *Dimensions*: 5.0 cm thick, 7.6 x 9.5 cm in the other dimensions.

5. Complete rectanguloid slab object (Plate 8,f). *Dimensions*: 2.2 cm thick, 7.6 cm wide, 12.8 cm long. *Texture and Color*: white sandstone with a very abrasive surface, one can see the laminations in the texture.

6. Trianguloid shaped fragment of an artifact manufactured from a very heavy, dense, reddish rock (Plate 8,g). One side is broken, and there are no well polished surfaces, so this was undoubtedly not a polishing stone. *Dimensions*: 8.5 x 5.0 cm (unbroken dimensions).

7. Irregular natural pebble, probably used for smoothing (Plate 8,h). It is composed of a very heavy dense rock. *Dimensions*: maximum diameter 6.0 cm.

8. Large elongated natural pebble, possibly a smoothing stone (Plate 8,i). *Dimensions*: maximum length 8.0 cm. *Texture and Color*: dense reddish stone.

9. Elongated natural pebble made of a dense gray stone (Plate 9,a). All edges are broken so that no dimensions could be taken.

10-20. Maguey pulpers (Plates 9,b to 9,k). These are all slab-like, trapezoidal shaped tools, with a dull, but definite bit, and frequent signs of polishing on the edge of the bit. During the Teotihuacan Valley project we identified these artifacts as hoes. Recent studies on present day maguey processing suggest that more probably they were used to pulp maguey leaves as a step in the manufacture of cordage. *Dimensions*: this group varies only slightly in size and we will present here only one measured example. The particular example had a maximum thickness of 0.8 cm, an approximate length of 6.5 cm, and a width that varies from 8.5 cm at the bit end to 6.5 cm at the butt end. *Texture and Color*: All of these artifacts are made of an extremely fine textured slatey rock, that is probably some kind of unusually fine textured basalt, since they have a color very similar to basalt. They are generally dark gray in color.

21-24. Fragments of large tabular artifacts made of the same material as the maguey pulpers but with chipped edges (Plates 9,l; 9,m; 10,a; and 10,b). One large fragment is 0.5 cm thick and measures 9.0 x 17.0 cm.

24-33. These are all fragments of the same kind of material used in the maguey pulpers but are all portions of either adzes or celts (Plates 10,c to 10,l). Most of them are too small to take any significant measurements, but in the following case examples such measurements were available. *Dimensions*: One has a double angle bit; it is 3.0 cm thick and has an approximate minimal length of 8.5 cm. Another one has a double angle bit; thickness varies from 3.0-3.2 cm, minimal length is 8.5 cm, however the butt end is broken. A third artifact from this group resembles a chisel rather than a celt. It is 5.9 cm long, 1.6 cm thick, and 1.1 cm wide. Finally, a fourth artifact, which has a single angle bit and hence perhaps should be classified as an adze, is 0.9 cm thick with a minimal length of 7.2 cm, however, a small piece of the butt end is broken off. The width varies from 1.6 to 2.0 cm.

34-98. In the excavation at Oxtotipac we found a great number of slab-like fragments, roughly comparable in thickness and overall appearance to central sections of metates (Plates 11,a and 11,b). They are either manufactured of basalt, or the slate-like material that we referred to in our description of the maguey pulpers. Nearly all of the artifacts in this group have well polished surfaces which would make it unlikely that they were actually used as metates. We have divided this group of objects into five categories, on the basis of the thickness of the fragments. This of course may not be an indication of any kind of use of the artifact. It is possible that they represent some kind of building stone. *Dimensions*: Approximately 15 fragments are 1.0 cm in thickness, 29 fragments had a modal thickness of 1.5 cm, fifteen fragments were 2.0 cm, two fragments were 2.5 cm, and 2 fragments were 4.0 cm in thickness. The largest fragments measured 9.0 x 10.0 cm in diameter although the fragments vary considerably in size and they are all broken pieces of some larger object so that the artifact dimensions are not obtainable.

99. Small fragment made of sandstone. This artifact is of uncertain function.

100. Large, granite oval hammerstone (Plate 11,c). *Dimensions*: 9.5 x 7.0 cm. Object is dirty gray in color.

101. Terminal end of a possible nonexpanded head mano (Plate 11,d). This object is made of a very heavy, dense yellow stone which feels sandy to the touch.

Miscellaneous Stone Tools

1-28. Basalt flakes (Plates 12,a to 12,j). These are all small fragments of basalt, usually lacking a well defined bulb of percussion and they are probably accidentally scaled off pieces from artifacts.

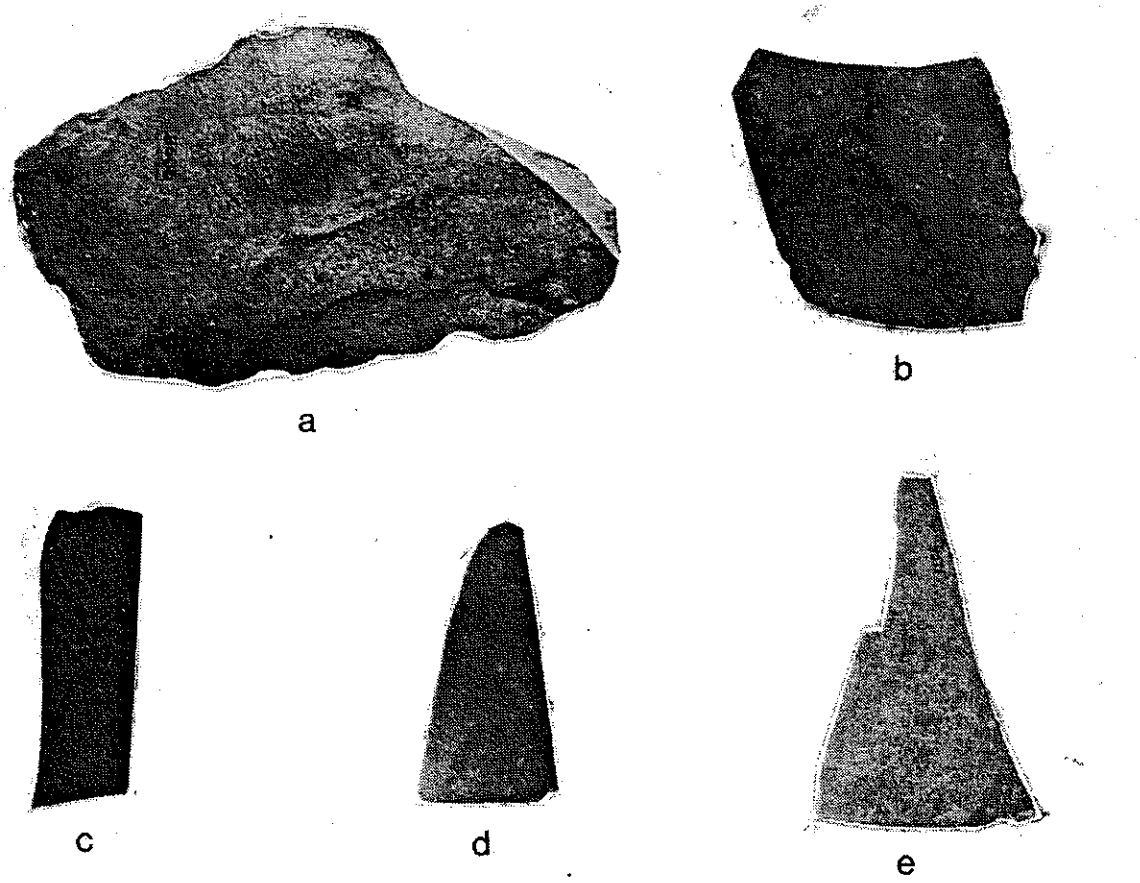
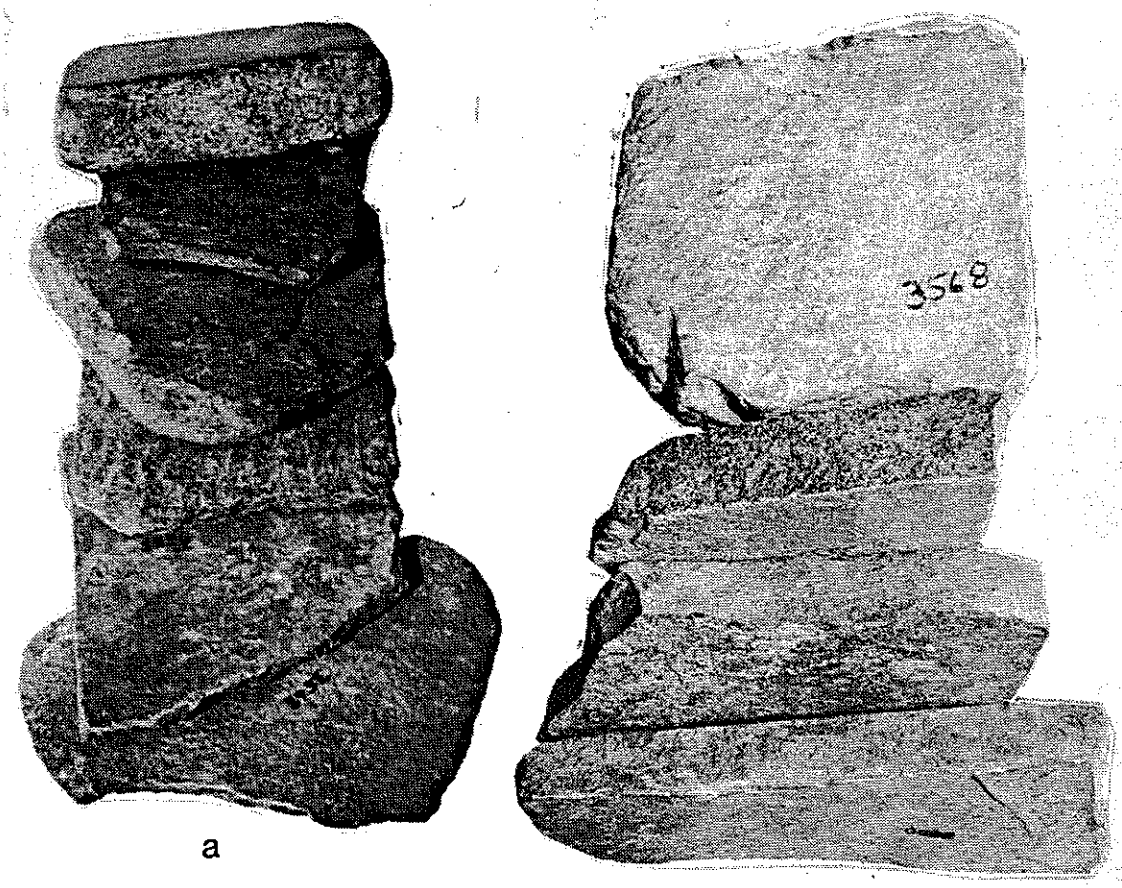


Plate 10



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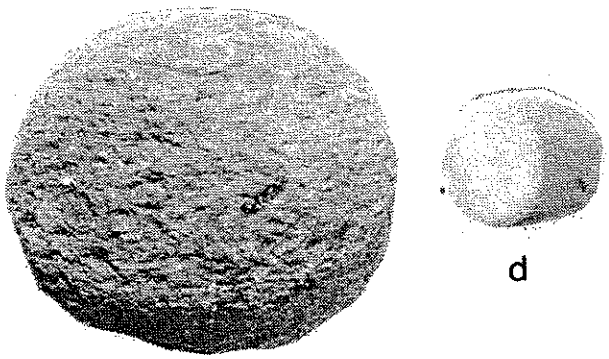

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Plate 11

29-32. Chipped basalt side scrapers (Plates 12,k and 12,l). These are all steeply keeled artifacts of relatively large size, compared to obsidian scrapers, and are chipped tools. *Dimensions*: The flat basal area measures 12.5 x 8.0 cm and the keeled profile varies from 3.4 cm to 2.4 cm in height in the one complete specimen.

33-90. Quartz flakes and nodules (Plate 13). Ten of this set are opaque nodules of a whitish material whereas the balance are flakes made of a translucent, grayish white material, that appears to be quartz. Three fragments apparently are pieces of projectile points, one is from a bifacially flaked knife and three are fragments from scrapers.

91-128. Unshaped small pebbles (Plates 14,a to 14,k and 15,e to 15,q). These generally range from 1.0 to 5.0 cm in diameter, are all well rounded, and generally are of a heavy dense stone. Several are basalt, a few are of tezontle, and several of quartz.

129-138. These are tubular fragments made of a material that has the appearance of petrified wood (Plates 14,m to 14,s). It is probably some kind of columnar basalt. The actual texture ranges from the finest of the finer grained basalt artifacts to the coarsest of the tezontle artifacts.

139. Eroded piece of a thin slab-like artifact (Plate 14,l). *Dimensions*: 0.5 cm thick, 8.5 x 3.5 cm in diameter but this has a very irregular shape and is incomplete. *Texture and Color*: Texture is a powdery substance comparable to pumice.

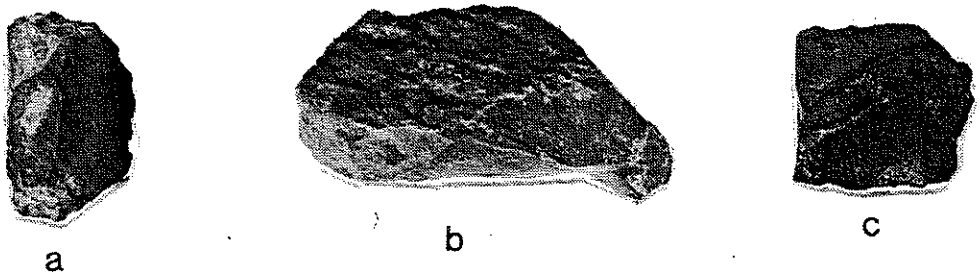
140. Tabular piece of slate-like stone with incised design (Plate 15,b).

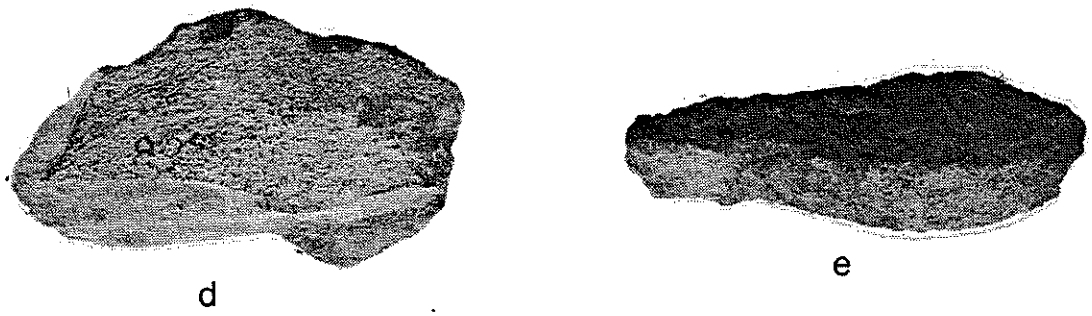
141-142. Pendants (Plates 15,a and 15,d). These are made of a coarse grain, soft, matte stone, in the form of human figurines.

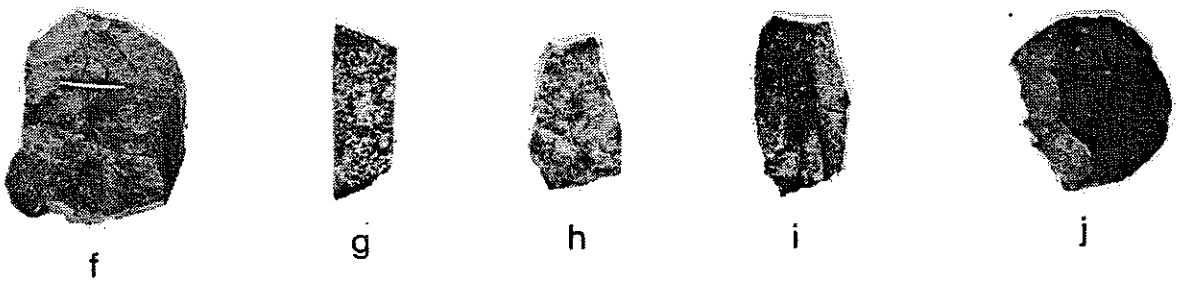
143. Small fragment of a sculpture. Manufactured of a highly polished and strikingly dense gray stone with features that resemble rather closely some of the carvings from the state of Guerrero (Plate 15,c).

Stone Ornaments

1-11. Circular stone beads (Plates 16,a to 16,k). These are all artifacts that were apparently used as beads; they are circular in form and are perforated. They include a total of 11 items with the following characteristics: A lightly polished white stone 2.0 cm in diameter; a pale green, very well polished jade bead, 1.5 cm in diameter; a light brown, matte surface, somewhat lopsided bead, 1.5 cm in diameter; a well polished, olive green bead, 1.0 cm in diameter; a somewhat rectanguloid, medium brown, moderately well polished bead measuring 1.3 x 0.8 cm in diameter; a dark olive green, well polished bead, 0.8 cm in diameter; a black, lightly polished bead, 0.6 cm in diameter; a matte gray, ring-like bead, measuring 0.8 cm in diameter; a light gray, matte surface bead, measuring 0.4 cm in diameter; and finally, a fragment of a green jade bead.







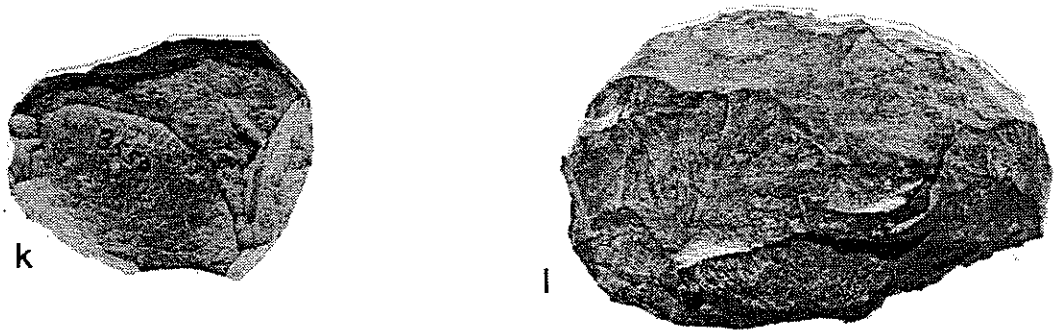


Plate 12

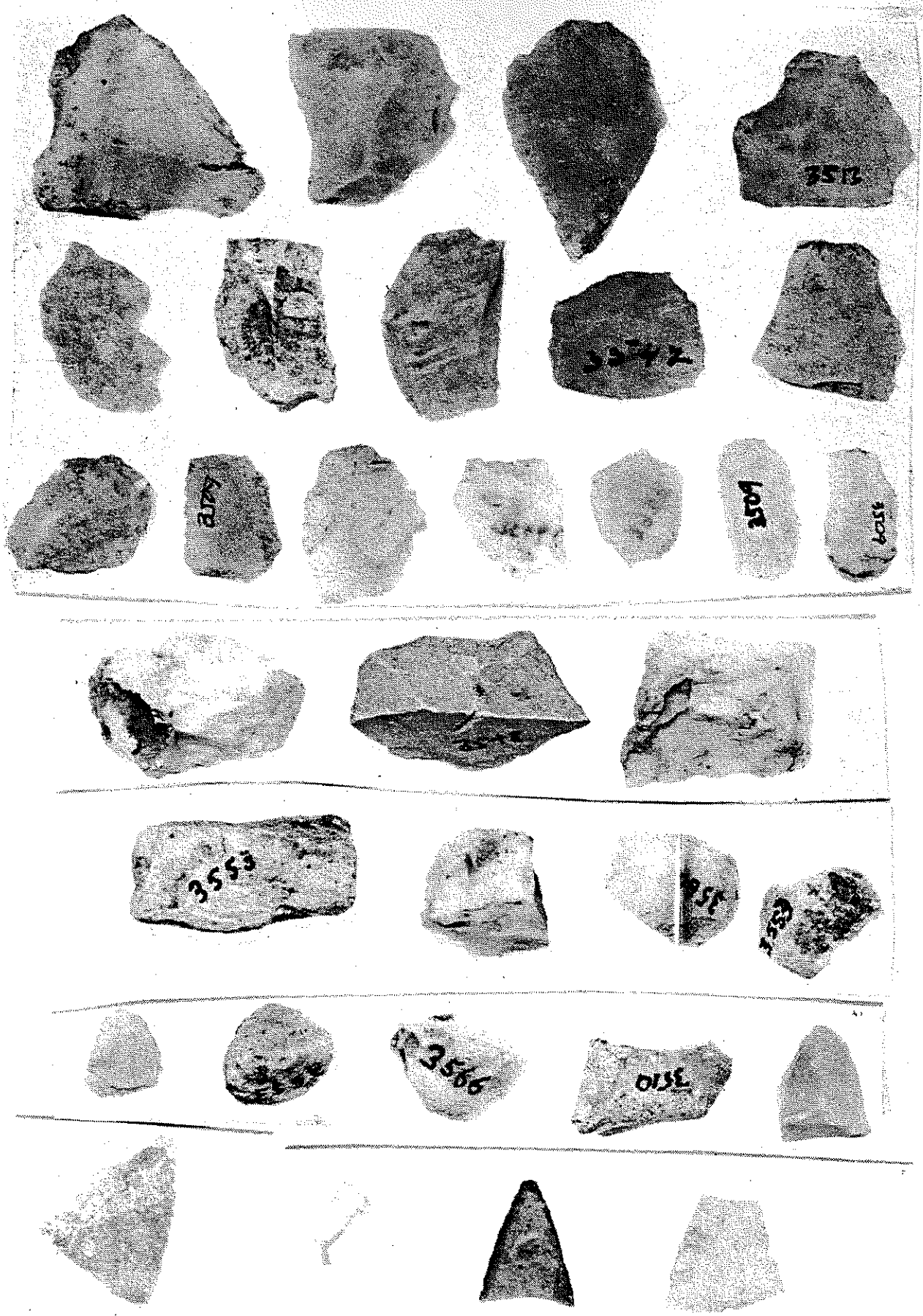


Plate 13

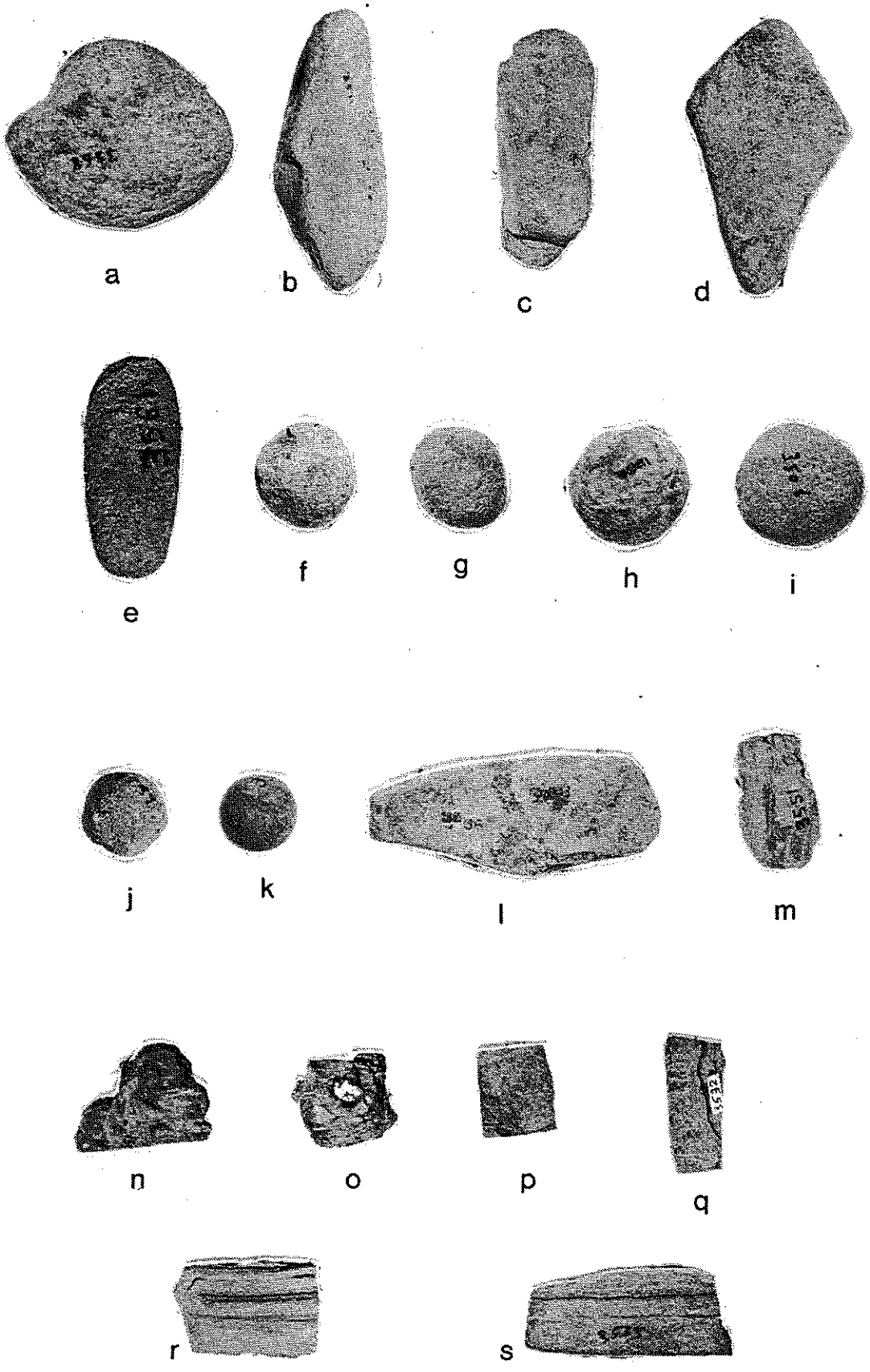


Plate 14

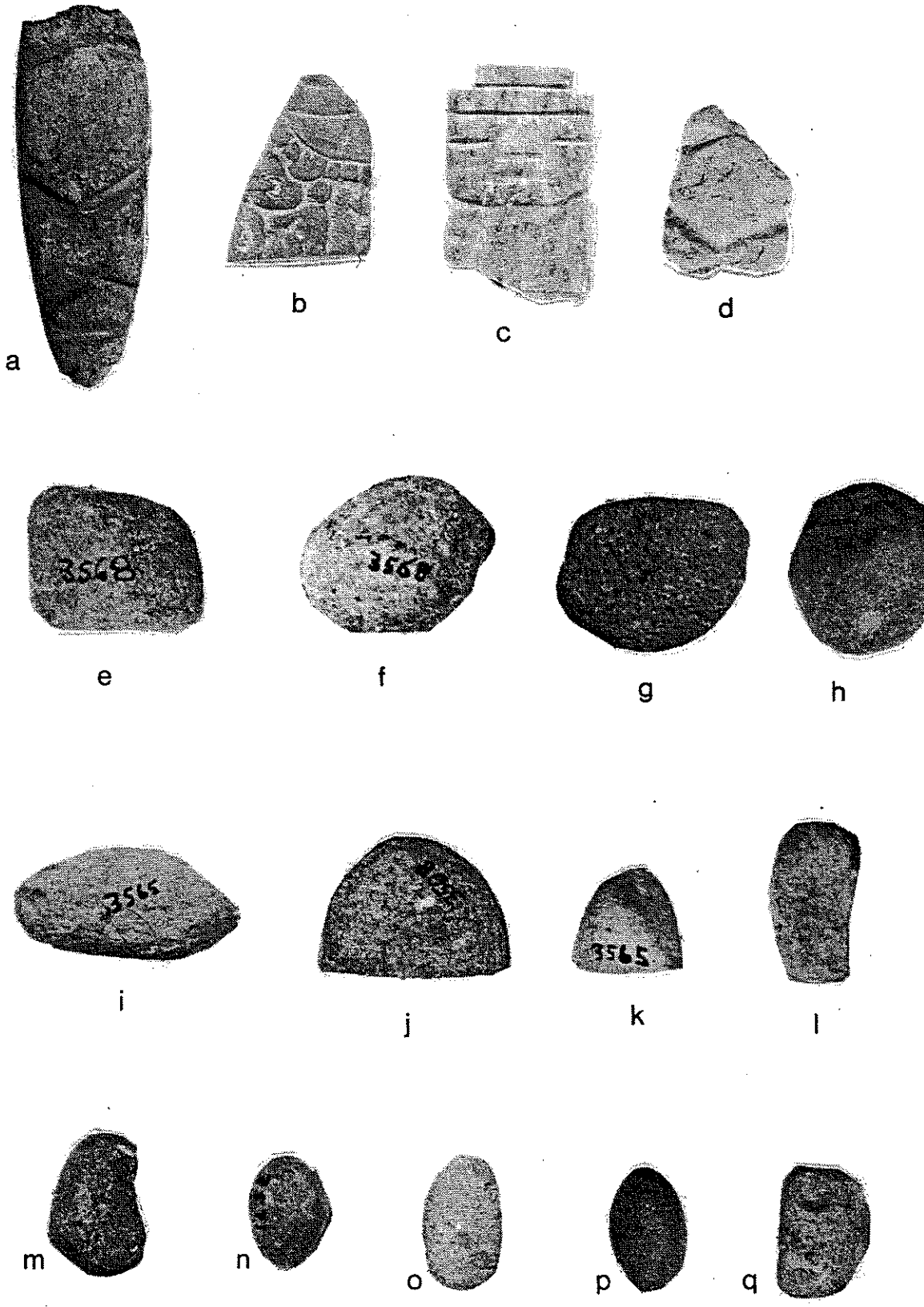


Plate 15

12-16. Miscellaneous ornaments (Plates 16,l to 16,p). These include a total of five artifacts of varying characteristics. One is a tubular, well polished bead of a black stone which measures 2.3 cm in length (but is broken) and 0.4 cm in diameter. Another one of these ornaments is a circular slate pendant, with a matte surface, almost paper thin, with a diameter of 3.0 cm, and is perforated with a 0.4 cm wide hole in the center. Other ornaments are a highly polished, black, flaring mouth, labret of obsidian; a fragment of obsidian like substance; and a fragment of an artifact similar to the last. Finally, the sample includes a small curtain holder-like artifact, very similar to those we previously described, and manufactured of tezontle, but measuring only 1.2 x 1.5 cm; it has two partial perforations similar to the larger tezontle curtain holders described above.

Pumice Artifacts

These are all artifacts manufactured of a light powdery substance that in most cases is probably volcanic pumice.

1. Irregular, pitted ball shaped artifact (Plate 17,a). *Dimensions*: maximum diameter is 8.2 cm. *Texture and Color*: this is heavier than most of the artifacts in this category but it is powdery in texture and full of air spaces. The color is reddish.

2. Small ball shaped artifact (Plate 17,b). *Dimensions*: maximum diameter 4.0 cm. *Texture and Color*: this is similar to (1).

3. Piece of what appears ot be a lip from a mortar (Plate 17,c). *Texture and Color*: this is a very spongy pumice varying from orange to brown in color.

4. Small fragment of talc-like material (Plate 17,e).

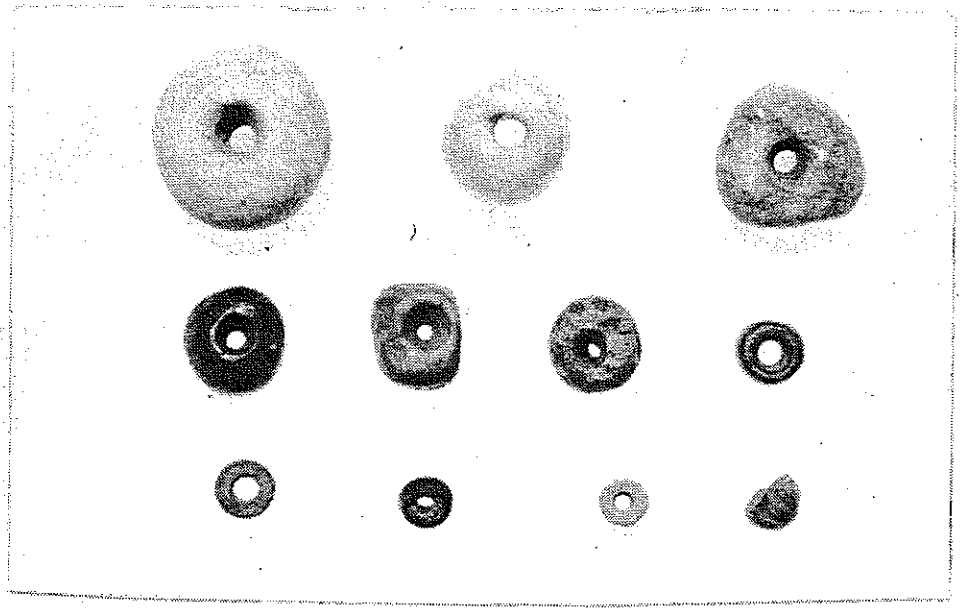
5-6. Pieces of either adobe or pumice (Plates 17,i and 17,j).

7-8. Two small pieces of pumice (Plates 17,k and 17,d).

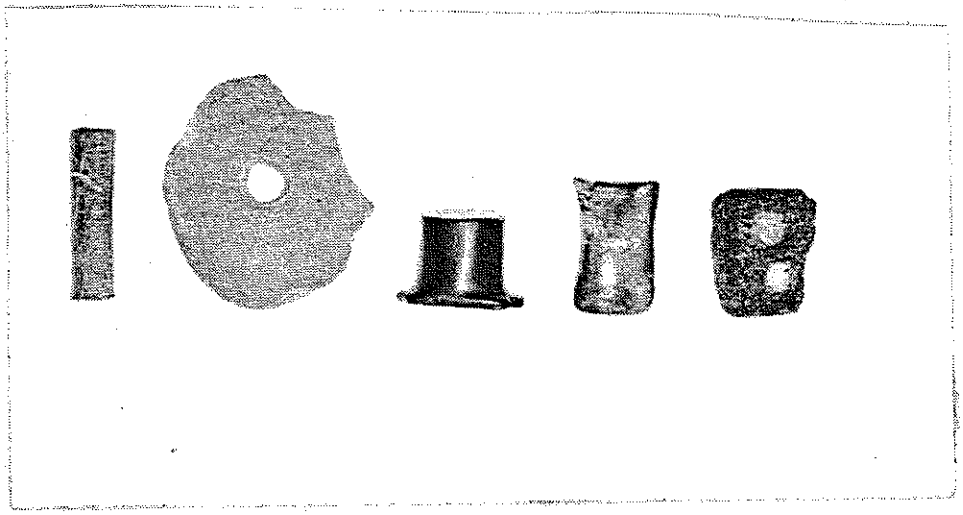
9. Piece of hard yellow pumice with incised lines on it (Plate 17,g).

10. Bell shaped artifact (Plate 17,h). This resembles a pestle and was probably used as a polisher. *Dimensions*: 3.8 cm high, 3.0-4.5 cm in diameter at the flat base. *Texture and Color*: the material is white and chalky.

11. Thin slab-like rectanguloid artifact with one pointed end (Plate 17,l). *Dimensions*: as seen in the plan the artifact is 2.0 cm wide and 6.8 cm long. It is 0.8 cm thick. There are incised scratched lines on the surface. *Texture and Color*: this is a very soft material, almost like lime, and has a white color.



a – k



l m n o p

Plate 16

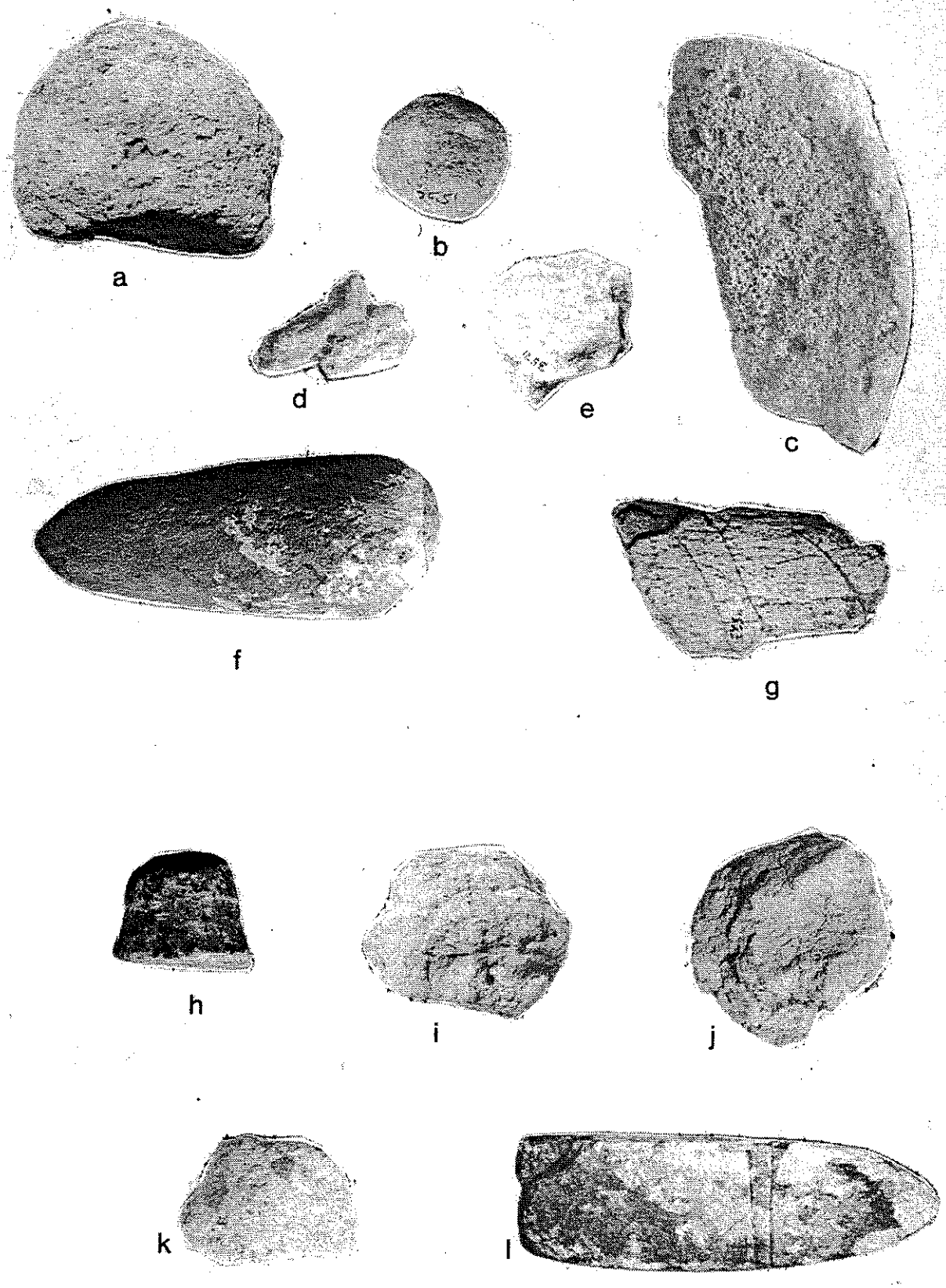


Plate 17

12. Tear drop shaped artifact (Plate 17,f). This has one end pointed and the other rounded. *Dimensions*: 13.0 cm long, 5.0 cm wide at the larger end. *Texture and Color*: light, porous, reddish pumice.

13. Irregular fragment of an artifact (Plate 18,a). *Texture and Color*: yellow to gray, very coarse, and light in weight.

Building Debris

1. Corner piece of lime concrete (Plate 18,b).

2. Corner fragment of lime concrete attached to a tezontle block (Plate 18,c).

3. Trimmed block of tezontle (Plate 18,d).

4. Possible piece of fired clay (Plate 18,e).

Miscellaneous Artifacts

1. Fragment of a copper ear spool (Plate 18,i).

2. Fragment of an ornament manufactured from iron (Plate 18,h).

3-8. Six small fragments of mica (Plates 18,l to 18,p).

9-10. Fragments of a wooden artifact (Plates 18,f and 18,g).

10-12. Pieces of bark or shingle-like wood (Plates 18,j and 18,k).

Shell and Bone Artifacts

1-2. Large pendants of chalky white substance, either decomposed bone or shell (Plates 19,a and 20,g).

3-15. Miscellaneous fragments of shell ornaments (Plates 19,b to 19,j; 19,r; 19,u to 19,w).

16-23. Small land snail shell pendants (Plates 19,k to 19,p; 20,h to 20,i).

24. Shell ring (Plate 19,q).

25-26. Shell pendants or large beads, probably sewn on garments (Plates 19,s and 19,t).

27-32. Shell beads (Plates 19,x to 19,bb).

33. Bone chisel (Plate 20,a).

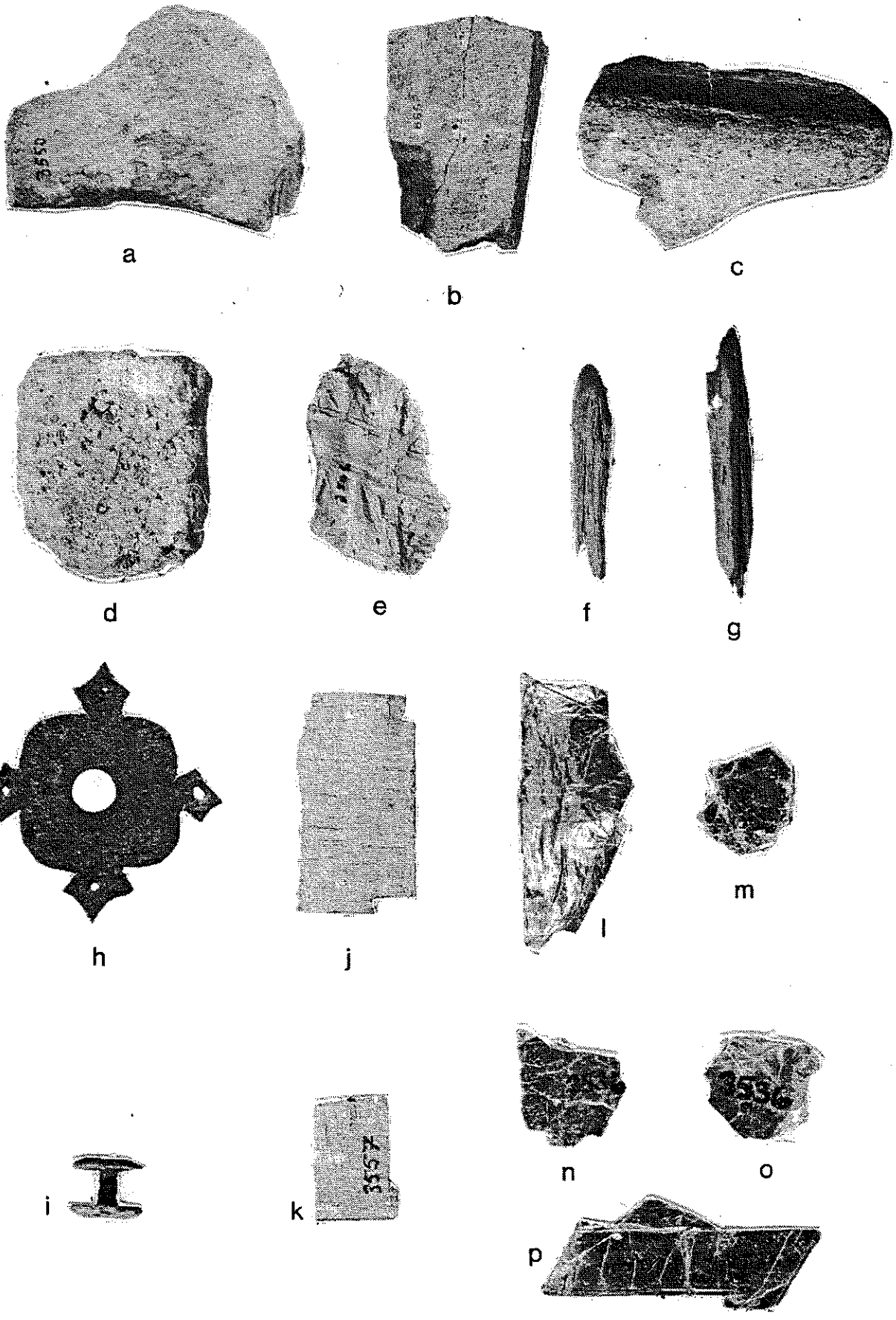
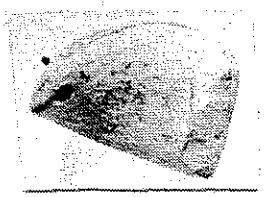
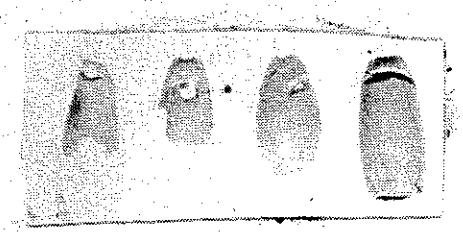


Plate 18



a

b – j

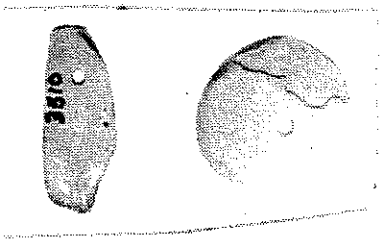


k – n

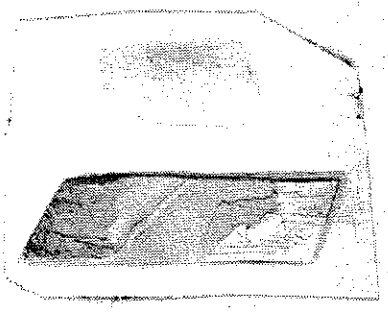
o – p

q

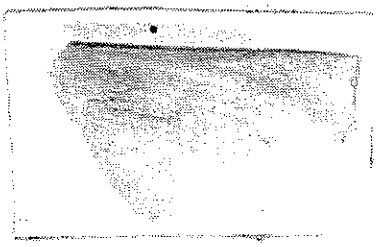
r



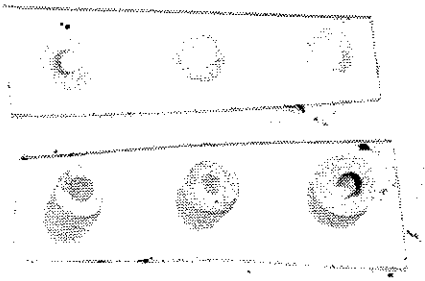
s t



u – v



w



x – bb

Plate 19

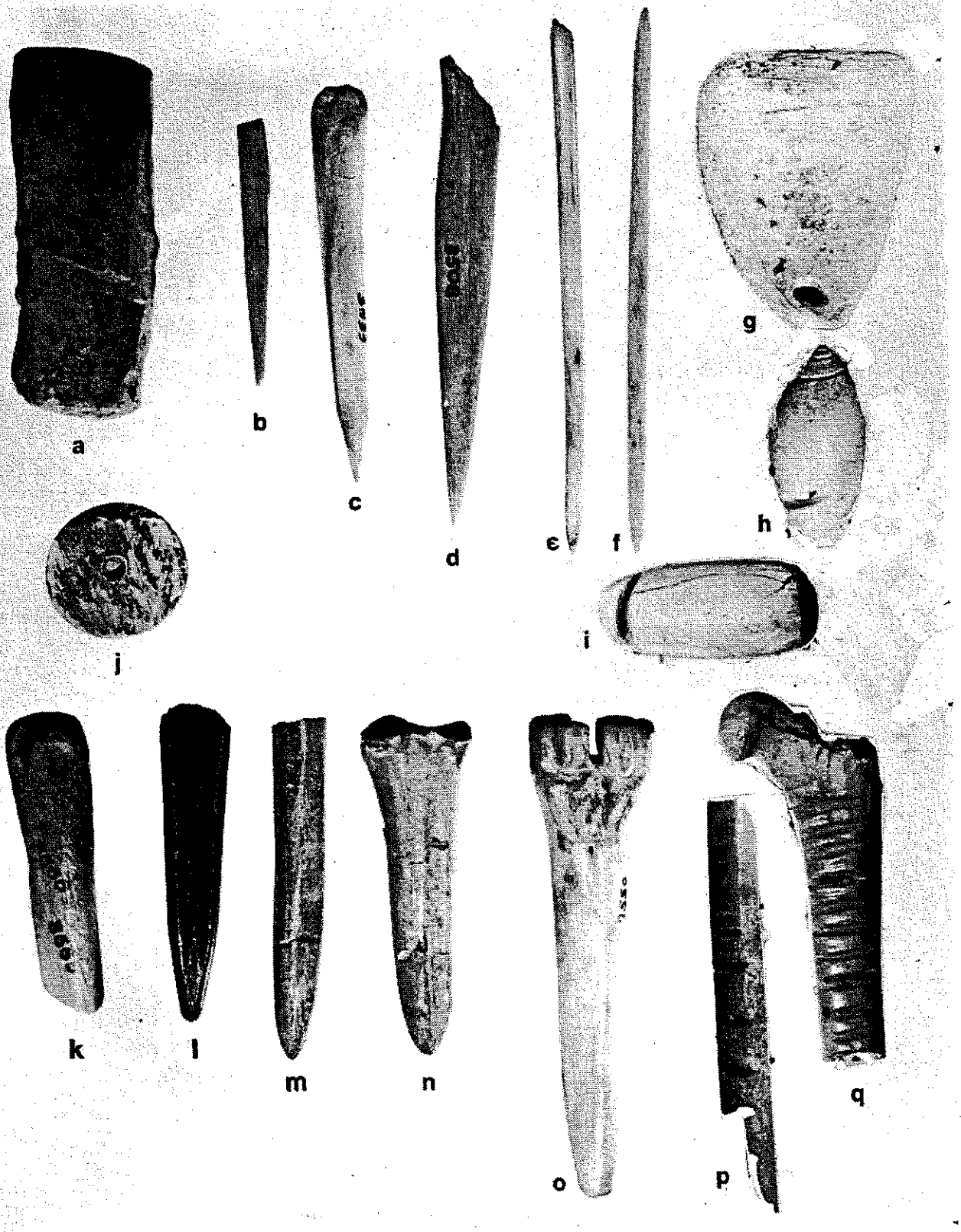


Plate 20

34-38. Bone awls (Plates 20,b to 20,f).

39. Bone bead or button, disc shaped (Plate 20,j).

40-44. Large bone perforators (Plates 20,k to 20,o).

45-46. Musical rasps of bone, one made from human femur (Plates 20,p and 20,q).

ARTIFACTS FROM XOMETLA

Basalt Artifacts

All of these artifacts are made of the heavy dense material usually referred to as basalt and varying in color from light to medium gray. The following artifacts fall into this category.

Manos

1. Mid-section of a mano with a rectanguloid cross-section (Plate 21,a). *Dimensions*: the cross-section measures 4.7 x 5.5 cm.

2. Butt end of a mano (Plate 21,b). This has a trianguloid cross-section. *Dimensions*: 5.7 x 7.3 cm.

3. Butt end of a mano with a trianguloid cross-section (Plate 21,c). *Dimensions*: cross-section is 4.3 x 4.5 cm.

4. Fragment of the mid-section of a mano with a rectanguloid cross-section (Plate 21,c). *Dimensions*: cross-section is 6.4 x 4.5 cm.

5. Fragment of a mid-section of a mano with a rectanguloid cross-section (Plate 21,e). *Dimensions*: cross-section is 4.5 x 6.8 cm.

6. End fragment of an expanded end mano, with a flattened, rectangular cross-section (Plate 21,f). *Dimensions*: cross-section is 3.5 x 7.5 cm.

7. Fragment of a mid-section of a mano, with an almost circular cross-section (Plate 21,g). *Dimensions*: cross-section varies from 5.5-6.0 cm.

8. Butt end of a non-expanded head mano, with a flattened, oval cross-section (Plate 21,h). *Dimensions*: cross-section is 4.5 x 8.0 cm.

9. Mid-section of a mano (Plate 21,i). The cross-section is square. *Dimensions*: cross-section is 8.0 cm.

10. Butt end of a non-expanded mano, with a rectangular cross-section (Plate 21,j). *Dimensions*: cross-section is 3.0 x 6.2 cm.

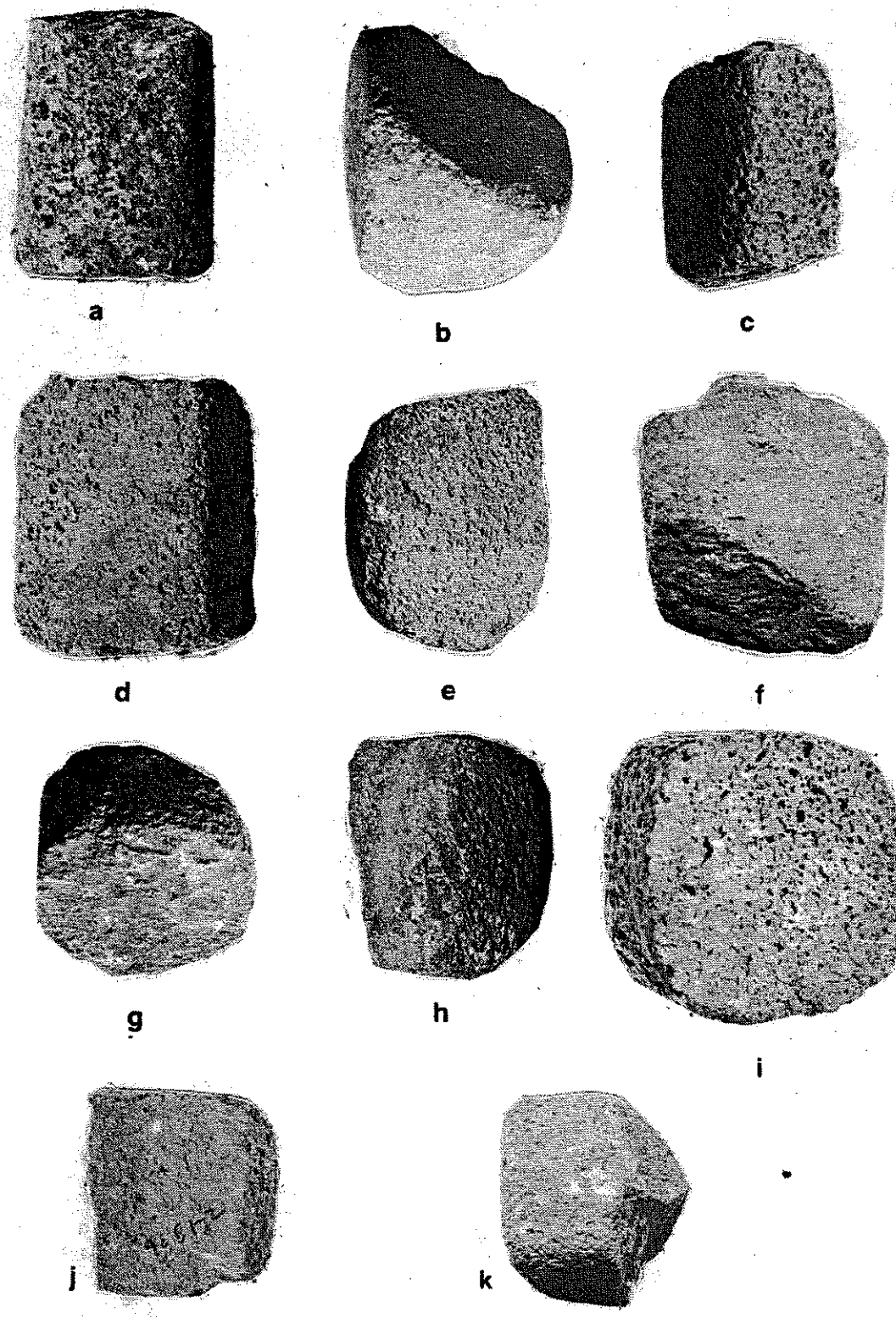


Plate 21

11. Small fragment of a non-expanded head mano with a rectangular cross-section (Plate 21,k).

Large Shallow Mortars

These are all massive, shallow mortars, artifacts which seem to be limited to the Early Toltec phase. All have flat bases and raised vertical or nearly vertical rims.

1. Total height of the rim 10.0 cm, height of the vessel floor 5.0 cm (Plate 22,a).

2. Total height of the rim 10.5 cm, height of the vessel floor 4.0 cm (Plate 22,b).

3. Total height of the rim 10.0 cm, height of the vessel floor 4.0 cm (Plate 22,c).

4. Total height of the rim 11.0 cm, height of the vessel floor 7.0 cm (Plate 22,d).

5. Total height of the rim 13.0 cm, height of the vessel floor 5.0 cm (Plate 23,a).

6. Small fragment of a rim, no dimensions measureable (Plate 23,b).

Slab Metates

1-4. These are all fragments of very crudely made artifacts which are probably metates (Plates 23,c to 23,e). All have flat bases and there is no evidence, from the small fragments that we found, of any supports. Three have bevelled rims and the fourth has an upturned rim.

5. This is a fragment of a legged metate, which includes the rim and the conical support on the fragment (Plate 24,a).

6. Fragment of a metate, with evidence that it did have a basal support. The fragment is extremely irregular so that no dimensions are measureable. It is made of a very fine grain basalt, light gray in color.

7-9. Fragments of metates (Plates 25,d to 25,f).

Probable Plastering Tools

These are similar in texture and weight to the Teotihuacan period heavy basalt plastering tools, except that in the Xometla examples one of them is pestle shaped and does not have the clothing-iron form.

1. This is a typical bell shaped pestle like implement, with a handle placed in the center of the artifact (Plate 24,b). The bottom, however, is relatively flat and looks as though it may have been used as a plastering surface rather than as a pounding surface. *Dimensions*: 7.5 cm high, the basal area measures 9.0 cm wide, its length is unknown because the artifact is broken.

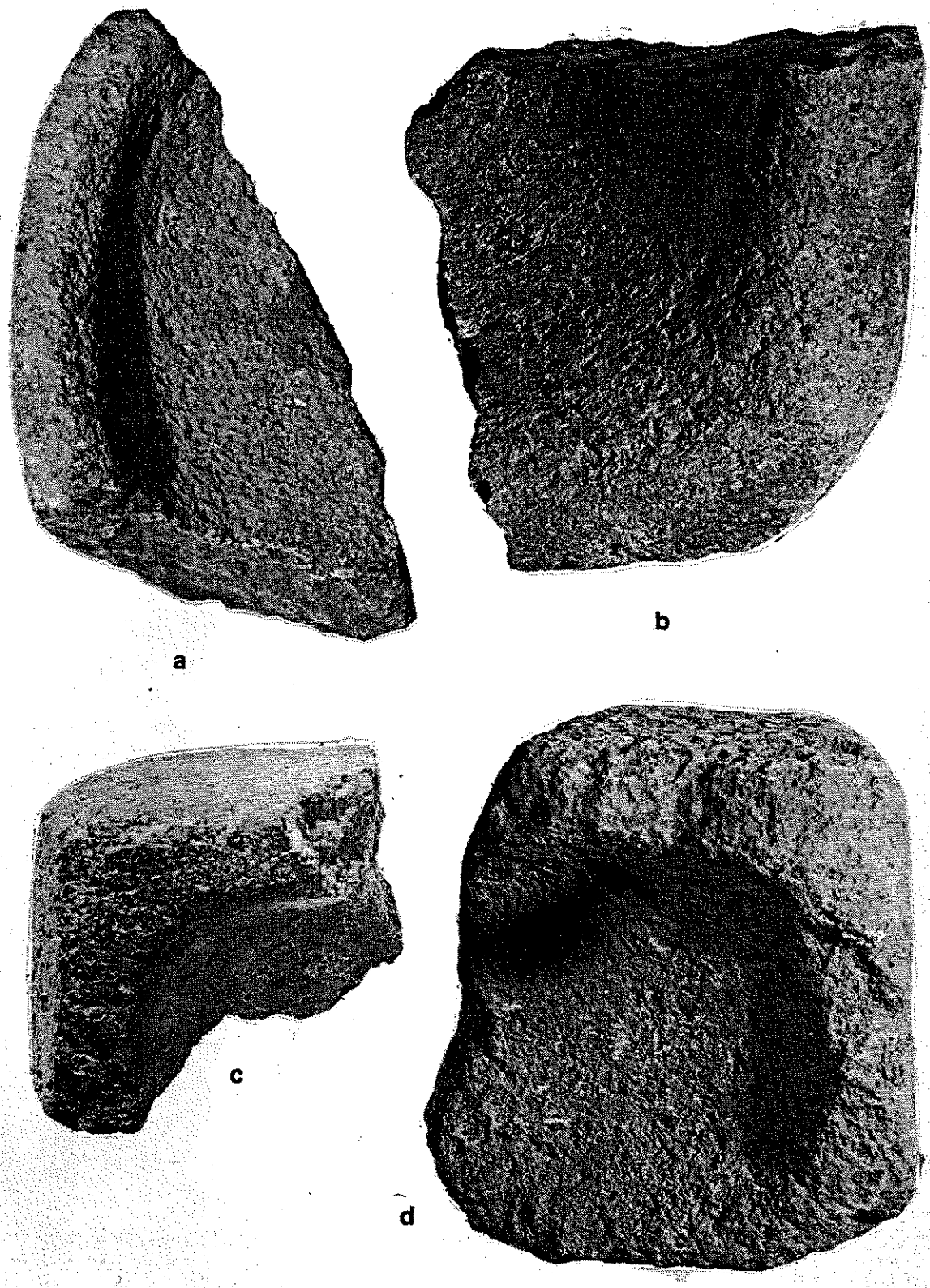


Plate 22

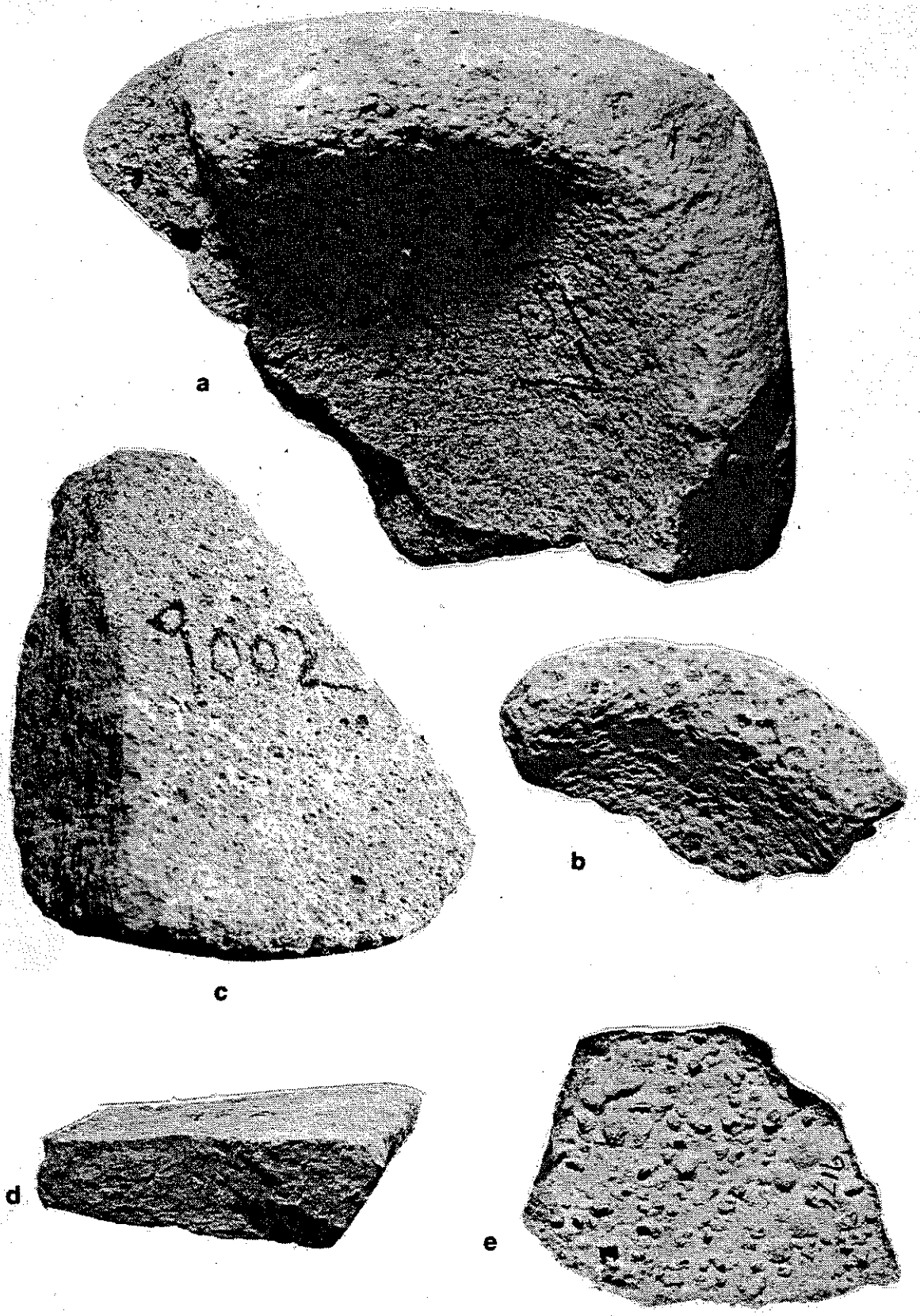


Plate 23

2. Small fragment of the same type of artifact but with a clothing-iron type handle, typical of those from Teotihuacan (Plate 24,c).

Bark Beater (?)

1. This is an artifact that is basically rectangular in shape with a groove running around the sides and resembles bark beaters found in other parts of Mesoamerica (Plate 24,d). However, it does not have the grooved surface of the usual bark beater so it probably had some other function, perhaps it was used as a hammer of some kind. *Dimensions*: 3.7 cm thick, in plan view one dimension is 7.0 cm, the other could not be determined because the artifact was badly broken on that side.

Miscellaneous Basalt Artifacts

1. Large basalt pebble (Plate 24,e). It was probably used for grinding and polishing. *Dimensions*: 6.0 x 5.0 cm with one side somewhat flattened.

2. Small fragment of a rectangular object (Plate 24,f).

3. The mid-section of an artifact that shows evidence of polishing on two sides, could be a mano but is unusually thick for such an artifact (Plate 23,d). *Dimensions*: 6.0 cm thick, 8.0 cm wide, unknown length. It has a light gray color.

Tezontle Artifacts

Plastering Tools

These are all typical Teotihuacan type tezontle plastering tools; they are similar to those found and described from Oxtotipac.

1. Rectangular lower section, the upper section is irregular and rounded (Plate 24,g). The artifact is almost complete. *Dimensions*: the basal dimensions of the lower terrace are 8.0 x 12.0 cm, the total height is 9.0 cm, of which half is occupied by the basal terrace, the other half by the upper terrace. *Texture and Color*: this is a porous, medium density rock, gray in color.

2. This artifact has a lower rectangular section and an upper section with a somewhat ovoid plan (Plate 24,h). *Dimensions*: total height 4.5 cm, most of the dimension consisting of the upper terrace, and the basal dimensions are 8.0 x 6.5 cm. *Texture and Color*: This is a medium density artifact, gray in color.

3. Asymetrical trapezoidal shaped block of tezontle, with no differentiation between the handle and the functional part of the artifact (Plate 24,i). It is, however, similar in size and texture to the first two artifacts, with a typical flat base. *Dimensions*: maximum height 6.5 cm, the basal area measures 7.0 x 5.5 cm. *Texture and Color*: This is made of a medium density stone and is reddish in color.

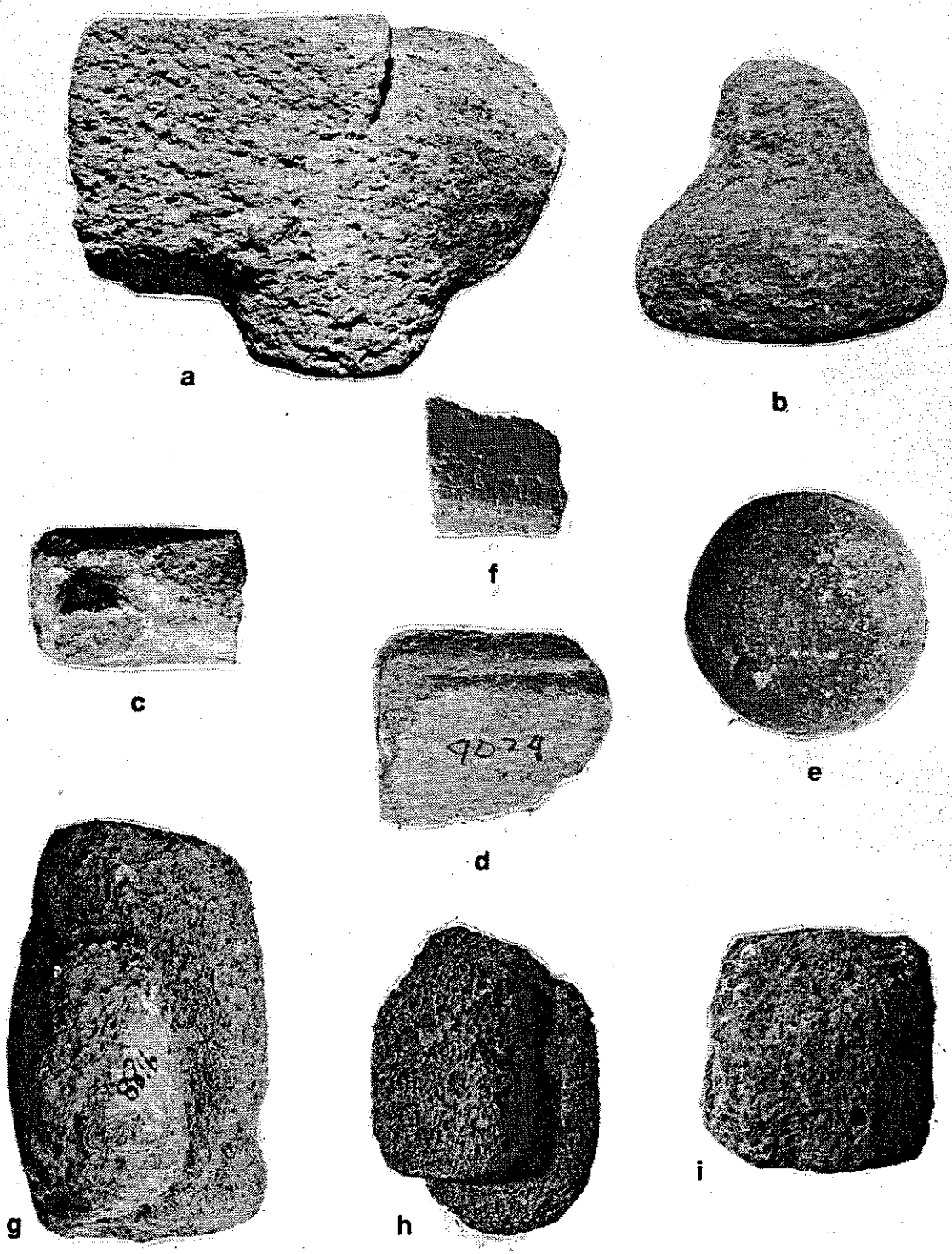


Plate 24

4. This is a very irregularly shaped artifact but similar in size to the first three artifacts of this category (Plate 25,a). Again, it has a well defined, flat, basal area. *Dimensions*: the total height is 9.0 cm, of which 2.5 cm is the poorly differentiated basal section, the base is 9.0 cm wide and the length is indeterminate.

5. This is an artifact with a well differentiated lower section but the upper section is extremely irregular and lumpy in appearance (Plate 25,b). It has the typical flat base, however, of the other artifacts we identified as plastering tools. *Dimensions*: total height is 9.0 cm, of which the differentiated base is only approximately 2.0 cm. One of the basal dimensions is 9.0 cm, the other is indeterminate. *Texture and Color*: This is a medium density artifact and light reddish in color.

Miscellaneous Tezontle Artifact

1. This is an artifact which has a plan in the form of a parallelogram (Plate 25,c). It has a depression in the center giving the appearance of a tezontle box or mortar. However, the hole itself is a very small one in proportion to the total size of the artifacts and the walls of the "mortar" would be exceeding thick. *Dimensions*: In plan the upper surface has a measurement of 10.5 x 7.5 cm, the base is 12.0 x 8.0 cm, and the height of the artifact is 5.0 cm. The maximum diameter of the depression is only 4.8 cm. *Texture and Color*: This is a relatively light artifact and is gray in color.

Miscellaneous Artifacts

These are all artifacts either ground from some type of stone which is not definitely tezontle or basalt, and includes a number of artifacts of varied source materials. There is considerable variation in texture and density of the stone used in these artifacts.

1. Fragment of a slab-like artifact (Plate 26,a). This is made of a very coarse white sandstone. *Dimensions*: 6.0 x 4.0 x 1.0 cm.

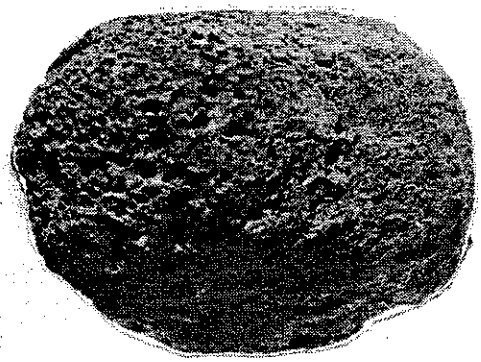
2. Piece of a doughnut shaped artifact (Plate 26,b). This artifact is manufactured of whitish granite.

3. Fragment of a slate maguey pulper (Plate 26,c).

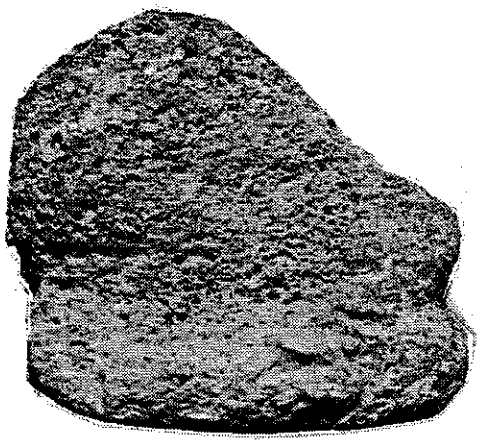
4. Irregular slab-like object of chalky stone (Plate 26,d).

5. Irregular shaped pitted and flattened pebble of reddish stone (Plate 26,e). *Dimensions*: 7.0 x 4.0 cm.

6. Flat slab of porous white conglomerate. The upper surface has two small knob-like projections (Plate 26,f). *Dimensions*: artifact fragment is 10.2 x 7.8 cm and is 2.4 cm high including one of the knobs in the cross-section.



a



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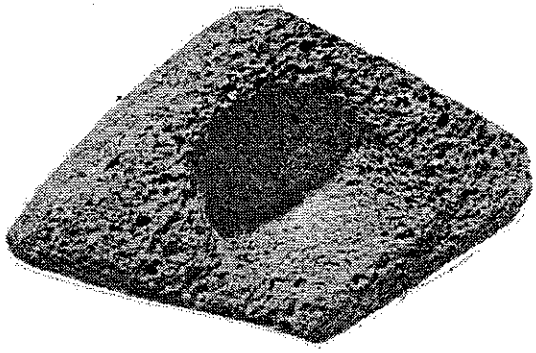
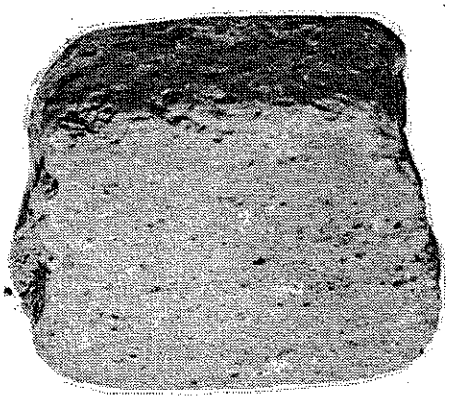
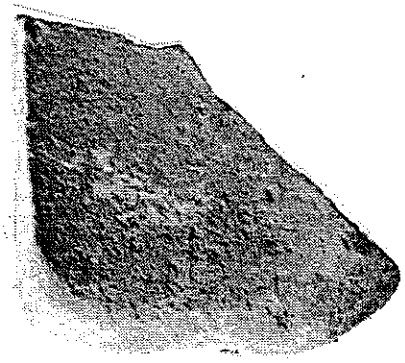


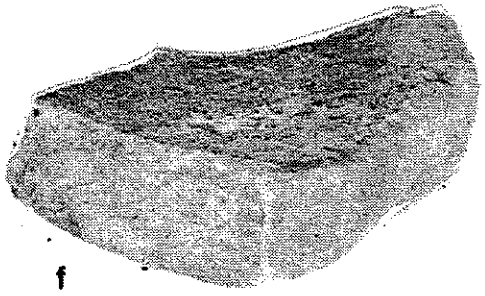
c



d



e



f

Plate 25

7. Piece of a doughnut shaped object (Plate 26,g). This is made of white pumice.

8. Possible fragment of a plastering tool (Plate 26,h). This artifact is made of a very soft pumice-like pinkish colored stone and is pyramidal in shape. *Dimensions*: the artifact is 5.7 cm high, and the basal area of the pyramid is 8.3 wide and 12.3 cm long, but the latter dimension is incomplete.

9-18. Irregular flakes struck from a quartz-like material.

19-20. Nodules of chert, possibly fragments of scrapers.

21. Drill. This artifact is made of a quartz-like stone.

22-26. Small rounded pebbles with evidence of use as polishers.

27-31. Small fragments of a talc-like material.

32. Basalt flake.

33. Lump of baked clay.

34. Small fragment of a jade bead.

35-36. Two small fragments of sheet iron.

37-38. Pieces of roughly trimmed tezontle with plaster adhering to the face and probably functioning as building fragments (Plates 26,i and 27,a).

39-42. Thick fragments of lime concrete with small gravel attached to them and probably forming the surface of the excavated house platform (Plates 27,j and 27,b).

43-45. Fragments of fired bricks (Plates 27,c to 27,e).

46. Fragment of a very finely ground slate-like artifact (Plate 27,f). This is in the form of a thin slab with very well finished surfaces. The only dimensions that is measurable is the thickness which is 2.2 cm.

ARTIFACTS FROM CUANALAN EAST

Several fragments of manos were recovered from the Cuanalan East excavations.

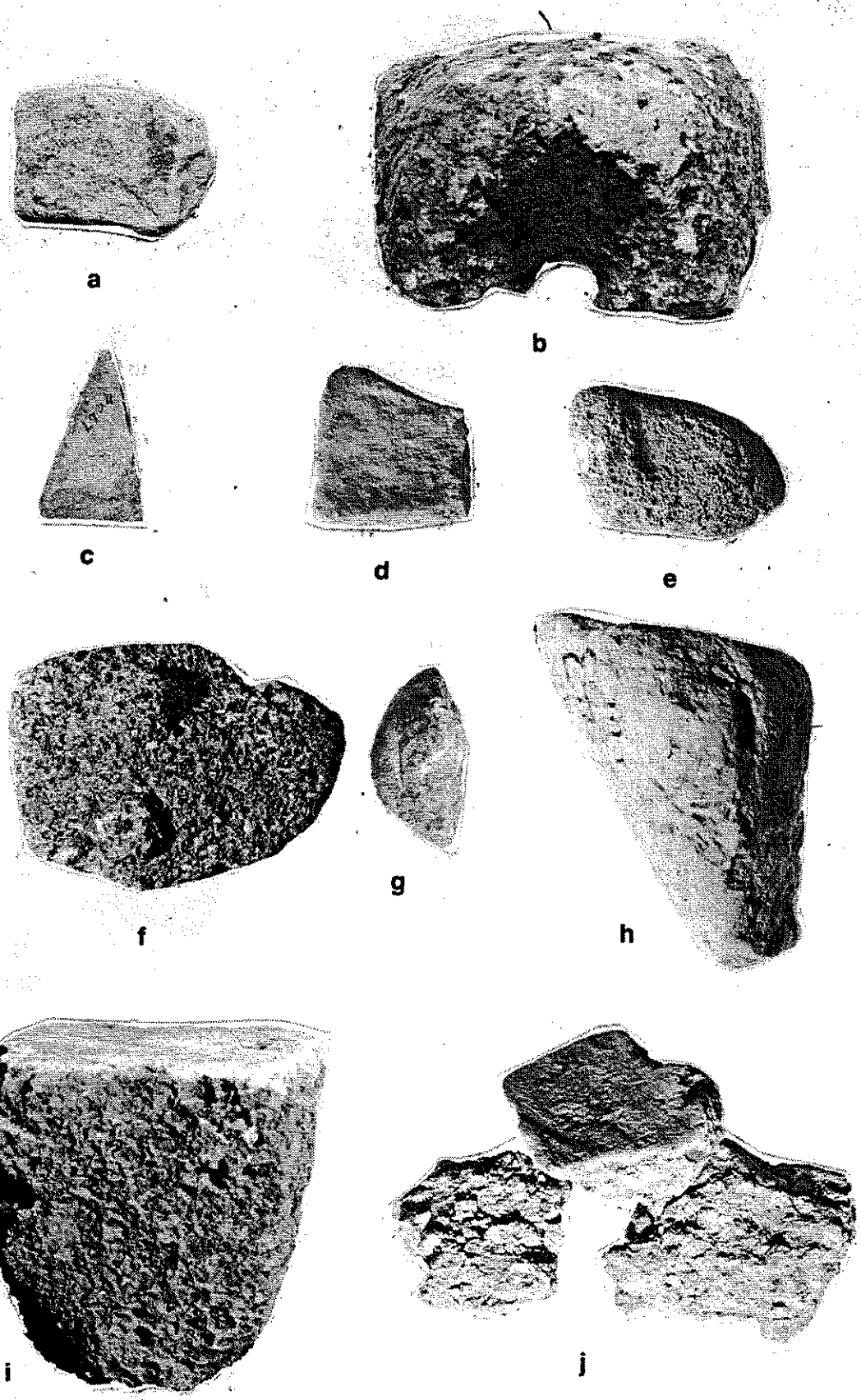


Plate 26

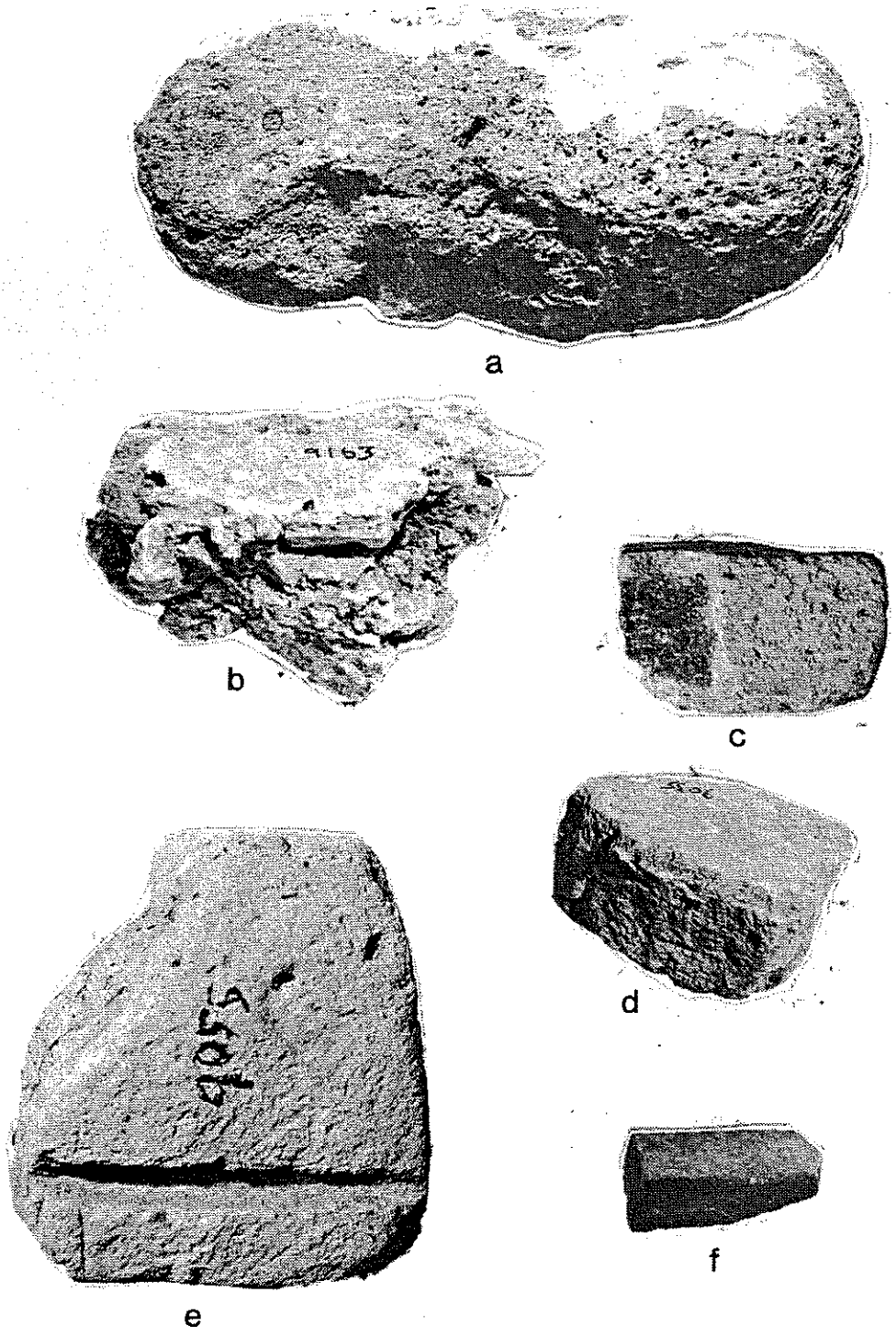


Plate 27

OBSIDIAN ARTIFACTS FROM OXTOTIPAC, XOMETLA, AND CUANALAN EAST

The entire obsidian collection from the Teotihuacan Valley project has been turned over to Joseph Michels who is planning a special monograph on the industry. In this report, we are publishing a series of plates to provide a general impression to our readers of the nature of the collection with no analysis, not even of the preliminary type presented for the other artifacts.

By way of orientation the obsidian collection from Oxtotipac is of considerable size and includes a large number of artifacts that probably date from the Early Colonial Period. The plates (Plates 28 to 32), therefore, represent a mixed bag, Oxtotipac and Colonial. In general, the Oxtotipac phase includes all of the bifacially flaked artifacts and most of the cylindrical core flake industry. The large crude flake tools are probably all from the Early Colonial period. The reader is referred to Charlton's intensive studies of the Colonial obsidian industry of the Valley. Plate 29 includes several white quartz artifacts as well.

The vast majority of the obsidian from Xometla, to judge from the ceramic ratios, is of the Xometla subphase with only a few Aztec and Mazapan pieces. The material is illustrated in Plates 33 to 35.

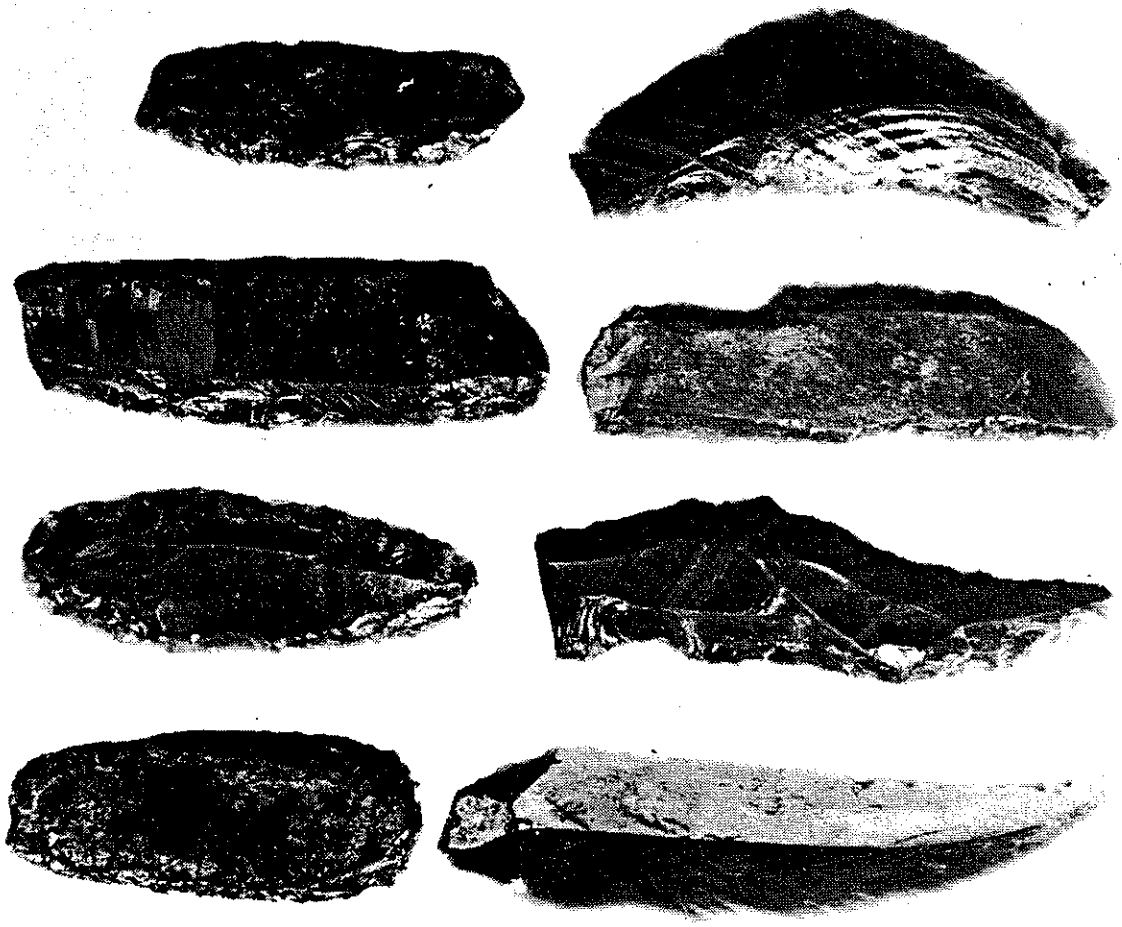


Plate 28

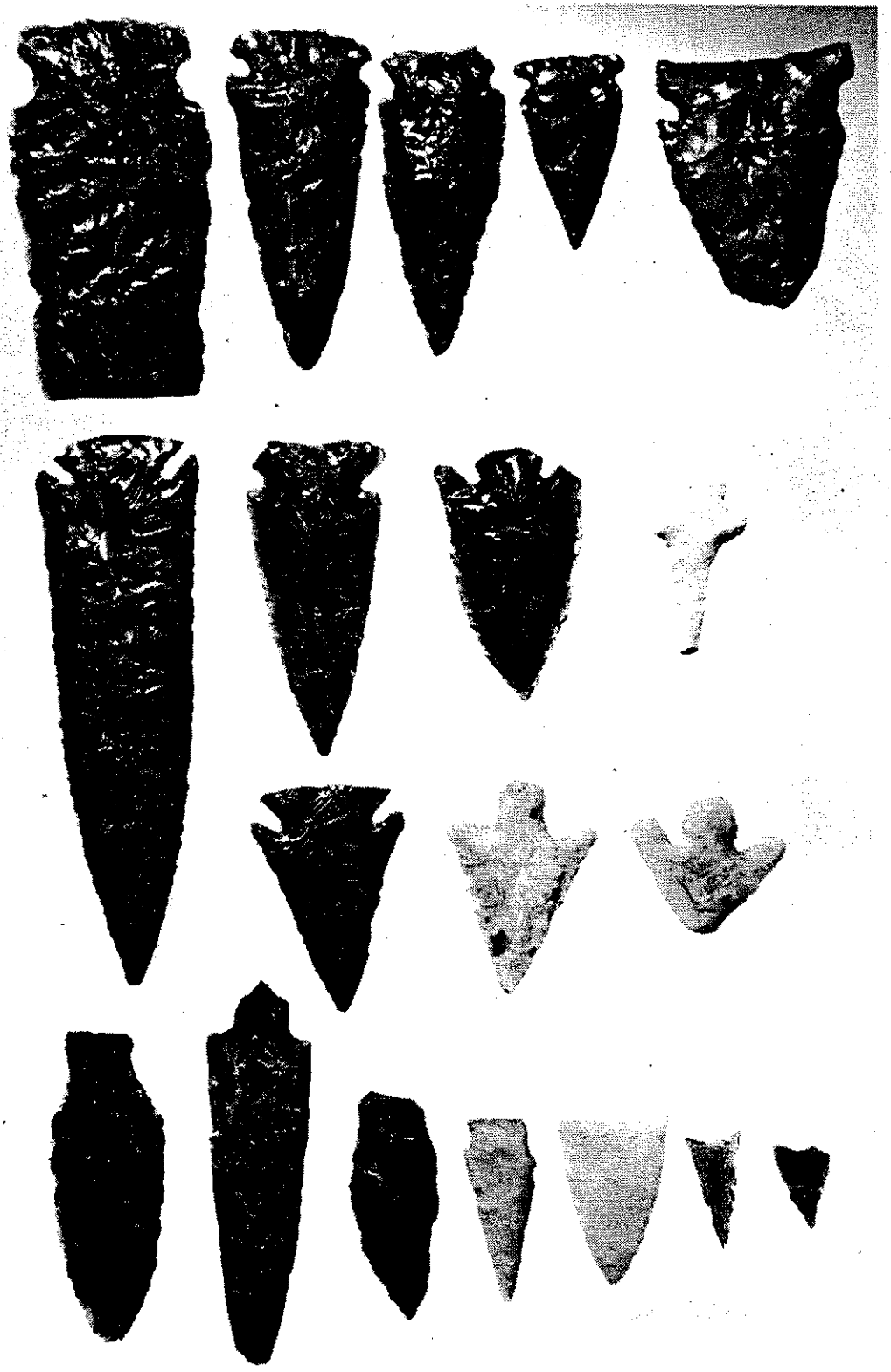


Plate 29

Plate 30

Plate 31

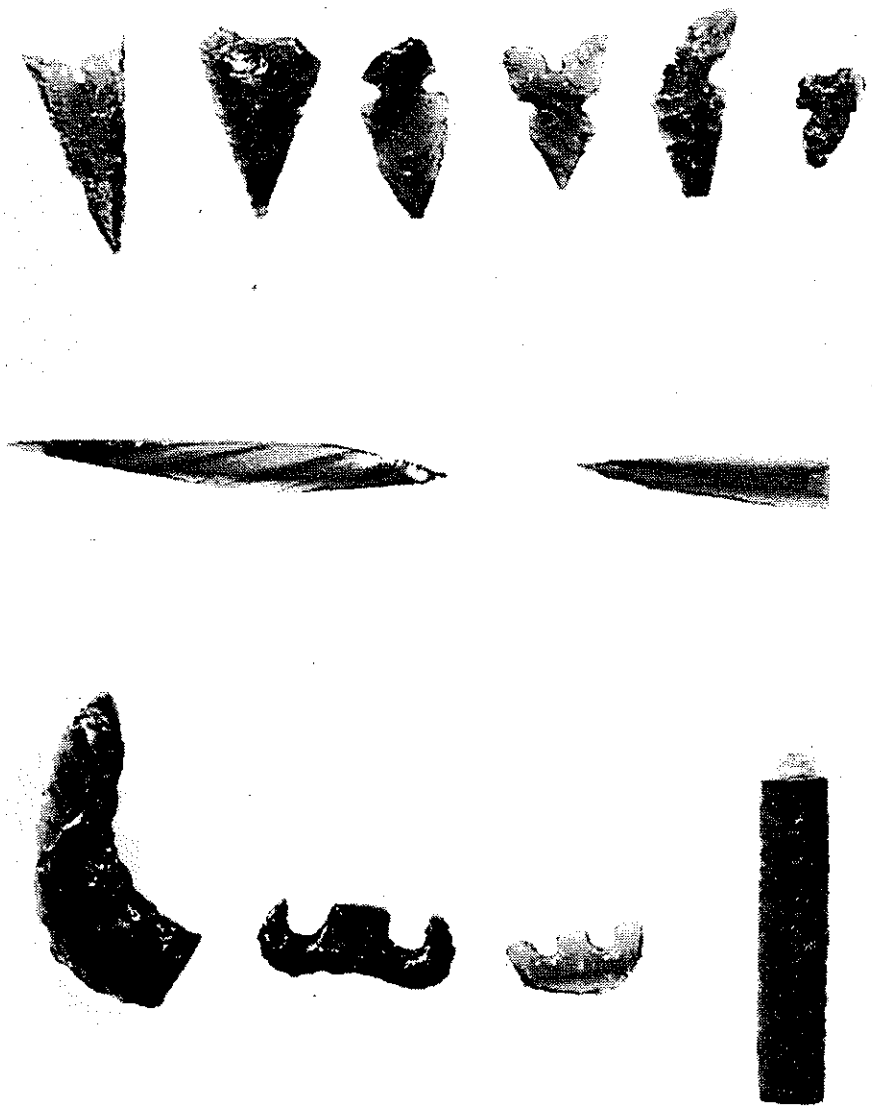
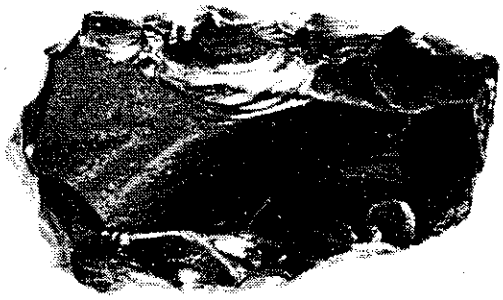


Plate 32



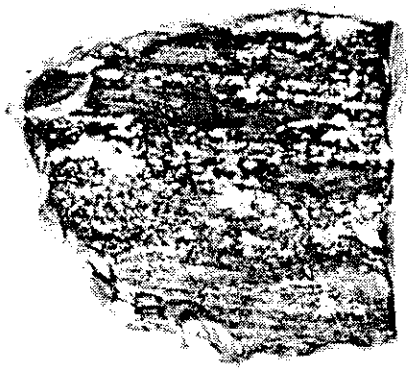


Plate 33

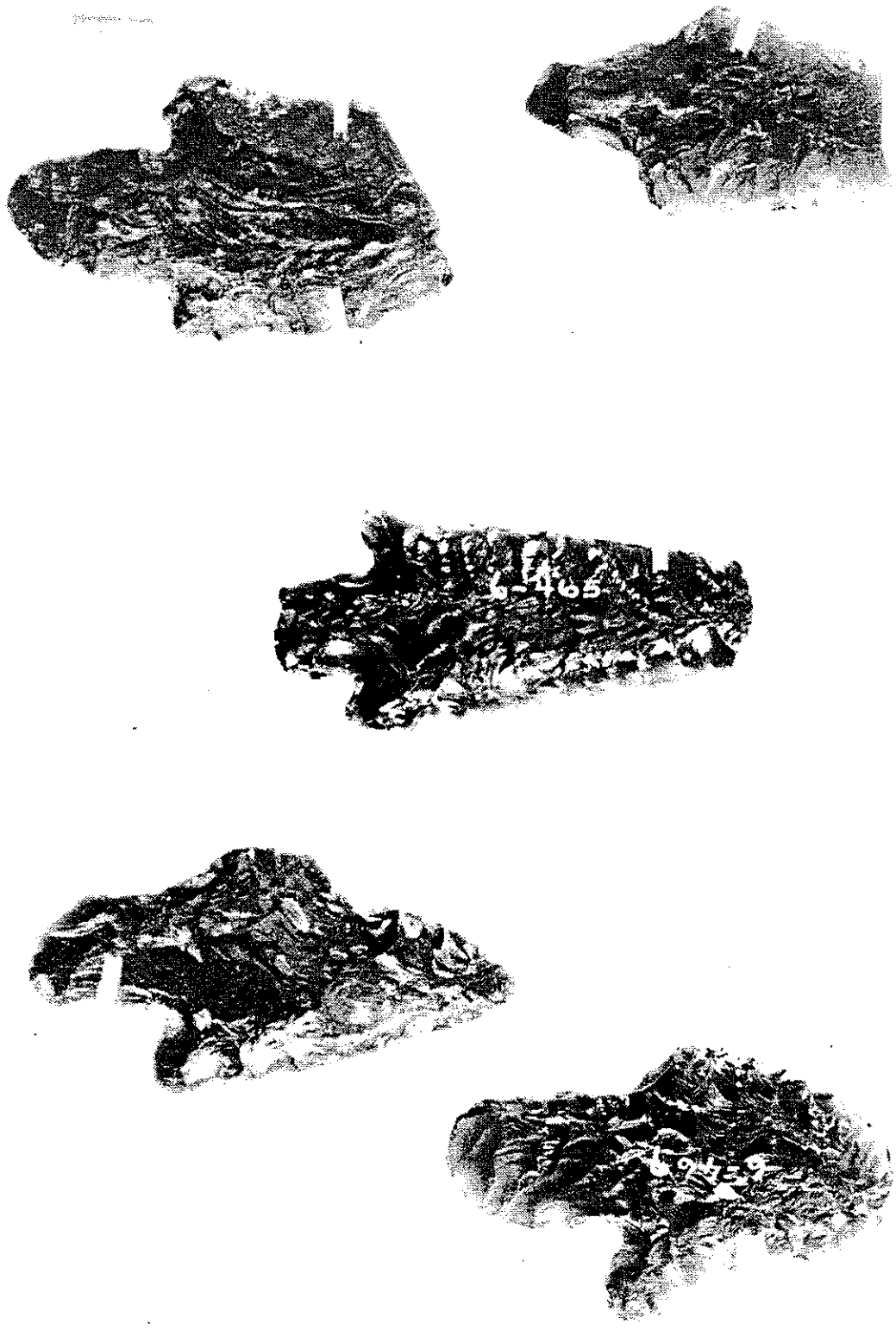


Plate 34

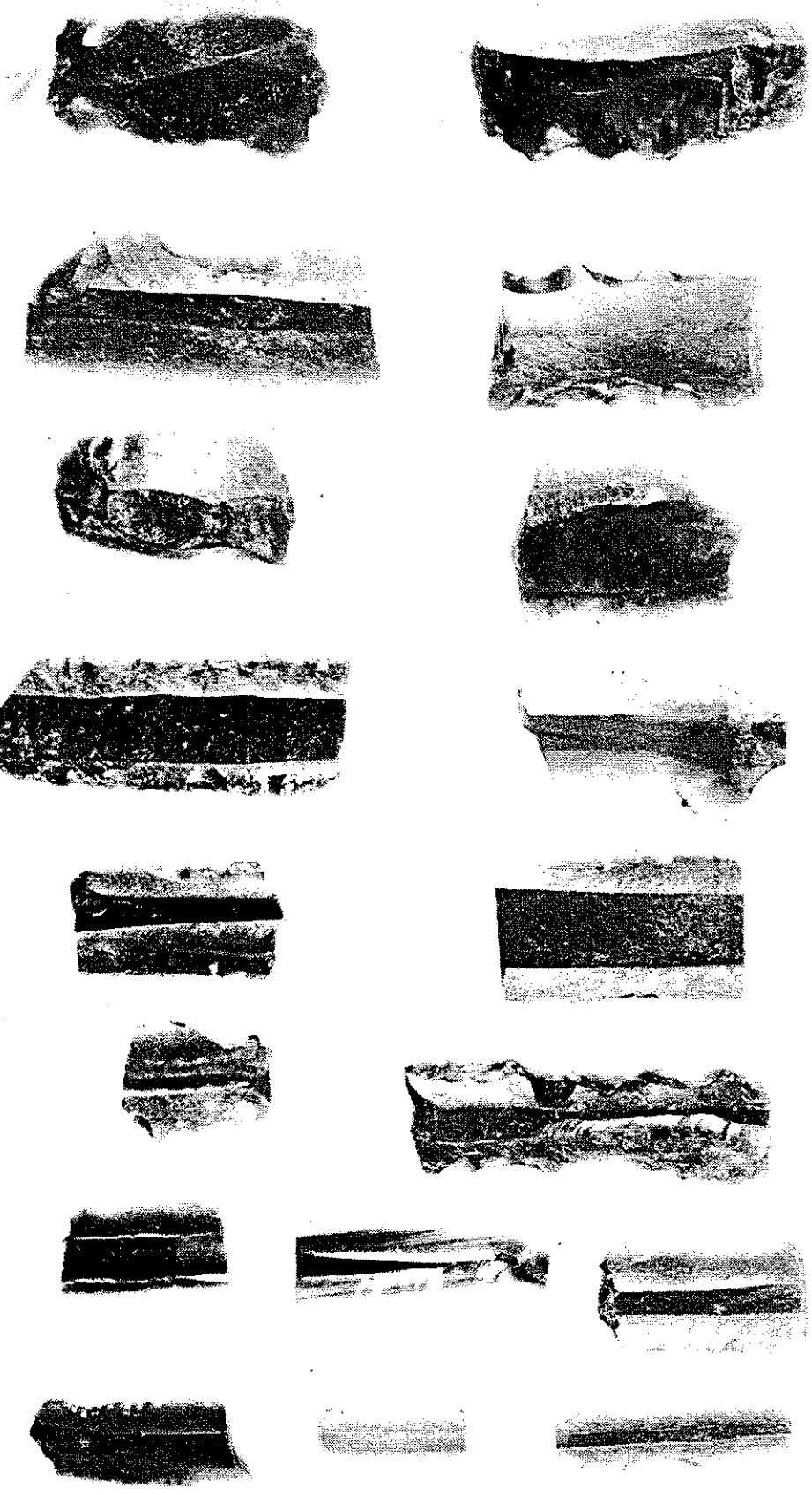


Plate 35

CHAPTER 12

CERAMIC FIGURINES FROM OXTOTIPAC

by

Warren Barbour

TABLE OF CONTENTS

Page

LIST OF FIGURES 699

LIST OF PLATES 700

INTRODUCTION 704

OCCUPATION OF HUEOXTOC 707

THE CHRONOLOGICAL PROBLEM: OXTOTIPAC AND XOMETLA 709

OXTOTIPAC AND XOCHITECATL 711

FIGURINE MANUFACTURING AND THE SECOND TEOTIHUACAN FIGURINE TRADITION 713

CONCLUSIONS 714

BIBLIOGRAPHY 715

LIST OF FIGURES

Figure		Page
1	Manufacturing and technical changes in the figurine chronology for the Valley of Teotihuacan; Tezoyuca to Aztec	719
2	Standing flat figurine, combining the four petaled flower and suspension holes of Metepec with facial and surface treatment of Hueoxtoc	720
3	Tenoned head of the Hueoxtoc subphase that is comparable to the niche figurines found at Xochitecatl, Tlaxcala	721
4	Figurine fragment with hematite surface treatment, of an eagle/serpent knight showing dental alteration, scarification on the left cheek, and a central medalion on the chest similar to the earlier Metepec phase half conical figurines	722
5	Flat standing figurine, with red surface treatment, with derived headdress and clothing elements related to those of the earlier Metepec phase	723
6	Figurines of a prognathic creature (presumably female because of the cape and skirt) holding a large child. The style is certainly Aztec, though I strongly suspect that this figurine is Colonial	724
7	The split in the Teotihuacan figurine tradition after the fall of the ancient city	725
8	The chronological comparison and distribution of figurines from the excavations at the archaeological sites of Hueoxtoc and Xometla	726

LIST OF PLATES

Plate			Page
1	Late First Intermediate and possible foreign figurines		727
	a	Guerrero?	
	b	Unknown (possibly Gulf Coast) polished reddish-beige with hatched headdress.	
	c	Small, light beige, seated; most like Vaillant's H4 category.	
2	Tezoyuca/Patlachique (300 BC to 100 BC) figurines		728
	a,b,c	Flat standing Tezoyuca figurines with slit eyes and prognathic face.	
	d	Early coffee bean eye figurine, standing, cylindrical, with cleft head; Patlachique period.	
3	Tezoyuca/Patlachique torsos (except f)		729
	Note the indication of breasts on a, b, and d.		
	e	May be as late as Tzacualli.	
	f	Post-Teotihuacan "Bat torso" related to those illustrated in Plate 25,c.	
	g,h	Patlachique.	
4	Tzacualli/Early Miccaotli torsos		730
	a-d,g,h	Typical torsos of the standing cylindrical types found by Noguera, Smith, and Rattray during their excavations in the Pyramid of the Sun.	
	e,f	Flatter figurines much like the late Tzacualli material found outside of the adobe bricks in the upper tunnel of the Pyramid of the Sun; and the earliest material from the adobes in the Ciudadela excavations of the Teotihuacan Mapping Project.	
5	Typical Tzacualli/Early Miccaotli heads		731
	d	An animal, possibly a canine.	
	f	Late, possibly early Miccaotli; associated with torsos in Plate 4,e and Plate 4,f.	
6	Late Tzacualli heads		732
	a,c	Coffee bean eye, prognathic mouth, standing, flat, handmade female figurines.	
	b,d-f	Coffee bean eye prognathic mouth heads of standing cylindrical figurines.	
7	Early Miccoatli/Tlamimilolpa handmade, slit eye, figurine heads		733
	a	Head of a standing cylindrical figurine.	
	b,c	Wide handmade cleft heads from standing flat figurines. The double slit eyes may mean that these figurines are closer to the early end of the chronological spectrum.	
8	Miccaotli/Tlamimilolpa torsos arranged from earliest to latest		734
	a	Standing flat figurine.	
	b	Seated cylindrical torso.	

c,d Standing cylindrical torsos with supports.
e May be Xolalpan in date.

9 Tlamimilolpa to Metepec; puppet torsos 735
a Moldmade Metepec torso.
b Tlamimilolpa handmade puppet torso.
c,d Xolapan figurine torso.

10 Miccoatli/Tlamimilolpa; limbs 736

11 Xolalpan; limbs 737

12 Puppet limbs 738
These show the variation within the hadmade limbs, even though the heads and torsos to which these were attached were moldmade. j is a Tzacualli limb and d is most likely Tlamimilolpa, otherwise the limbs sould be either Xolalpan or Metepec, the darker limbs most likely Metepec.

13 Portrait limbs 739
a Typical foot, often with a fold or a disk on the the top of the foot.
b Typical cupped had. Note that hands are often oversize, suggesting that something may have been placed in the hand.
c Represents the shoulder section.

14 Xolalpan and Metepec heads 740
a,e,g-i Xolalpan. a and e are heads of either standing or seated seated cylindrical figurines. h and i are portrait heads.
b-d,f Metepec. b has a headdress that is identical to those on representations of Teotihuacanos in the Maya area and is also one of the headdresses that continues after the fall of the city in an attenuated form. c is the distinctive head of a type of Teotihuacan figurine called bound figurines with wraps or ties around the chest and feet. d is a standing, flat, moldmade female. Two small suspension holes can be seen in the headdress. f is a puppet head.

15 Xoplalpan/Metepec heads 741
a,c,f Fragments of Xolalpan puppet heads.
b,g Fragments of Metepec puppet heads.
d Xolalpan head of wither a seated or standing cylindrical figurine.
e Metepec phase portion of a ceramic Huehueteotl (old god). Note that the mouth is open and teeth can be seen.

16 Various torsos 742
a Late Xolalpan/Early Metepec torso of a type of figurine that commonly has articulated legs, a perforation in the chest, and three drops below the perforation. The head is always of a feline with a feather and disk headdress.
b Late Xolalpan/Early Metepec half conical torso.
c Late Tlamimilolpa handmade torso.
d Metepec half conical torso.

e Xolalpan Fat God torso.
f handmade Tlamimilolpa or Xolalpan torso of a bound figurine.

17 Hueoxtoc/Xometla plaques and figurine fragments (except for d) 743
a Hueoxtoc plaque representing a skull with a serpent tongue emerging below.
b Hueoxtoc plaque of a fire (?) serpent emerging from its own tail which surrounds the head and upper body.
c Hueoxtoc subphase knight figurine, see also Fig. 4 for further detail.
d Metepec torso.
e Xometla subphase knight figurine. Compare c and e: the later figurine (e) has lost depth, detail, and definition.

18 Hueoxtoc/Xometla figurine fragments 744
a Large, possible mask associated with the large ceramic figure illustrated in Plate 28. The eye and nose treatment are radically different from other techniques used in the Valley but the tooth alteration is common during the after the Teotihuacan period; the cheek disk is common in Late Teotihuacan murals and censer masks.
b Hueoxtoc continuation of the Teotihuacan throned figurine. Note the return of a coffee bean eye.
c "Posted" head with a coffee bean eye and a cross (which may be an attenuated four-petaled flower) in the headdress.
d Xometl subphase version of c. Note that the prognathism of the mouth has been reduced and the eyes are no longer defined coffee beans, but slits.
e,f Fragments of heads.

19 Hueoxtoc subphase helmeted knights 745
These are similar to the knight in Plate 17,c and Fig. 4. The depth, detail, and definition of features place them in the Hueoxtoc subphase.

20 Xometla subphase figurine fragments 746
a,c Show stylistic and chronological distance that obscure headdresses and features. The earspools of c have now changed dramatically compared to the Hueoxtoc subphase pieces.
b May be an example of a Xometla throne fragment.
d May be part of a plaque.

21 Hueoxtoc subphase head and headdress fragments 747
All of these have hematite surface treatment. These clearly show the continuity with the headdresses of Metepec phase throned and half conical figurines. a has the helmeted headdress with back plaque illustrated in Plate 14,b.

22 Hueoxtoc subphase fragments 748
These fragments are of elaborate headdresses from tenoned (posted) niche figurines, derived throned, or half conical figurines.

23 Xometla subphase fragments of heads 749
Note particularly g and h. These two show how hair is represented as falling down at an outward slant, not the right angle, blocky representation typical of Teotihuacan and Hueoxtoc.

24 Mazapan subphase figurine fragments (not Hueoxtoc)..... 750
- a TT-21, Mound 1.
- b TT-14-B.
- c TT-14-A.
- d,e Maquixco Alto, 5; these are included to illustrate the "cookie cutter," flat style of post-Xometla times.

25 Hueoxtoc Cave; unusual figurines..... 751
- a May be an Aztec period monkey or canine.
- b Unknown.
- c,d,f Possibly represent bats; see also Plate 3,f. The chronological positions of these frigurines are still in question. We have no figurines like these during the Teotihuacan period. Since the Hueoxtoc and Xometla subphase material clearly are derived from Teotihuacan, I suspect that these are Mazapan.

26 Hueoxtoc figurine fragments—evidence of manufacturing..... 752
- a A limb, pulled, elongated, deformed, and misfired.
- b A figure I suspect was formed by a child, covered with fingernail marks, with a simple fingernail face.
- c-f Limb fragments with various fingernail marks and firing anomalies.

27 Aztec and Colonial figurine fragments from Hueoxtoc Cave..... 753

28 Fragments of a large ceramic figure..... 754
- a Fragments of a two-tier shell necklace with red surface treatment.
- b Foot with a disk attached to an ankle bracelet. The foot is resting on a suppory that is contoured like smaller ceramic representations of thrones.

INTRODUCTION

This study focuses on the anthropomorphic terracotta figurines excavated at Hueoxtoc cave at the archaeological site of Oxtotipac.[1] The purpose of this paper is threefold. First, it will demonstrate that chronological changes in the terracotta figurines from the cave are more apparent than in the pottery found with them. Second, it will show that these Hueoxtoc figurines are distinctly different from the Xometla figurines, and represent a direct continuity with Metepec figurines made at the time immediately prior to the fall of Teotihuacan. Finally, these figurines will be compared with those from the Tlaxcala/Puebla region. This final analysis will suggest that the Teotihuacan figurine tradition may have moved in two different directions after the fall of the city, one branch going north to Tula and the other east and south to Cholula.[2] It is suggested that there is sufficient evidence that a change in the ceramic figurines marks a distinct period of time directly after the fall of Teotihuacan, and that it warrants at least a subphase name. I am suggesting Hueoxtoc which has several advantages over the more commonly used Oxtotipac (Oxtoticpac).

The cave of Hueoxtoc at the archaeological site of Oxtotipac was excavated in 1962 by Gerald Obermeyer. The ceramic material has been the source of much speculation and controversy since that time. Except for isolated pieces from museum collections nothing like the distinct figurines from Hueoxtoc had previously been found in archaeological context. I analyzed over 1100 ceramic artifact fragments, of which 250 turned out to be figurines. The majority (194) of these figurines were from the Hueoxtoc excavation, the remainder (56) coming from the Xometla excavations. One of the first things that is noticeable when examining the collection is that even though it is small compared to the 45,000 figurine fragments from Teotihuacan analyzed for my thesis (Barbour 1976), the Hueoxtoc figurines covered the chronological spectrum from Cuanalan to Spanish Colonial phases (Plates 1 to 28).

Between 1964 and 1969, a series of excavations at Xochitecatl in Tlaxcala produced a group of 200 remarkable figurines many of which closely resemble those from Hueoxtoc cave (Spranz 1973:Figs. 1 to 3 and 19). The Tlaxcala find suggests that the Oxtotipac figurines are not an isolated geographic anomaly or the "proto-" part of the larger Coyotlatelco[3] ceramic phase as has been suggested by Evelyn Rattray (personal communication).

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[1]It should be noted that Millon differs in the spelling of the site. Sanders feels that since the modern town is "Oxtotipac" that the archaeological site should have the same name. Millon feels that the traditional Nahuatl spelling with a "c" should take precedence, thus making the site name "Oxtoticpac."

[2]The focus of this chapter is on the region to the east and south of Teotihuacan. I am preparing a paper that specifically deals with the northern tradition which terminates with the figurines of Tula, analyzed by Terrance Stocker (1982).

[3]I prefer to use another term than proto-Coyotlatelco for this material because the figurine material certainly is a continuation, though slightly attenuated, of the Metepec figurine tradition. "Proto-" implies a nascent early form leading up to Coyotlatelco. It seems more realistic to see Coyotlatelco as the last ember of the Teotihuacan tradition.

Obermeyer divided Oxtotipac figurines into three categories: "posted" (tenoned), animal masks, and zoomorphic. These included everything from Aztec to First Intermediate. The posted category, which was distinctive to Hueoxtoc turns out to be one of the most important markers, having connections to the contemporaneous figurines from Xochitecatl in Tlaxcala. Using the chronological typology developed for the analysis of the Teotihuacan Mapping Project figurine material, I was able to chronologically place the figurines from both Xometla and Hueoxtoc. This is reflected in Figure 8, which is a comparison of the frequencies of types by ceramic phases as a function of a percentage of the total from each site.

The most important changes and innovations associated with Teotihuacan figurine manufacturing are outlined in Figure 1. Sometime after the development of the mold, the figurine industry became more organized and there is evidence that particular workshops, mostly in the northwestern section of the city, specialized in the manufacture of specific groups of figurines (Barbour 1976). The production appears to have been organized by corporate groups.

The break between Metepec and Oxtotipac is marked by changes in both technical and stylistic characteristics of the ceramic figurines. The major technical and stylistic changes are those best understood as reflecting a collapse of the figurine industry as a guild or corporate enterprise.

During the Late Xolalpan-Early Metepec phases one finds many examples of the elaborate moldmade figurines having additional handmade pieces added. This practice largely ends in the Hueoxtoc subphase. Most of the figurines are moldmade with little or no retouching.

Many of the figurines that combined moldmade and handmade elements became purely moldmade. There is a hint of the continuation of combined moldmade and handmade techniques in the case of one figurine type, the host figurine type (see Spranz 1973:Fig. 19). This type is rare during the lifetime of Teotihuacan but seems to increase in frequency, though it changes in stylistic characteristics, during the Hueoxtoc subphase. Instead of having many smaller figurines in the interior as the Late Teotihuacan figurines have, the Hueoxtoc/Xochitecatl figurines have only one figurine in a niche in the lower stomach of the host figurine. This figurine may represent a child; more specifically, we may be seeing the first representations of the birth of Huitzilopochtli with the fall of Teotihuacan (Barbour 1986) In the Hueoxtoc collection a common moldmade technique for producing heads was to include a tenon, or spike, to form the neck (Plate 18,c and Fig. 3). This contrasts with the earlier technique of having a spike, or post, extending from the body on which the head is placed. The latter technique extends as far back as 250 BC, to the Patlachique/Tezoyuca ceramic phase. This indicates that even in those cases where the tradition of combining both handmade and moldmade parts continues into the Post-Teotihuacan period, a change in the perception of the figurines has occured.

Aside from these technical differences in manufacture there is also a disappearance of one type of figurine, the portrait, and radical revision of the puppet, or articulated figurine. It is my belief that the hollow standing figurines, such as the ones found in Tlaxcala and Hueoxtoc, replace the puppets. The variety of body positions for both seated and standing figurines is considerably less. The body is deemphasized and gives the impression of being built around the head. The head becomes dominant in importance, whereas one could not say it took precedence in the previous Teotihuacan period. Handmade, cylindrical, sitting, squatting, or crosslegged figurines disappear, including the common portrait figurine (Plate 13,a to Plate 13,c; Plate 4,h, and Plate 4,i), while the

posted figurines in a standing position, with handmade hollow bodies with a niche, replace the common puppet figurine (Plate 9,a to Plate 9,d; Plate 10,a, Plate 10,b; Plate 12,a to Plate 12,i, Plate 12,k; Plate 14,f and Plate 15,a, Plate 15,b, Plate 15,g). The large cache uncovered at Xochitecatl, Tlaxcala is an excellent example.

One large figure with hematite surface treatment was found. In the figurine collection, only portions of a ceramic shell necklace and the left foot attached to the lower edge of a throne were identifiable (Plate 28,a and Plate 28,b). It is probable that more sections of this large hollow figure may be in the sherd bags. A mask fragment, illustrated in Plate 18,a, may also have been part of this figure. When complete, it must have ranked in complexity and size with the large Post-Teotihuacan Xipe figures found by Linné (1934) at las Palmas. This figure is another example of continutiy of Teotihuacan style and manufacturing techiniques into the Hueoxtoc subphase.

Recent evidence from the compound directly north of the Ciudadela indicates that censer parts and some figurine heads were produced there, but not the molds, half conicals, or puppet figurines (Cabrera Castro, Rodriguez G., Morlelos G., *et al.* 1982). The picture that one gets of the Late Teotihuacan figurine industry is that it was segregated into multiple levels of production and very specialized, the state controling at most only a small portion of this production. I say this because the numbers of figurines and their presence, primarily in house middens, reflect common everyday use, much the same as the distribution of utility ceramic wares. Also there are specific types of figurines that abruptly end or radically change with the fall of Teotihuacan. These figurines, such as the portraits and puppets discussed above, must have been used directly by the inhabitants of the compounds in some hitherto undetected relationship with the official state religion. When the Teotihuacan state disappears, the need for these figurines also disappears. As mentioned above, the portrait figurines totally end and have no Post-Teotihuacan analogs even remotely related to them. A great deal of hand work was also required to complete the bodies of the portrait figurines, and, as mentioned above, the hand work is what largely ends with the fall of the city. The most important change in the puppets is not so much the technique, but the context. At Xochitecatl they are found in a cache at the base of a temple, a far different context than the domestic midden and occasional burial at Teotihuacan.

An additional characteristic of the Hueoxtoc subphase figurines is dental alteration. This has been identified by Dumond and Mueller in their 1972 *Science* article on the Classic-Postclassic transition as "T Shape Dental Mutilation." I prefer simply dental alteration because the T shape, while most common, is not the only one (see Plate 18,a for another variation) and the term mutilation is perhaps too specific and ethnocentric and may not have been in the minds of the creators of these figurines. The important point is that the illustration of the altering of the teeth is an extension of a practice that begins in the Metepec phase. In Test Excavation 23, above Layer 33, of the Teotihuacan Mapping Project, we found figurine heads with purposeful illustration of teeth. This seems restricted to those layers associated with Metepec ceramics, and so far I have found no examples of dental alteration on earlier Teotihuacan specimens.

OCCUPATION OF HUEOXTOC

During the previous season's survey (1962) the site of Oxtotipac was considered a prime candidate for excavation because this low hill, which overlooked the distant pyramids to the west, was covered with ceramics that dated from the Middle First Intermediate (500 BC) to the Colonial period. This long ceramic sequence on the surface strongly suggested that an excavation, particularly in a protected area away from the houselots that covered the hill and formed the present village of Oxtotipac, would likely yield a stratification that might clarify the long cultural history of the Valley of Teotihuacan. For this reason the cave of Hueoxtoc was chosen. The excavation by Gerald Obermeyer proved more difficult than expected, with the collapsing of walls and a white ash that filled the air and clogged the lamps. The pottery recovered from the cave held another surprise. Almost all of the ceramics were from Post-Teotihuacan periods. In addition, all of the floors and walls that were uncovered were Post-Teotihuacan.

The terracotta figurines, however, showed the same range of chronology as the pottery from the surface. I have included plates of these figurines to graphically illustrate this fact (Plates 1 to 28). What explains this disparity? Clearly, the cave may only have functioned as a residence after the fall of Teotihuacan, hence the Post-Teotihuacan pottery, but it had another, most likely sacred function dating from the Middle First Intermediate Period which involved the use of figurines.[4] In addition to figurines, there was one cache of Teotihuacan items discussed in Part 1 of this volume (Sanders 1986:206, 227 *passim*, 255, Plate 4) that I will comment on because it supports the interpretation of the sacred, non-residential nature of Hueoxtoc cave from the Middle First Intermediate Period to the end of Teotihuacan. In the first part of this volume it was suggested that the "Oxtotipac phase materials are the result of a single occupation over. . .a Teotihuacan occupation" (Good and Obermeyer 1986:227).

A cache of ordinary Teotihuacan cooking vessels accompanied by a stone Huehueteotl, two manos, two metates, and other ceramic vessels were found together in the cave. This clearly domestic assemblage raises the possiblity that the function of the cave during the Teotihuacan period may well have been domestic; however, no walls or floors could be assigned to a phase earlier than the Oxtotipac or Xometla ceramic subphase. As mentioned above, the figurines follow the chronological pattern of the pottery found in the 1961-1962 surface survey, indicating that the primary use of the cave was ancillary to the community that grew up on the hillside of Oxtotipac.

There is no evidence that the population increased so dramatically in the Hueoxtoc subphase that occupation of the cave occured because of the shortage of land. It seems more reasonable that the cave became residential because whatever restricted its consideration as a house site in the Teotihuacan era was removed. It is tempting to suggest that this restriction was religious, which is possible but not necessarily the case. Perhaps the cave served some economic function that ceased with the end of Teotihuacan.

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[4]It has been suggested by Cynthia Conides (personal communication) that the cave might well have not functioned as a residence during the Second Intermediate Period, but as a midden for the surrounding area. While this may have intermittently been true during the Post-Teotihuacan phases, it seems unlikely that only figurines would have been tossed in the cave without other pottery during most of its history.

Obermeyer suggests that the cave may have been a source of Tezontli[5] for the ancient city. If this were true it would still not explain the presence of Pre-Teotihuacan figurines in the cave, and yet no other ceramic evidence is suggestive of residential occupation.

While trying to understand the Teotihuacan cache described above, I mentioned its content (domestic, everyday kitchen ware) and ambiguity of context (no structures) to Timothy Knab, a linguist and cultural anthropologist. Knab commented that the artifacts and their context reminded him of an incident that occured in the Sierra de Puebla a few years ago. One of his informants, who was a curandra, was dying. She asked Knab as a favor to take her household goods—including pots, metate, and incense burner—to a nearby cave and bury them just inside the entrance. She explained to him that she wished him to do this because caves are the entrance to the underworld, and for her to have access to her possessions in the afterlife he would have to bury them in the cave. The similarity of the class of Teotihuacan artifacts found, with those buried by the curandra is striking. Here the context of the cave as an entrance to the underworld strengthens the possibility that the presence of Teotihuacan domestic ware and a Huehueteotl does not necessarily mean that there was residential occupation of the cave. The cave clearly had multiple purposes over the two thousand year span of its use.

The sacredness of caves in Teotihuacan, specifically, has been discussed by Doris Heyden (1975) in her paper on the cave under the Pyramid of the Sun. It certainly seems reasonable that Hueoxtoc may well have had a sacred function, at least during the Middle Horizon, since it is so close to Teotihuacan. Consider also that the Nahuatl meaning of the name of the site "Oxtoticpac": "above the cave" or "cave with painted front and a ball [of thread] above" (Peñafiel 1885:159, Plate XXI)[6], and the cave itself, "Old Cave," might indicate a previous sacred function for the cave. The presence of figurines without evidence of domestic pottery at least to the end of Metepec phase also suggests the sacred nature of the cave even though (or perhaps because) it was man made. Sometime after the fall of Teotihuacan the sacred nature of the cave may have been lost or rejected, and it became available as a residential structure. The figurines from these Post-Teotihuacan phases may simply be domestic debris within the cave during occupation, or the cave may have continued as a sacred place, perhaps with the residents of the cave also having a specialized or sacred function. Much of the Post-Oxtotipac material is common domestic ware, though the existence of a possible new censer type (scoop handled?) suggests that some of the sacred characteristics of the artifacts may have continued.

There is evidence of figurine manufacturing from Hueoxtoc excavations. Workshop debris (Plate 26), including misfired misshapen figurine fragments, is found there. There are even more conclusive examples of workshop material with examples of figurines showing fingernail marks including one crudely made with fingernail marks (Plate 26b). Jose Luis Franco (personal communication) related the results to those of a study he made after finding an Aztec site that he thought might be a workshop area. He had noticed that

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[5]Tezontli is the local term for very spongy volcanic rock that occurs in a wide variety of sizes that was used from Tlamimilolpa ceramic phase through the Metepec phase for subflooring, for fill, and cut into facing stone for walls. In the survey conducted by the University of Rochester under the supervision of Rene Millon, Tezontli was found to be an excellent surface indicator that significant construction existed in the subsurface.

[6]I disagree with Peñafield's interpretation of the object above the cave's mouth. I believe that it may be a spider's web associated by Karl Taube (1983) with divination. It also closely resembles the pecked crosses that appear in Teotihuacan.

many of the figurines seemed not only poorly made but also has fingernail marks. In observing a modern ceramic village workshop where vessels and figurines were being made for the market and tourists, he noticed that children imitating their parents made crude vessels and figurines of their own and would insist that their products be fired along with those of the adults. One gets a picture much like the modern child insisting that his or her cookies or cake be put in the oven with the parent's.

THE CHRONOLOGICAL PROBLEM: OXTOTIPAC AND XOMETLA

In this section on Oxtotipac and Xometla, I discuss some of the specific chronological problems presented by the Oxtotipac figurine material. In this instance, the figurines may well be more sensitive to change that no doubt affected the religious and political life of the Valley of Teotihuacan than the pottery. For a full discussion of the pottery differences, see Sanders's paper (particularly pp. 369-70) on the ceramic chronology in Part 1 of this volume. The data presented in Figure 2 support the ceramic findings as to differences. As far as figurines being a more sensitive indicator of change, we have an excellent example at Hueoxtoc which dates from the final phase of the regional chronology. Thomas Charlton (1968) found that Aztec domestic wares continued to be made in the countryside seventy, even a hundred years, after the collapse of the Aztec political structure. Two colonial figurines were found at Hueoxtoc, and one illustrates the fact that political and religious change are reflected in figurines but not in pottery. Figure 6 shows a Colonial figurine which may have been an attempt to maintain some semblance of earlier Aztec religion. It is a representation in fired clay of a very strange animal, with a long snout and a skirt that is clearly Colonial in nature, holding a child on her lap. The child stylistically is Aztec, except that it is huge compared to the female animal, and is cupping the breast of the animal. I have never seen another Aztec figurine with this motif, though women with children are common enough. While some Aztec pottery may have been continued to be made after the coming of the Spanish, the small religious items change drastically. Even if this animal mother and child is an attempt to continue an aspect of the earlier religion, it is greatly modified and must have been rare, for it is hard to believe that a peasant found with such a figurine would not be in mortal danger of having his or her soul translated from this vale of tears.

A representative sample of the 194 terracotta figurines analyzed and typed are illustrated in Plates 1 to 28, with the exception of Plate 24, which illustrates Mazapan subphase figurines from the surface collection for comparison.

Even though there is no direct stratigraphic evidence for the Hueoxtoc, or Oxtotipac, subphase, at least among the figurines, there is a great deal of evidence that strongly suggests that it is a distinct earlier part of the Early Toltec phase. First, the most definitive marker of the Oxtotipac figurines is their hematite or cinnabar post-fired red surface treatment. This characteristic distinguishes the pieces from the earlier Metepec phase figurines. On the other hand, the figurines represent a continuation of the Metepec figurine complex and it is through the Oxtotipac, Cerro Tenayo, and Xochitecatl material that one can trace the continuation of the Second Teotihuacan Figurine Tradition, characterized by those elements listed in Figure 1. Throned figurines and the standing flat figurines common in the Metepec phase continue to be made. The standing flat figurines have the elaborate headdresses of the Metepec phase, but the four petaled flower is now replaced with a cross (Figs. 5 and 6, and Plates 18,c and 18,f), or, in one case, a mixture

of the two (Fig. 5). In addition, the feathers of headdresses are not as well-defined, but still have the proportions of the earlier Metepec headdresses (Plate 21,a to 21,g and Plate 22,b to 22,e, Plate 22,g and Plate 22,h). The figurines from the Hueoxtoc subphase also have more roundness and relief of features than the Coyotlatelco/Xometla figurines (compare Plate 17,c with 17,e).

The Oxtotipac terracotta figurines differ from the typical Coyotlatelco figurines in paste, surface treatment, modeling, and motifs. Before discussing these specific differences, it is important to understand the history of the Coyotlatelco figurine, as it is in these beginnings that many of the chronological problems with the Second Intermediate Period have their roots. The particular problem surrounding Coyotlatelco goes back to Tozzer and Vaillant as discussed below, and was touched on in Part 1 of this volume (Koehler 1986:29-30). The early chronologies for the Basin of Mexico were largely produced through the stratification and seriation of figurines. Since the transition to the more chronologically sensitive pottery that took place during the late 1940s and early 1950s, terracotta figurines have been largely ignored as chronological markers. Tozzer (1921) first defined the Coyotlatelco figurine style and phase from his excavations at Santiago Ahuizotla.

In my thesis (Barbour 1976:109-112), I discussed the beginnings of the basic problems with Vaillant's excavation at Las Palmas, a site about 100 m to the south of the site of Xolalpan and dug by Linné in the 1930s. Vaillant defined the Coyotlatelco period by pottery and figurines. He placed Mazapan figurines and pottery as being at first contemporaneous with, and then dying out and being totally replaced by, Coyotlatelco types (1938:537, Fig. 2). He also accepted Tozzer's conclusion that there was only one Coyotlatelco figurine type that did not occur at all at Teotihuacan (Tozzer 1921:42). The root of the problem was Vaillant's reversal of the chronological relationship between Mazapan and Coyotlatelco as well as his accepting Tozzer's definition of Coyotlatelco figurines as being one type. Tozzer (1921:42) described this type as consisting

> of a complete body, much thinner than the usual Toltec [by which he meant Teotihuacan] figurine, and characterized especially by a sharp-pointed nose. The face is usually painted red, together with part of the dress, and the simple headdress is sometimes yellow. The faces of these figurines were probably not always made in molds.

Tozzer emphasized the simple headdress and the thinness. Because he lumped all Teotihuacan figurines into the category of Toltec, he did not notice other distinctions among any of these figurines. When it was realized that Vaillant's original chronological sequence was reversed, Mazapan pottery was re-examined but the figurines were not. Two figurines listed as Mazapan are clearly Coyotlatelco (see Vaillant 1938:537, Fig. 2). Tozzer missed an entire complex of figurines intermediate between his Coyotlatelco types and the earlier Teotihuacan types, and he also mixed distinct stylistic, and probably chronological, features of the one type that he defined as Coyotlatelco. This can be inferred from the statements above. Red surface treatment and hand retouching, particularly of the face, are characteristics of Oxtotipac figurines. Tozzer's use of the terms "usually" and "sometimes" indicates that he was sensitive to the variety, though he had no way of understanding the difference.

Figure 8 shows the distribution of the figurine types from Xometla and Oxtotipac, by subphase, as a function of the percentage of the total number of figurines from each site. To make the data comparable, I typed them before I had the knowledge that the Xometla ceramic figurine collection was included with the figurines from Hueoxtoc Cave.

The basis for the typing of these figurines was my thesis (1976) and Noguera's excavations from the Pyramid of the Sun (Millon *et al.* 1965) for the Tezoyuca to Metepec material. For early ceramics, I also examined Robert Smith's figurine material from his upper puramid excavation. I also found Tolstoy's (1958) survey of the ceramics of the Valley of Mexico to be useful. I used Parsons (1972), Rattray (1966a, 1966b), Spranz (1973), Stocker (1982), Tozzer (1921), and Vaillant (1932, 1938) for typing the Post-Teotihuacan collections, which at that time I thought were only from Hueoxtoc cave. I noticed an interesting difference between figurines with the 9000 series of numbers and those in the 3500 series. The 3500 series contained many more figurines with red surface treatment, retouching, coffee bean eyes, headdress motifs that clearly related to earlier Metepec headdresses, and more rounded figurines. The 9000 series had more of the Coyotlatelco type as described by Tozzer and had much less sharp features, little or no retouching, were flatter, and had no red surface treatment. In checking the Hueoxtoc ceramic catalogue, I could not find any 9000 series. William Sanders then pointed out that the 9000 series of catalogue numbers refered to the Xometla excavations. Seriation alone strongly suggests that the figurines of Hueoxtoc are chronologically closer to Teotihuacan. On the other hand, the Xometla collection, with the disappearance of many Teotihuacan motifs; their indistinct features; and flatter, thinner, entirely moldmade forms, represents a figurine industry that is temporally removed from Teotihuacan. However, the majority of the Hueoxtoc collection must have been manufactured by individuals who knew, remembered, and manipulated the symbols of Teotihuacan power and authority. The red surface treatment, the visible tooth alteration, and the introduction of a cross and circle motif are an additive continuation of the Second Teotihuacan Figurine Tradition that began in the Metepec ceramic phase.

These figurines, first defined at Hueoxtoc Cave, were also found at Cerro Tenayo and were described as figurines with "degenerate" Teotihuacan headdress characteristics (Rattray 1965). They were later found in the Tlaxcala region at Xochitecatl as well (Spranz 1973).

OXTOTIPAC AND XOCHITECATL

Clearer evidence that the Hueoxtoc figurines represent material made directly after the fall of ancient Teotihuacan come from the site of Xochitecatl excavated in the late 1960s as part of a multidisciplinary program sponsored by Deütsche Gorshungsgemeinschaft. Spranz (1973:218) notes that about 200 figurines were found, most of them moldmade with several copies being produced from some of the molds. A description of the figurines by Spranz (1973:219) strongly indicates that they are virtually identical to those excavated at Hueoxtoc cave.

> The great majority [of figurines] is formed completely or in part by means of molds. Some are solid and flat, like gingerbread men; some are hollow, with a child in the body or made as a rattle. There are also dolls with movable limbs. The size lies between four and twenty-five centimeters, for the majority are about seventeen centimeters. Some of them are dressed, some not. The naked ones are sexless, but are perhaps females, for in this category fall the mother/child figurines. Only three small figurines wear the male loin cloth. Besides the hand-modeled figurines, the flat ones show the most elaborate costume. Nearly all are painted, after firing, with red, white, black, and one also with yellow. The red color is cinnabar or hematite; in one case both reds are used on the same figurine.

A specific figure (Spranz 1973:223, Fig. 19) can be directly related to the Hueoxtoc type defined by Obermeyer as tenoned, or posted, figurines. Plate 18,c (see also Fig. 6) illustrates one of this type. The head was built into a large hollow body, perhaps with a niche like the one illustrated by Spranz. The fragments of headdresses illustrated in Plate 22, particularly 22,d to 22,f, are stylistically close to the Xochitecatl material. One of the stylistic characteristics that the Xochtecatl material shares with the Hueoxtoc material is the maintanence of an almost architectural style, even in a plastic medium such as clay. Hair surrounding the face falls straight down at right angles to the hair line (Plates 18,b and 18,c). This contrasts sharply with the Coyotlatelco style where the hair flies out at about a 45° angle (Plates 23c, 22,e, 22,g, and 22,h). In fact, the standing flat figurines from both Hueoxtoc and Xochitecatl retain a style that strongly reminds one of the large stone statuary from Teotihuacan (see Spranz 1973:221, Figs. 1, 2, and 3). It is this closeness of stylistic detail that may have led Millon (in Spranz 1973:218) to describe the Xochitecatl figurine and pottery material as being "related to late Teotihuacan (Metepec), without having been made there, because the clay and the vessel profiles differ from those in Teotihuacan." I contend that the similarity described by Millon is a function of time, but only a very short time period indeed. Stylistically, the Oxtotipac and Xochitecatl material is so close to Metepec that it could not have been made much more than fifty years after the fall of the city. They may even have been manufactured by individuals that were responsible for the earlier Teotihuacan figurine industry. The Xometla/ Coyotlatelco figurines retain fewer Teotihuacan elements and are indistinct in features and details, such as the falling of the hair, because these figures were made not only after the city had fallen, but after the direct memory of the city had been lost. Xometla is not a stylistic reflection of Teotihuacan as the Xochitecatl and Hueoxtoc figurines are, but rather a distortion produced by time and a further falling away of the figurine industry that had been so productive during the life of the ancient city.

Charlton's (1972) description of the changes in the Aztec pottery complex might well be describing forces that similarly changed in figurine manufacturing after the collapse of Teotihuacan.

> Between the conquest and about 1650 the changes which occured in the Aztec ceramic complex were of a kind that might be described as simplifying. Decorated wares declined in frequency gradually. Plain wares increased in frequency. Occasionally new designs appear in both Red and Orange Wares. In addition there was a decline in technological sophistication (p. 6).

> The archaeological investigation of the post Conquest periods of part of the Teotihucan Valley has shown clearly that significant changes in settlement patterns, demography, ecology, religion, and ceramics can be demonstrated. . . .It is almost one hundred years to 130 years after the actual military conquest that settlement patterns, demography, ecology and ceramics reflect that event in the eastern Teotihuacan Valley. Only the church and cemetery appeared earlier indicating outside influence (p. 7).

The implications that Charlton draws from the historic and archaeological data also may well reflect the situation in the Valley of Teotihuacan for the early Toltec phases. Perhaps it is not so much political fragmentation as seen by Blanton *et al.* (1981:143), but a multiple fragmentation of many aspects of life after the fall of Teotihuacan. In examining the Post-Teotihuacan figurines for manufacturing technique, motifs, and style, it appears that there develops two clearly different traditions: one moved north whereas the other moved to the east and south. The one that is later expressed by the Mazapan and Aztec figurines does not seem to retain as many of the Teotihuacan elements as the tradition

that is later represented by Cholula. This persistence of Teotihuacan elements continues for a longer time in the south; I have called this tradition the Second Teotihuacan Figurine Tradition.

FIGURINE MANUFACTURING AND THE SECOND TEOTIHUACAN FIGURINE TRADITION

Looking at the organization and demise of the Teotihuacan figurine industry one can see a reasonable explaination for the transition from Metepec through Oxtotipac and into Xometla and Mazapan, as far as the figurines are concerned. The Teotihuacan figurine industry clearly was specialized (Barbour 1976), with different workshops concentrating on the manufacture of specific types of figurines. The half conicals and throned figurines, for example, were being made in different workshops than the standing flat figurines. With the collapse of the city, this organization broke down, and whoever was making the figurines suddenly was faced with manufacturing many different types. Since the mold was the easiest way to make figurines (outside of Teotihuacan the use of the mold generally does not appear until the Early Second Intermediate Period), all of the surviving types of figurines were made in one workshop. By the Xometla subphase, the result was the simplification and stylistic unification of what once had been an elaborate and stylistically diverse industry. The Second Teotihuacan Figurine Tradition ends with the use of one type of mold and less and less attention given to details that were important when the city was functioning.

The trend in figurines from Metepec to Mazapan thus is one which goes from more hand finished work to little or no retouching; from a variety of molds and styles to use of only a flat, thin mold; from headdress and clothing details that, no doubt, represented those seen everyday by the manufacturers to abstracted vague distortions of long forgotten ornament. The Second Teotihuacan Figurine Tradition began in the Metepec phase. Millon, through excavations at the sides of buildings that faced on the Street of the Dead, has shown that while there may have been a short downturn in building and quality of construction, the Metepec phase represented a rebirth of construction (Millon n.d.:57-58). I would suggest that it was during this last phase that a new political/religious or an expanded older tradition spread down to the level of the figurines which were household items used by the commoners of Teotihuacan. This tradition is expressed by the introduction of new figurines, motifs, and headdresses, such as the throned figure, the four petaled flower, the wide band headdress suddenly appearing on children, open mouths sometimes showing teeth,[7] and the appearance of more military motifs in the figurines[8] such as the serpent lip helmet (Plate 14,b) and military knight orders, all features that continue to be well-represented in the Hueoxtoc subphase that immediately follows (Plate

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[7]There is some disagreement here with Sue Scott (1982) who indicates that dental mutilation may occur during the Metepec phase though I have seen no examples, and all of the examples from Hueoxtoc (Plate 17,c and Plate 18,a) are in contrast to the Teotihuacan examples (Plate 14).

[8]The sudden appearance of military motifs in figurines does not mean that the military was any less important earlier. It only suggests that perhaps during this last phase the structure of the military may have changed. Cowgill (1979 and personal communication) has often pointed to early evidence of militarism at Teotihuacan.

12,a; Plate 17,c; and Plates 19,a and 19,b). The knight orders continue into the Xometla subphase but the figurines are flatter and have cruder, less sharply defined features (Plate 17,e).

This Second Teotihuacan Figurine Tradition ends in the Coyotlatelco/Xometla subphase, though some elements do continue into Mazapan and possible Aztec times. For example, Linné (1934:82) found one Mazapan child burial with two matching female figurines as part of the grave furniture. This is similar to the practice of burying two female figurines (puppets) in some graves.

CONCLUSIONS

The excavation of Hueoxtoc cave in 1962 occured at an awkward time when archaeologists in the Valley of Teotihuacan were just beginning to develop a detailed chronology based on excavation. Paul Tolstoy (1958) was still wrestling with the unity of Coyotlatelco/Mazapan as a pottery complex that had been put forward by Acosta (1940, 1958). Tolstoy did not deal with the ceramic figurines, primarily due to space and time restrictions. Attention had been focused on the early chronology leading up to the building of the Pyramid of the Sun. Tozzer and Vaillant's definition of Coyotlatelco figurines was widely accepted, and the Teotihuacan sequence was still being refined by excavation and survey. A small site, just to the east of Teotihuacan that produced an anomolous collection of sherds and figurines, was on the periphery of chronological concerns and could be interpreted as an isolated, localized phenomenon. Since then, the figurine material from Cerro Tenayo and Xochitecatl have strengthened what Sanders and Obermeyer have suggested: that there is a distinct ceramic and figurine period that exists for a short period of time right after the fall of Teotihuacan.

In examining the Amantla and Teotihuacan collections at the American Museum of Natural History that Vaillant excavated, I was able to find three examples of Hueoxtoc figurines. One was a throned figurine with goggle eyes and red surface treatment similar to the fragment shown in Plate 21,a. The others are standing flat figurines with elaborate headdresses like the ones in Plates 17 to 22. Most of the Amantla figurine collection appears to be of the Metepec phase with a small amount of earlier material and a few pieces that could be called Hueoxtoc.

A detailed reanalysis of earlier ceramic pottery and figurine collections of Tozzer and Vaillant would help clarify the spatial and temporal boundaries of the Hueoxtoc subphase.

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Figure 1: Development of Figurine Techonology and Associated Chronology at Teotihuacan

Date	Ceramic Phase	Figurine Excavations	Puppets	Portraits	Flat	Cylindrical	Plate
1521			southeast to Cholula	none			
1100	**Aztec**				continue to Aztec & become female deities "derived" Teotihuacan hematite surface treatment	throned "derived" knights hematite surface treatment	
900	**Mazapan**		become Post-Teotihuacan host & niche figures	none	wide band appears only on bound figurines & children of mother & child	all throned & half conicals are moldmade	24
800	**Xometla**	Coyotlatelco Xometla		moldmade heads with back of head flat	moldmade flat variety of headdress	moldmade head with handmade bodies	17-23
750	**Hueoxtoc**	Cerro Tenayo? Xochitecatl Hueoxtoc	greatly altered at Xochitecatl, tenoned heads	tendancy toward dark surface treatment	tendency toward dark surface treatment	tendency toward dark surface treatment	17-23 28
650	**Metepec**	TE 23 TE 2	all moldmade some hand finishing	handmade/moldmade heads	handmade resemble later moldmade	moldmade head with ornaments, resemble later moldmade	14-16
550	**Late Xolalpan**	TE 24	hollow & solid moldmade	handmade heads?	?		13-16
			solid moldmade	handmade heads?			
450	**Early Xolalpan**	TE 23 (below layer 33)	handmade heads & ornaments on handmade bodies	earspools?	cylindrical, handmade covered with slab of clay to give flat appearance	thickened cylindrical bodies seated & standing	9-12
350	**Late Tlamimilopa**	TE 24 (below concrete floor 3)		handmade heads & bodies (large)			9-12
200	**Early Tlamimilopa**	TE 25		round head continues, no headdress		handmade loin cloths	
		TE 19	split heads, some with wide band headdress				7-8
150	**Miccaotli**	Late Upper Pyramid TE 22	?	?	single slit eye wide band headdress begins	?	
		Early Upper Pyramid	legs only have perforations?				4-5
	Tzacualli		pregnant puppets?	some fine workmanship natural contours, round heads		handmade bodies & heads	3
AD		Lower Pyramid	Noguera type V	Noguera type VI	Noguera type V	Noguera type VI	
BC 150	**Patlachique Tezoyuca**		none		Noguera type I No. 7		1-2

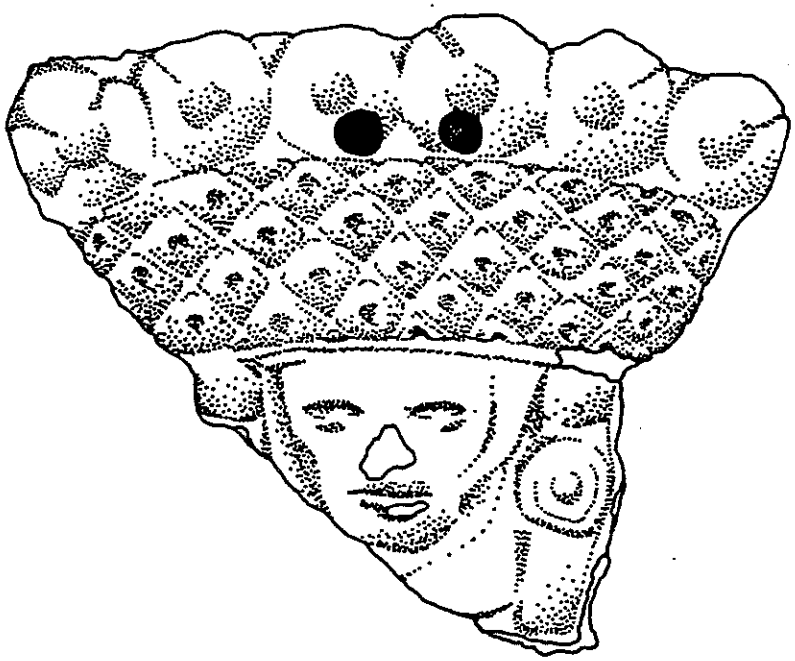


Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

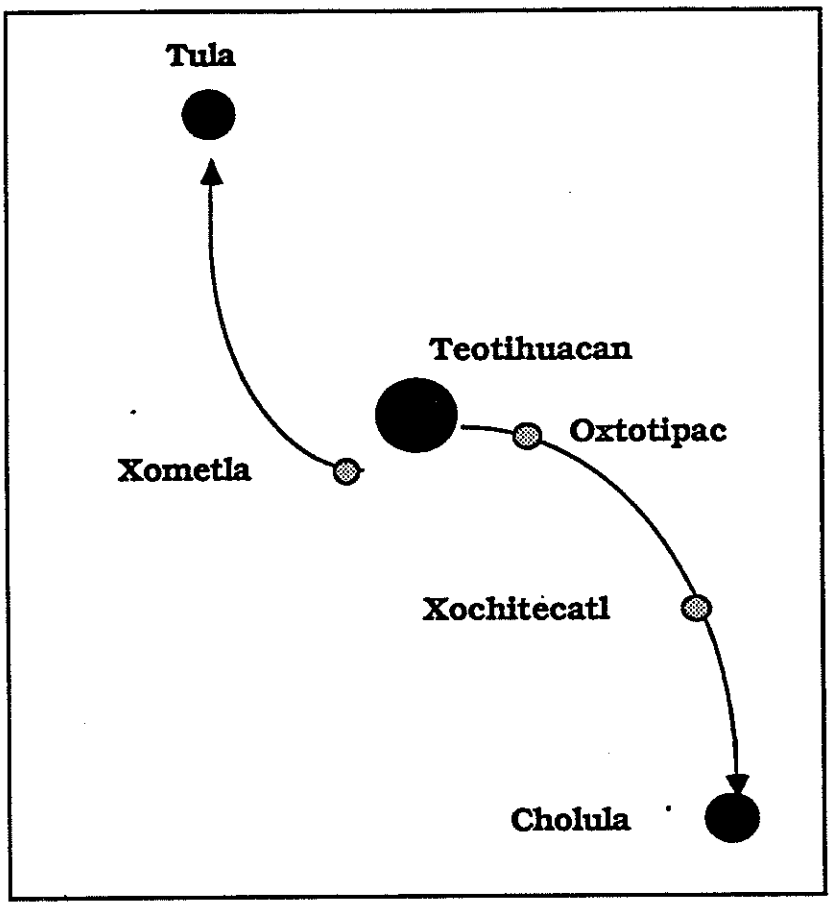


Figure 7

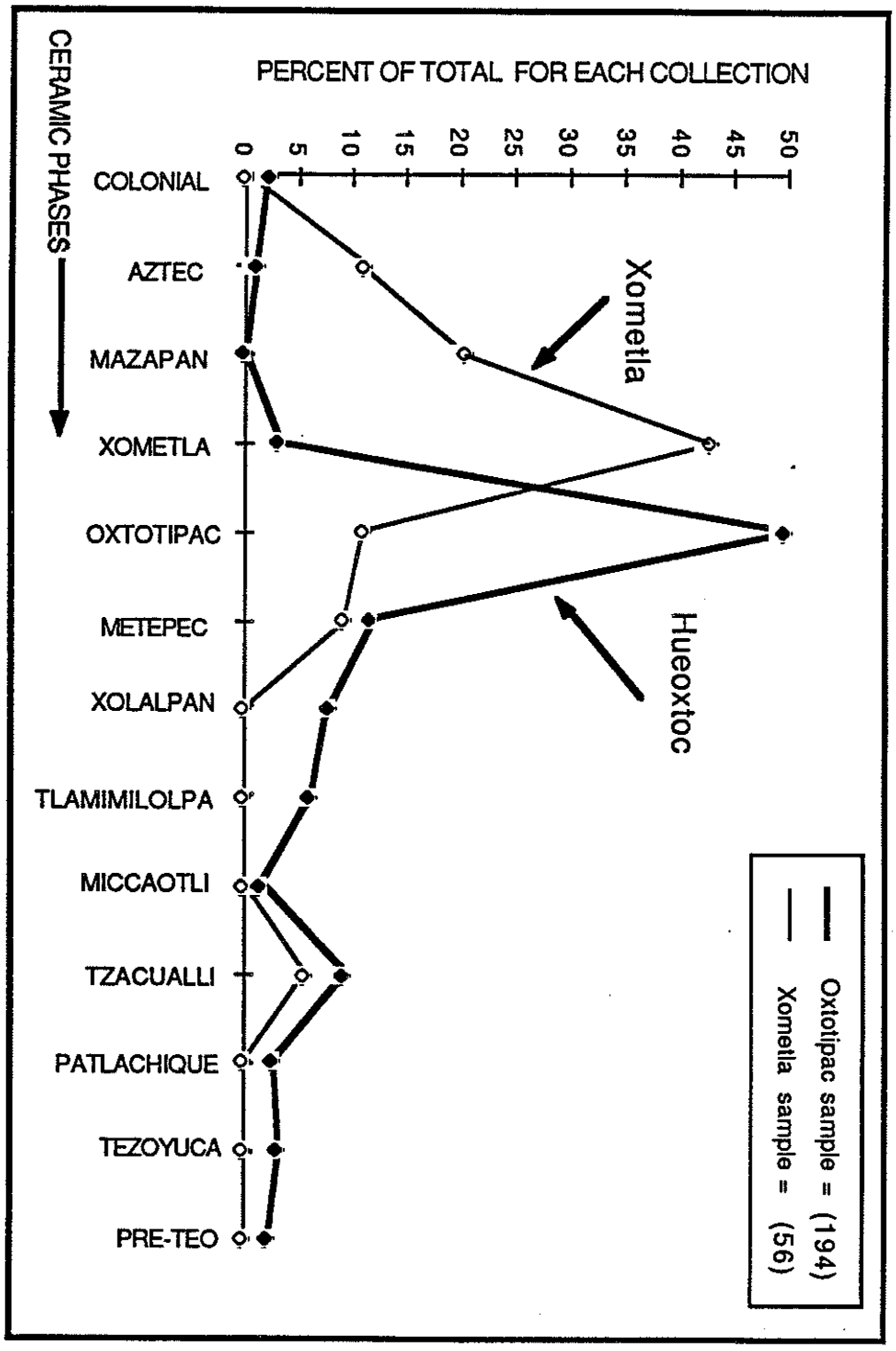
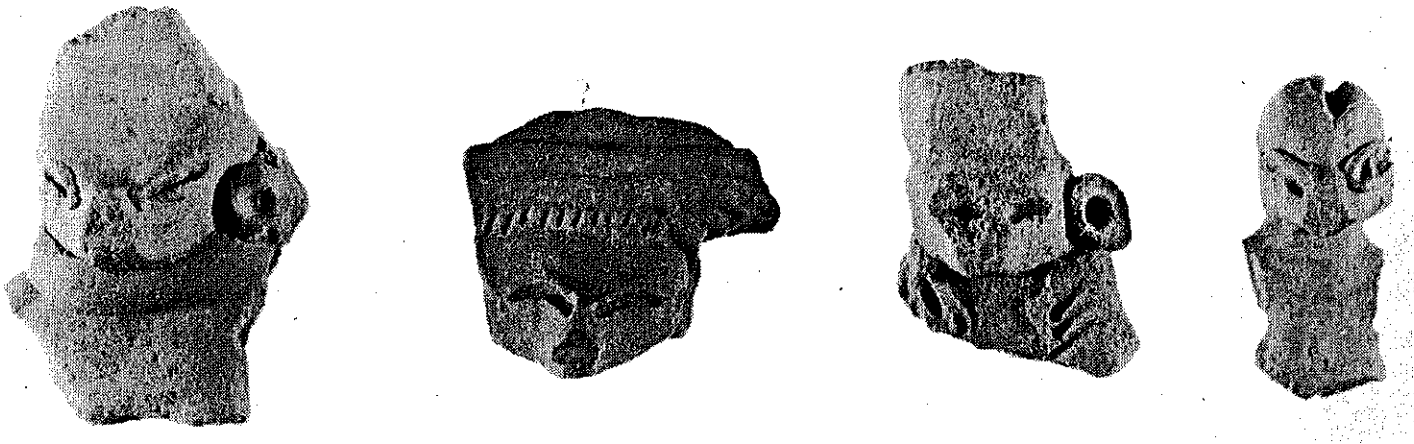

CERAMIC PHASES
PERCENT OF TOTAL FOR EACH COLLECTION
0
5
10
15
20
25
30
35
40
45
50
COLONIAL
AZTEC
MAZAPAN
XOMETLA
OXTOTIPAC
METEPEC
XOLALPAN
TLAMIMILOLPA
MICCAOTLI
TZACUALLI
PATLACHIQUE
TEZOYUCA
PRE-TEO
Xometla
Hueoxtoc
Oxtolipac sample = (194)
Xometla sample = (56)

Figure 8

Plate 1



A B C D

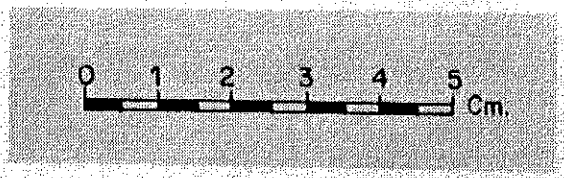


Plate 2

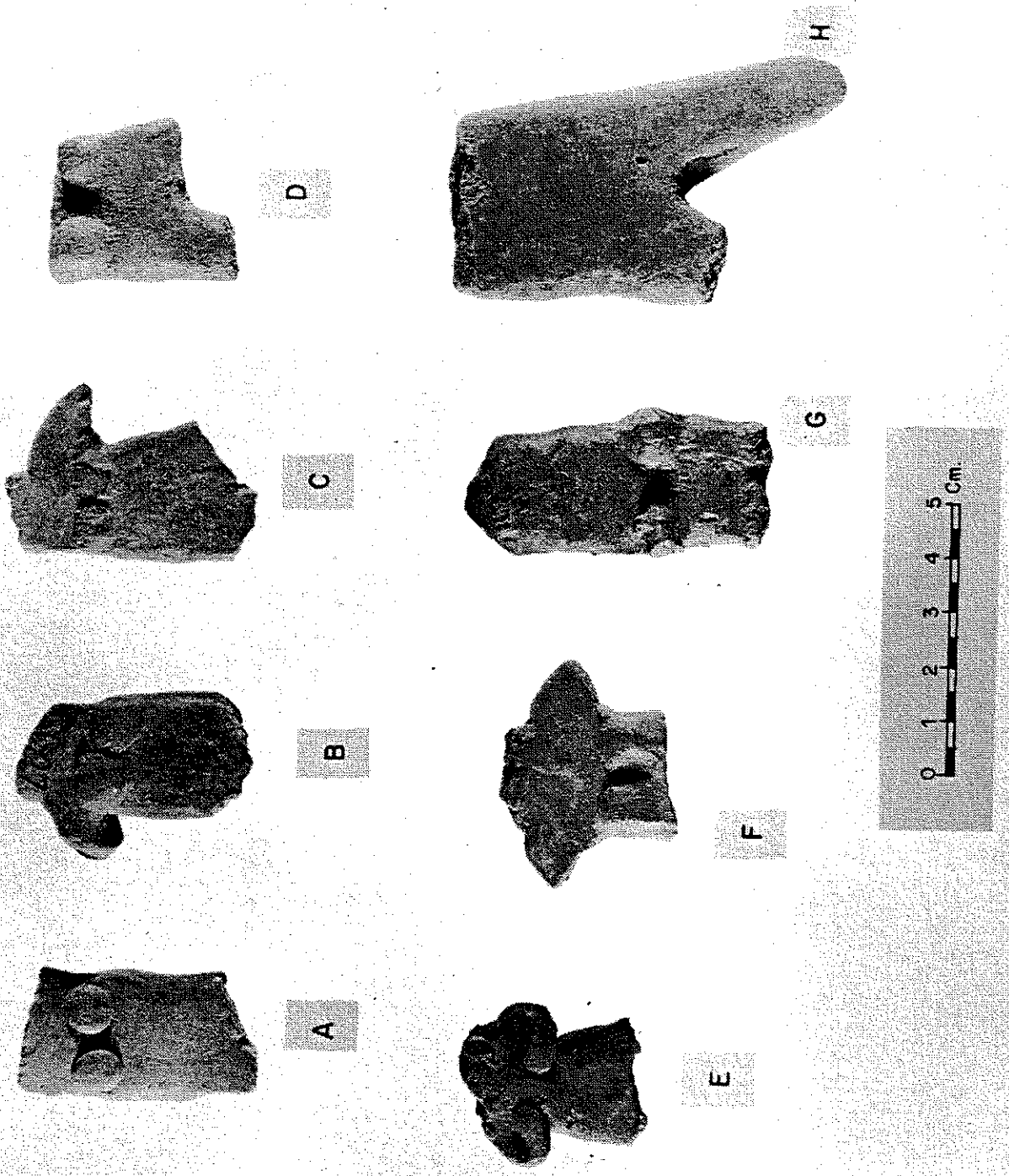
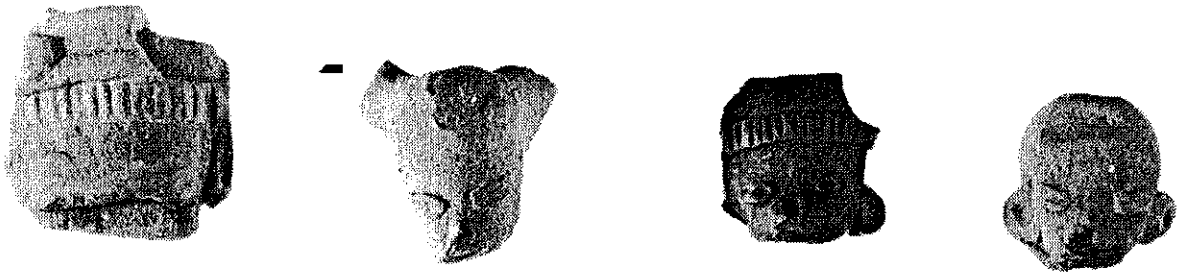


Plate 3

Plate 4

Plate 5



A B C D

E F G

Plate 6

Plate 7

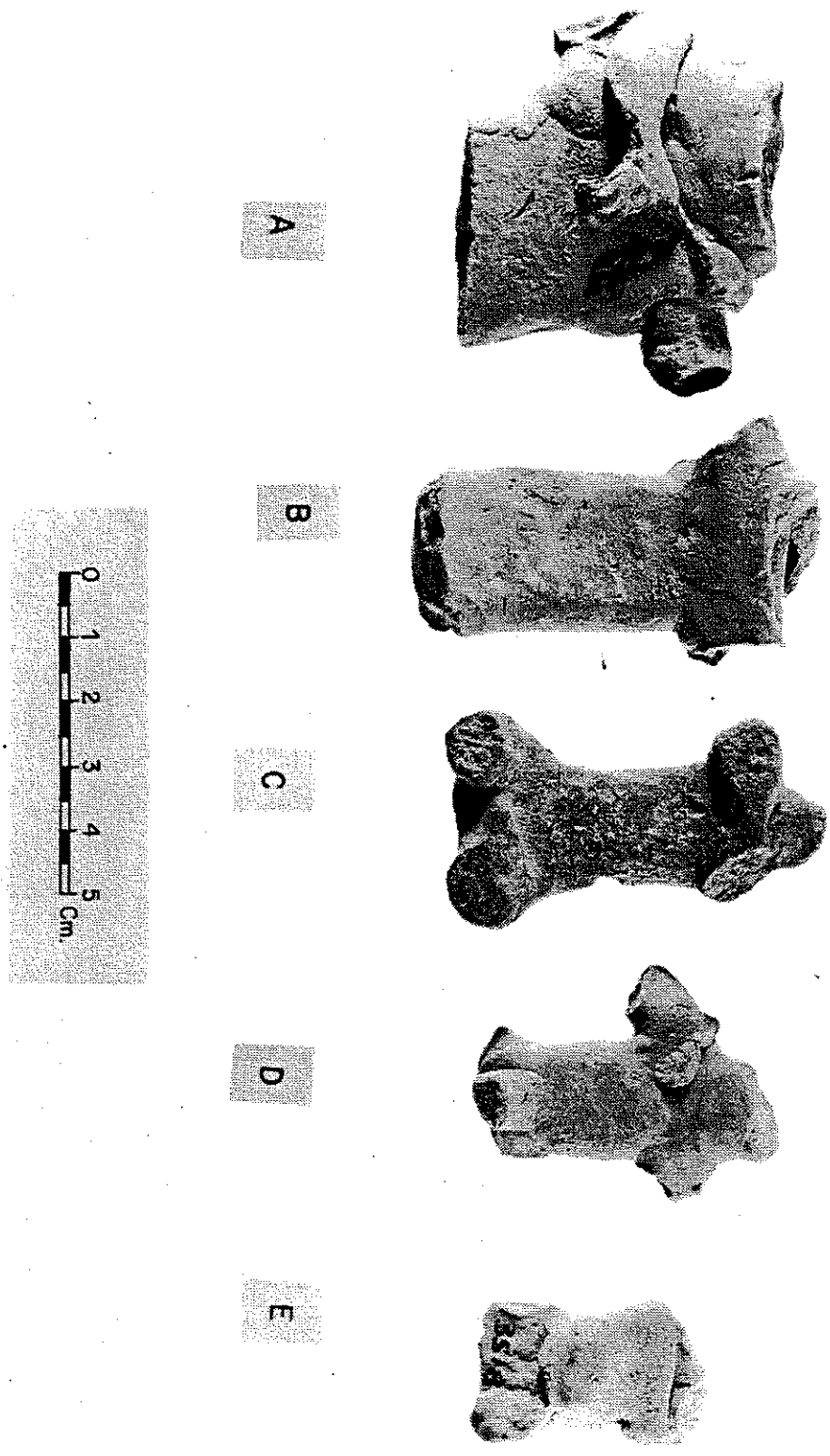
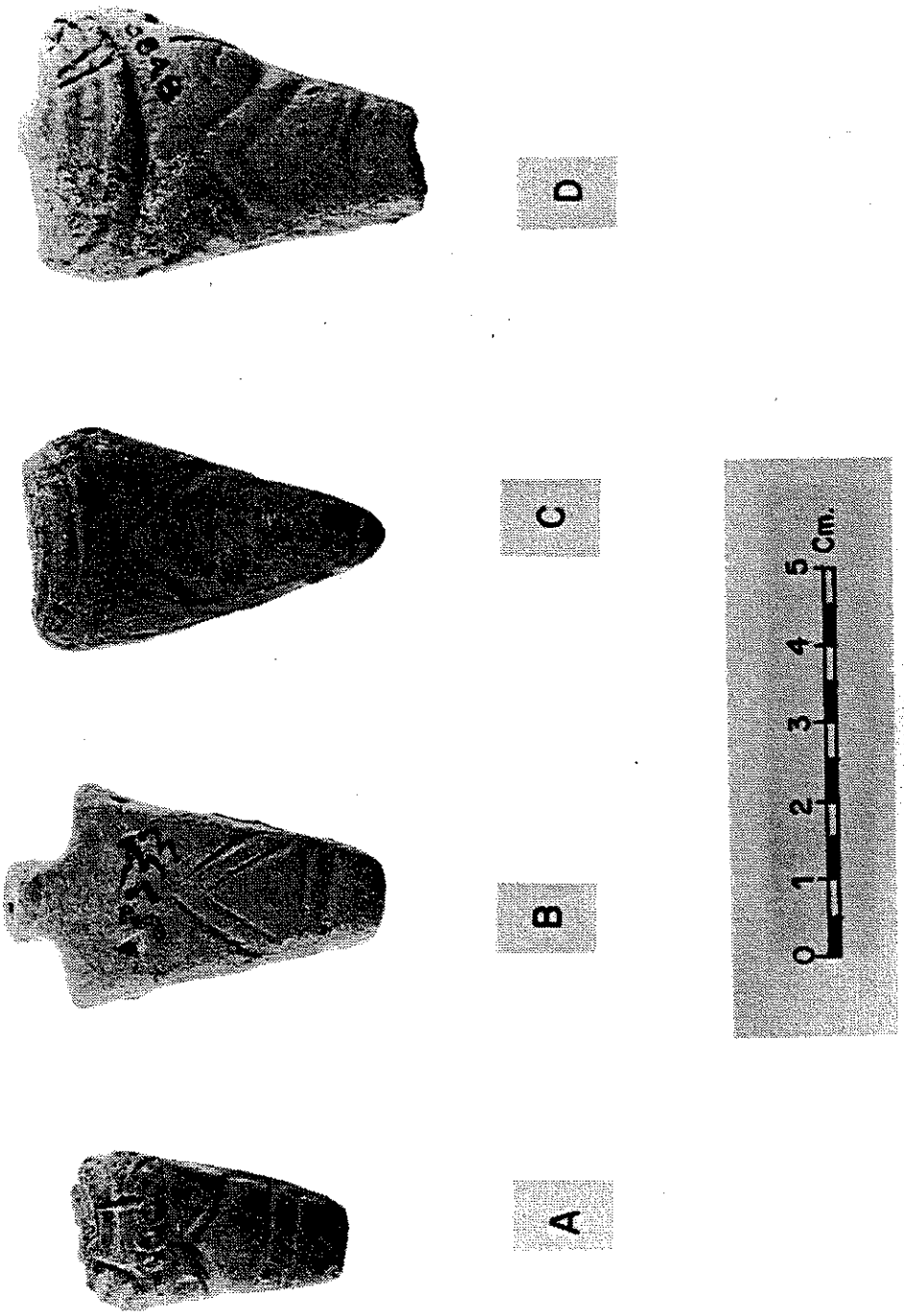


Plate 8



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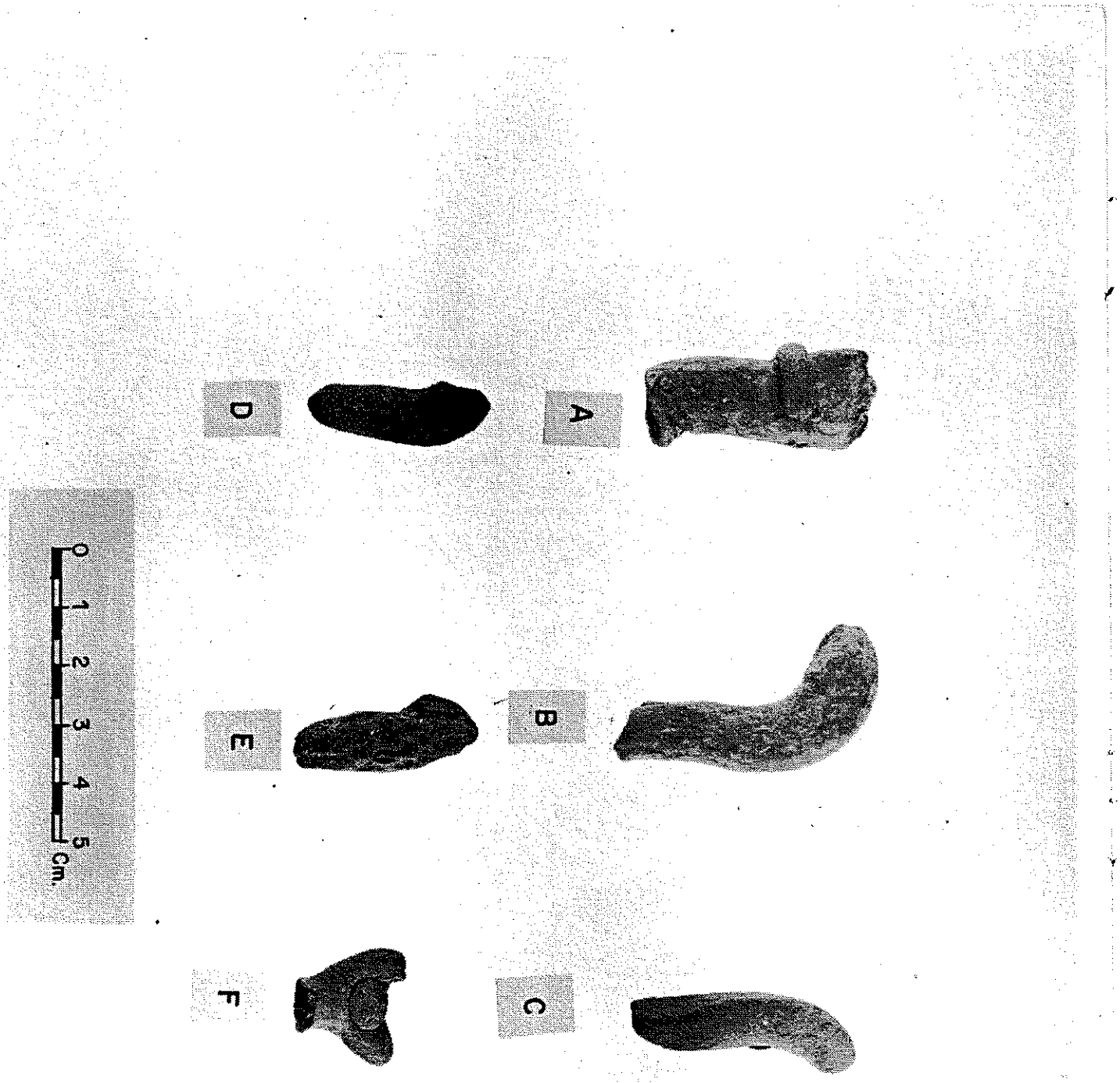

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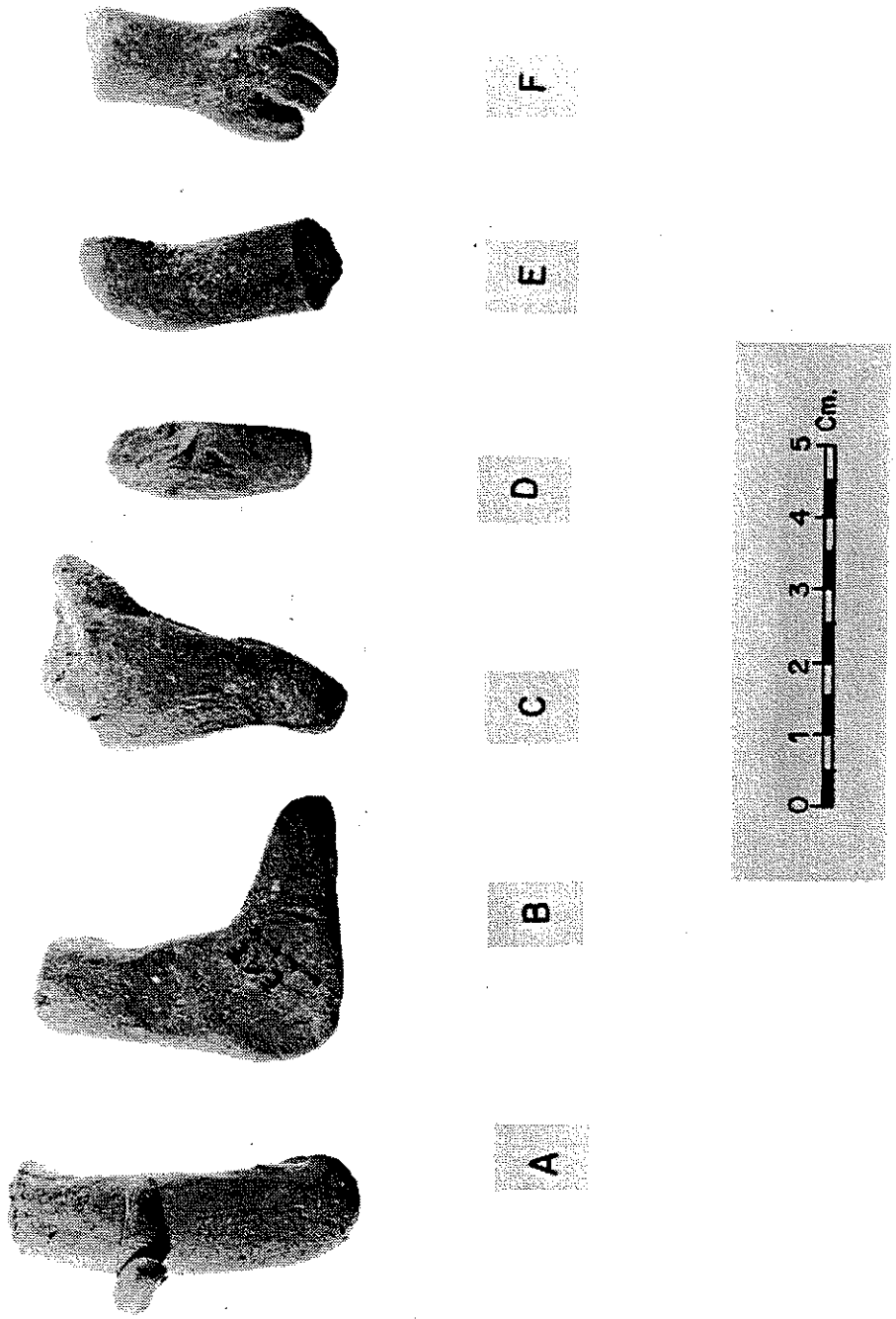

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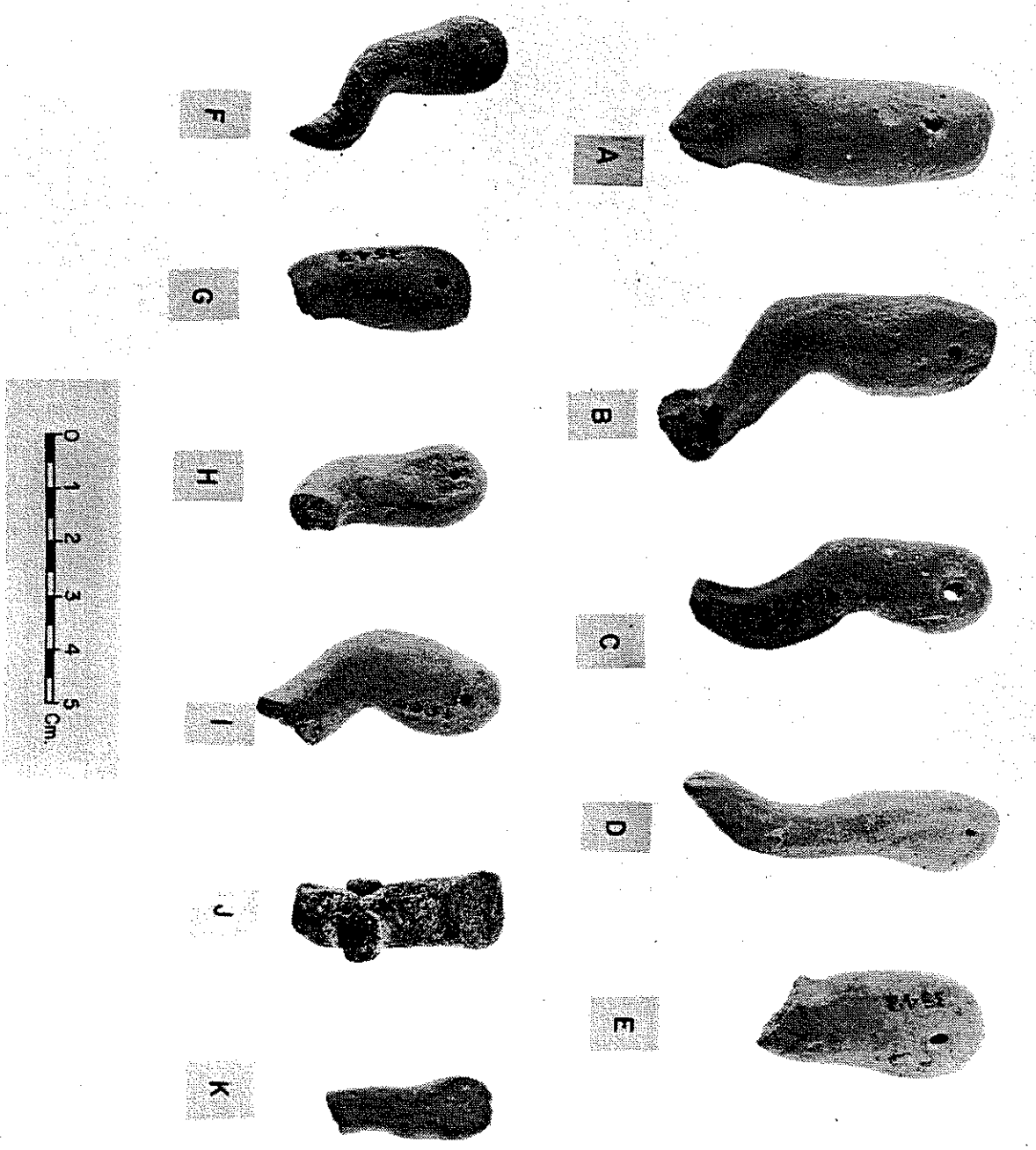

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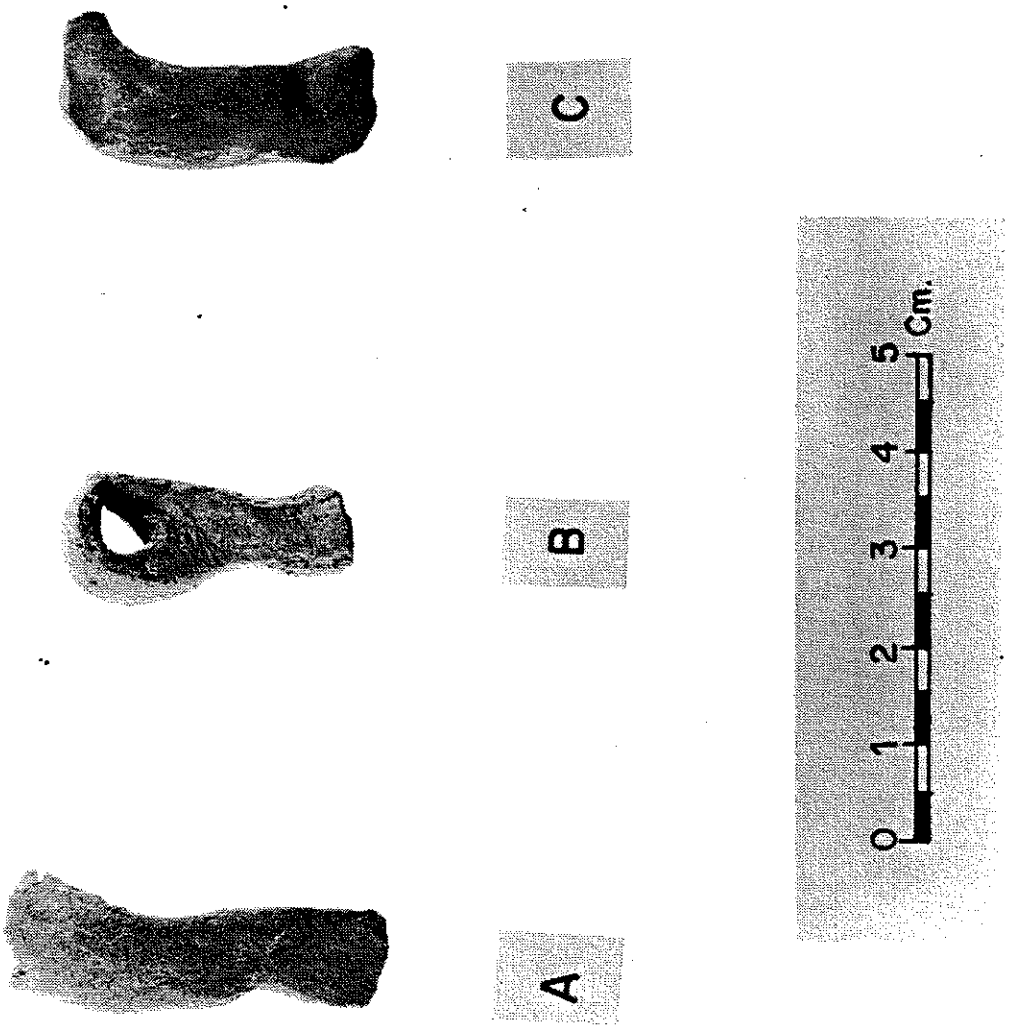
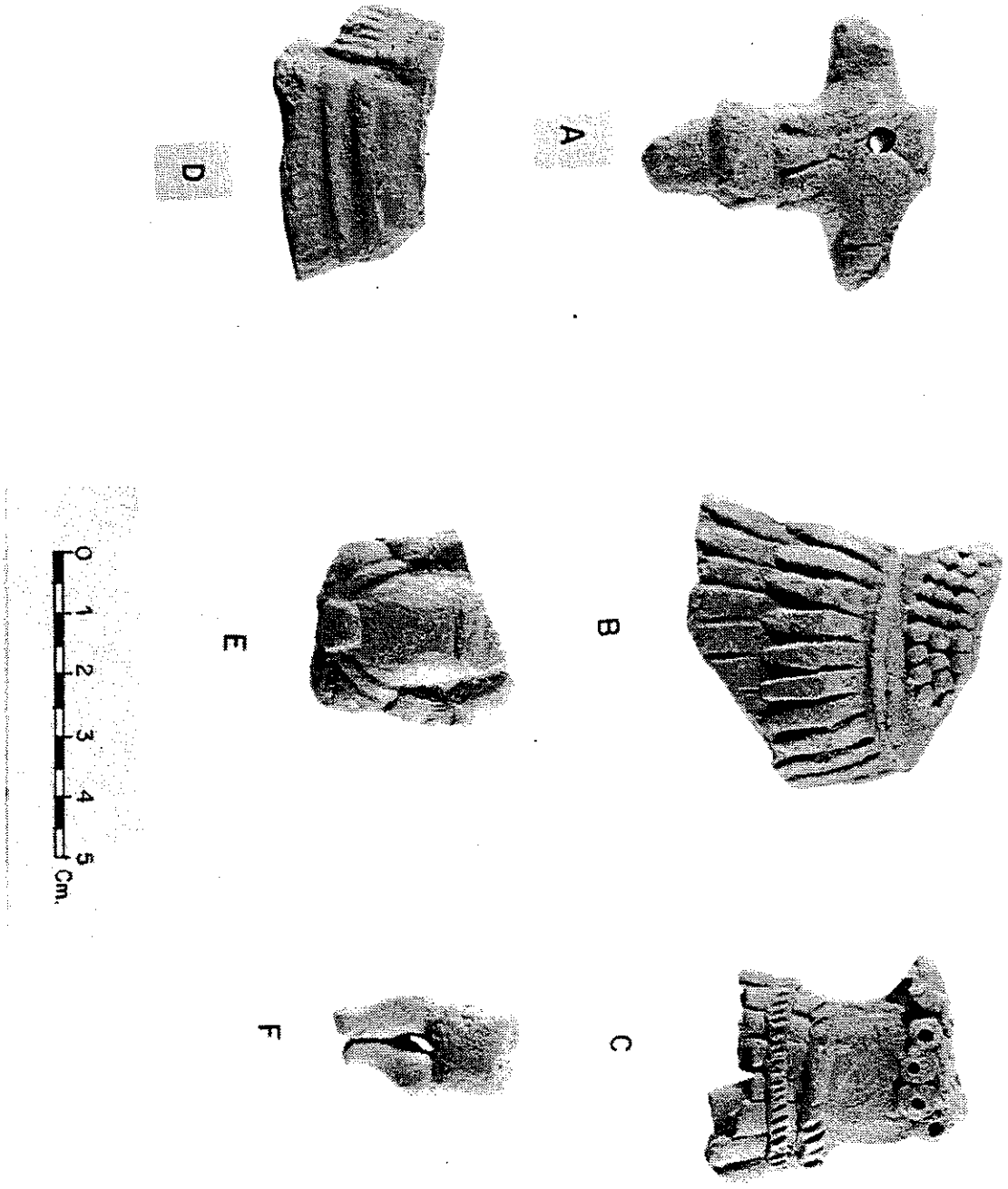


Plate 13

Plate 14

Plate 15



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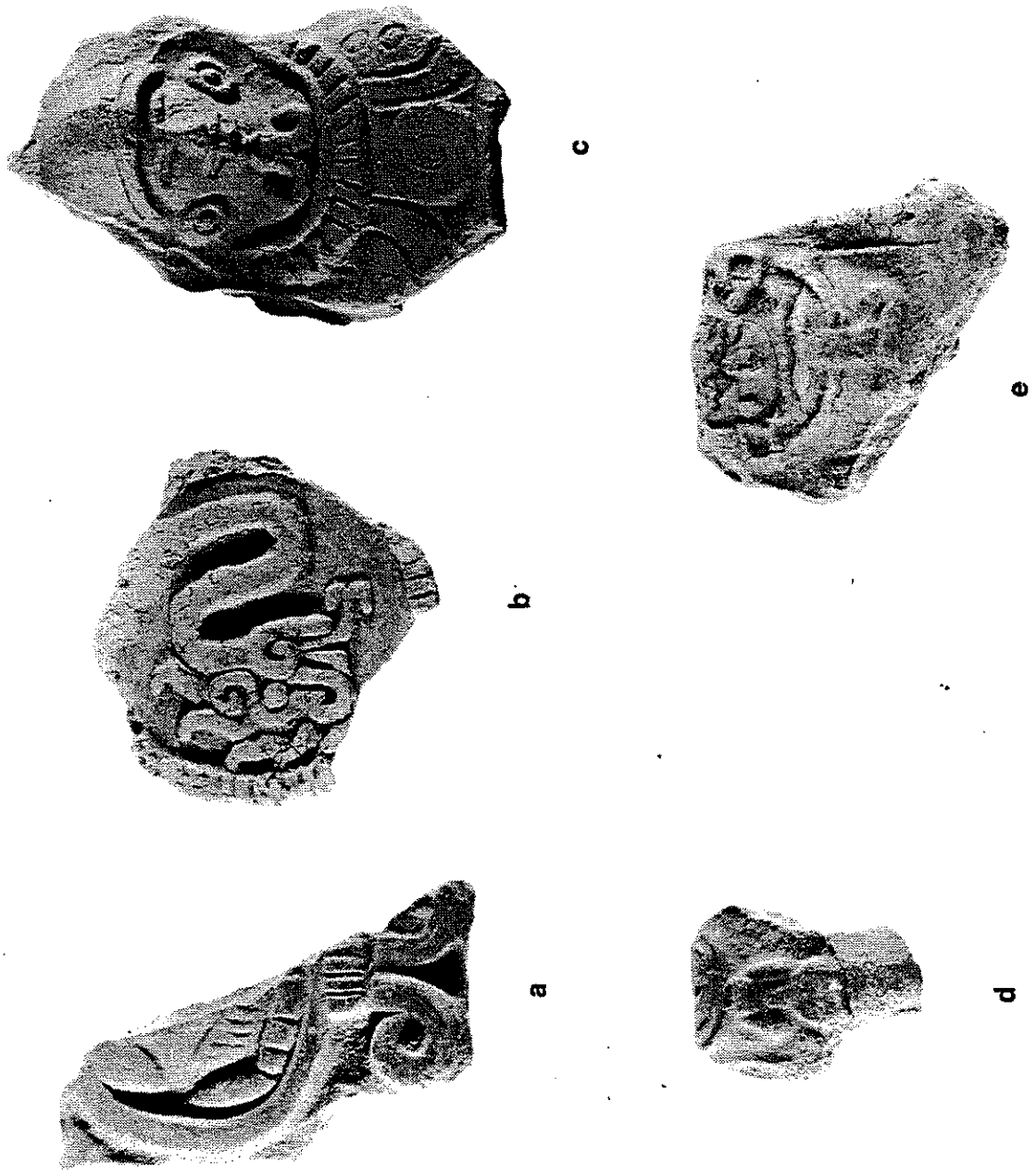

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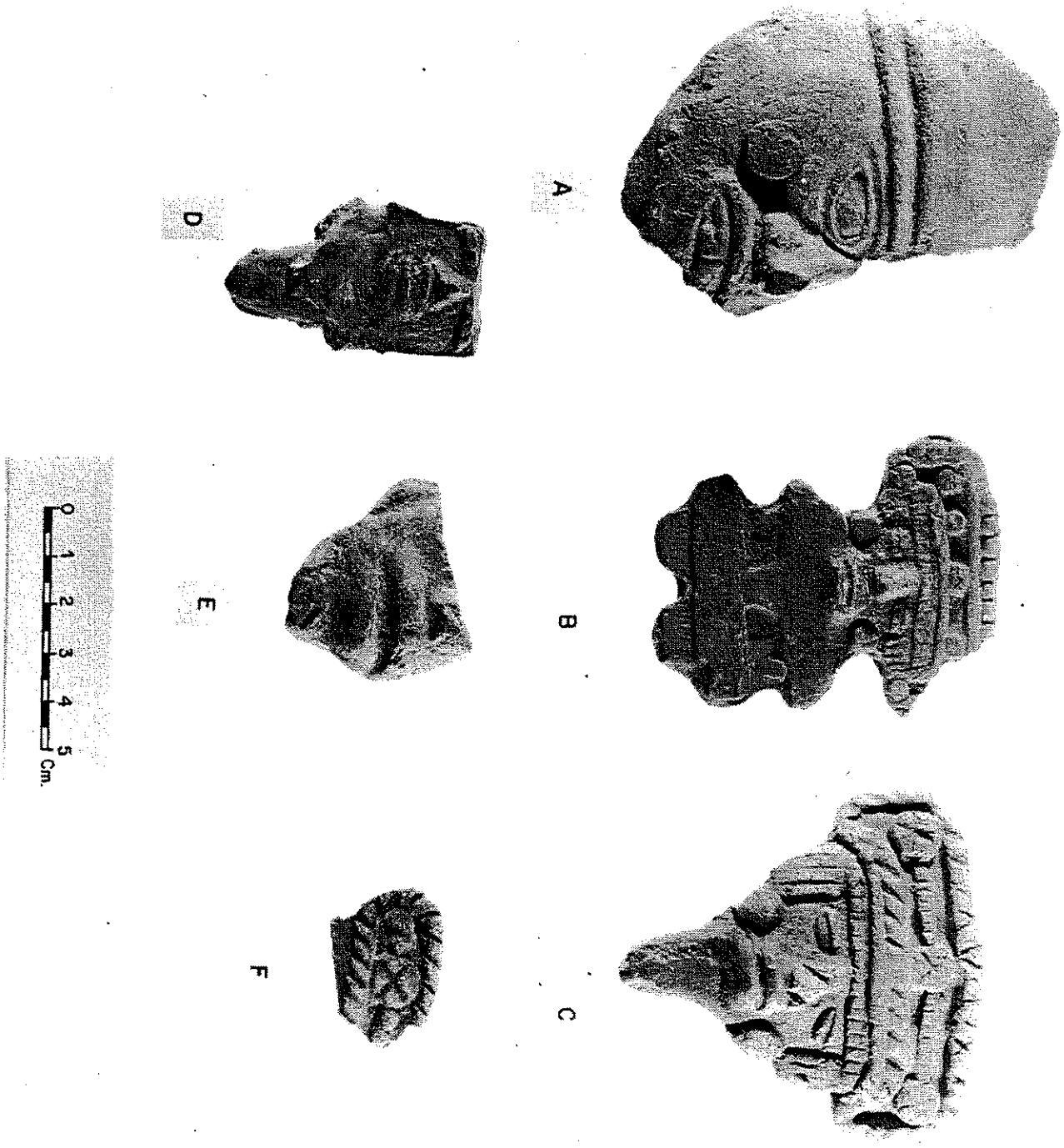
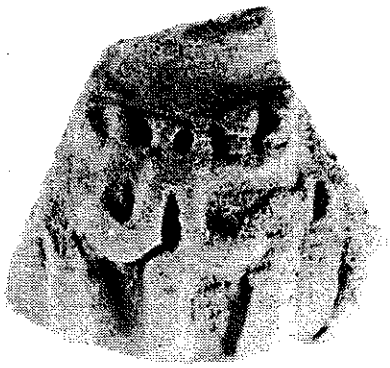


Plate 18



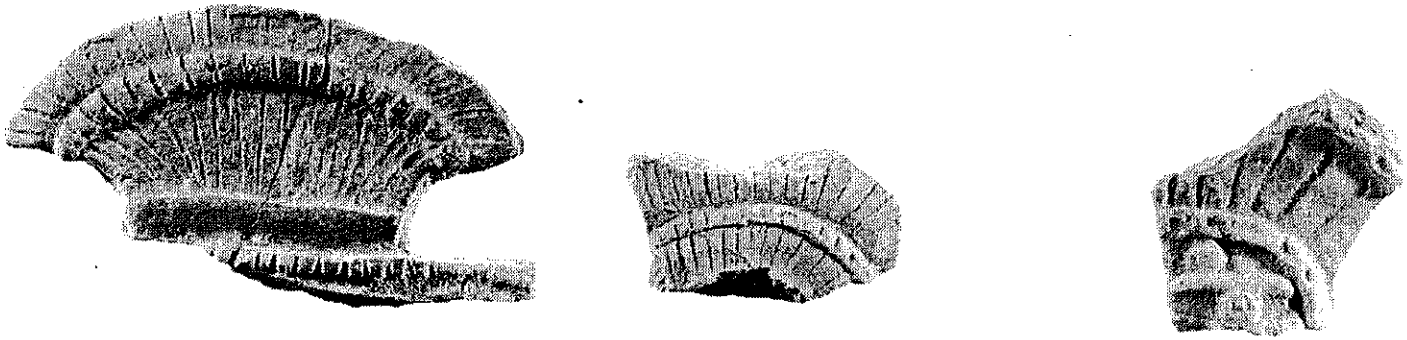
A

B

Plate 19

A B C D

A B C D



E F G

Plate 21

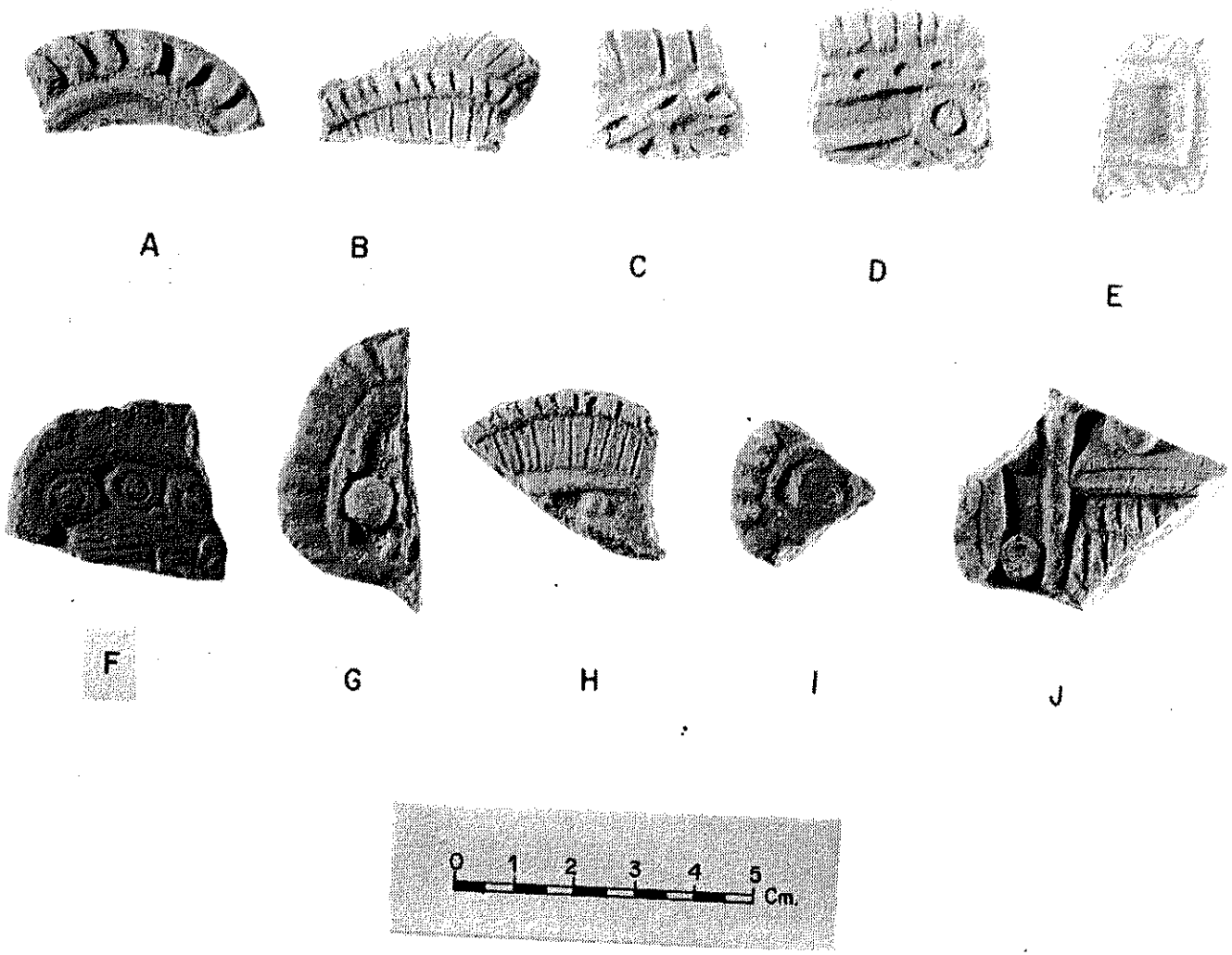
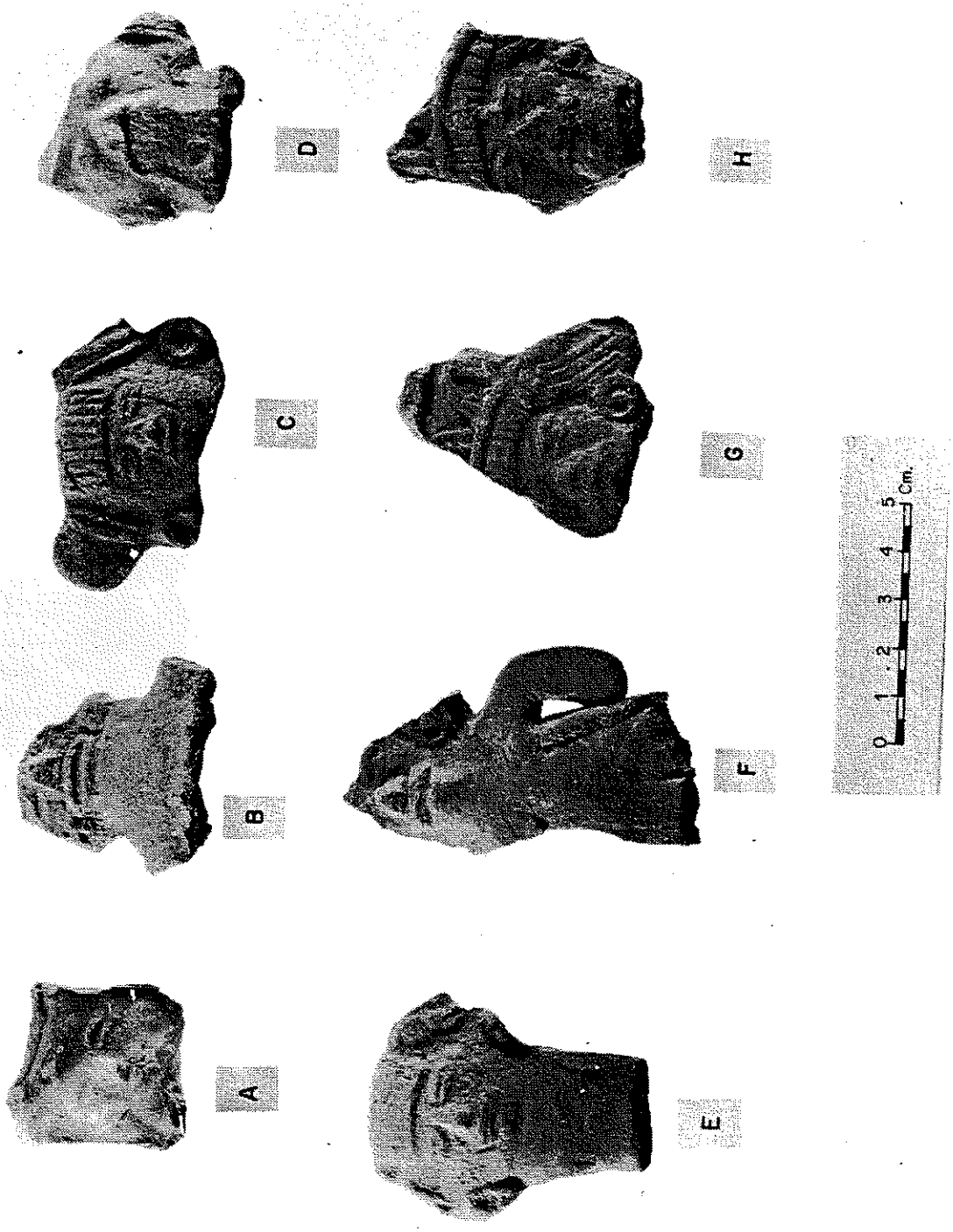


Plate 22



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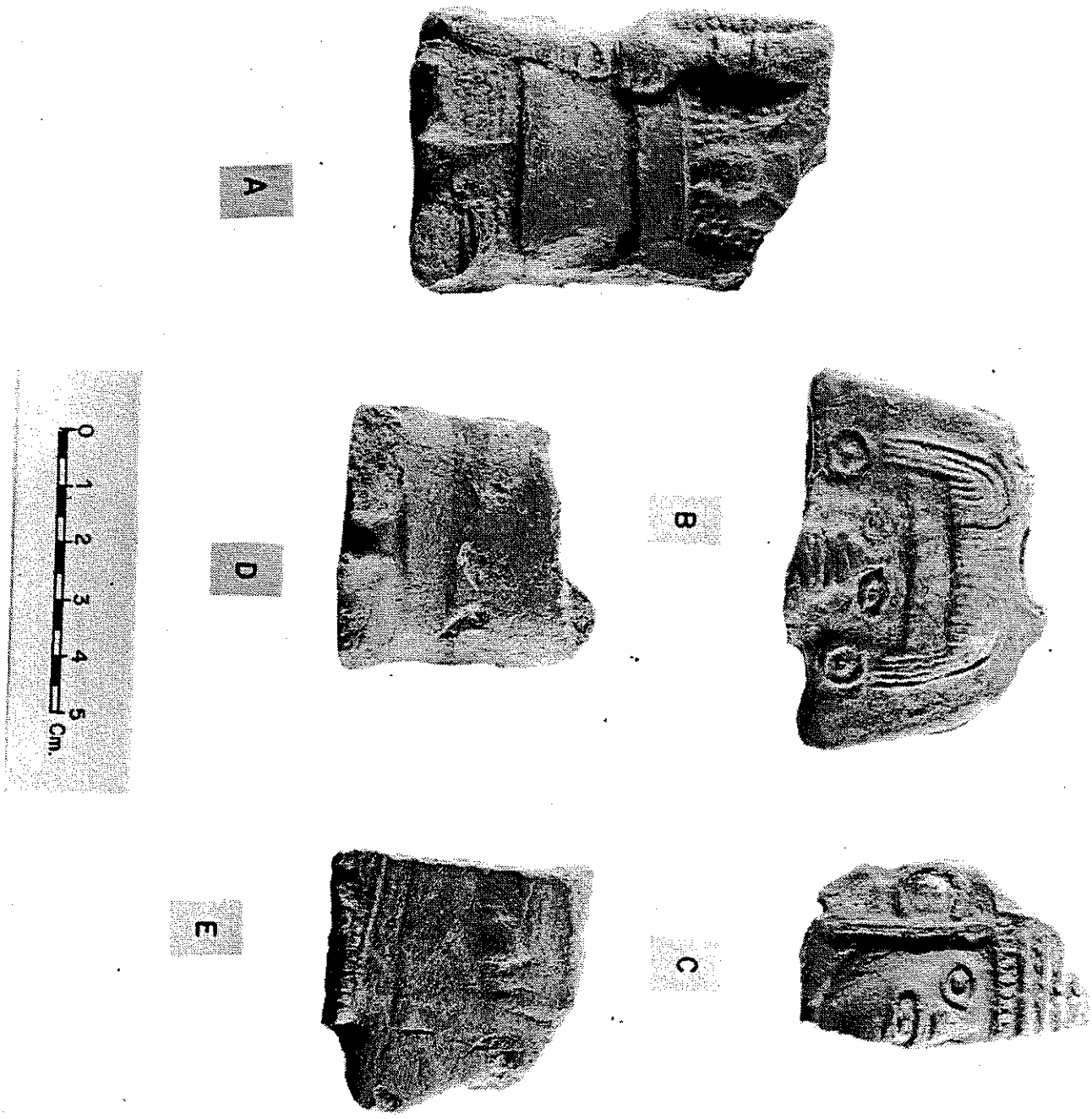

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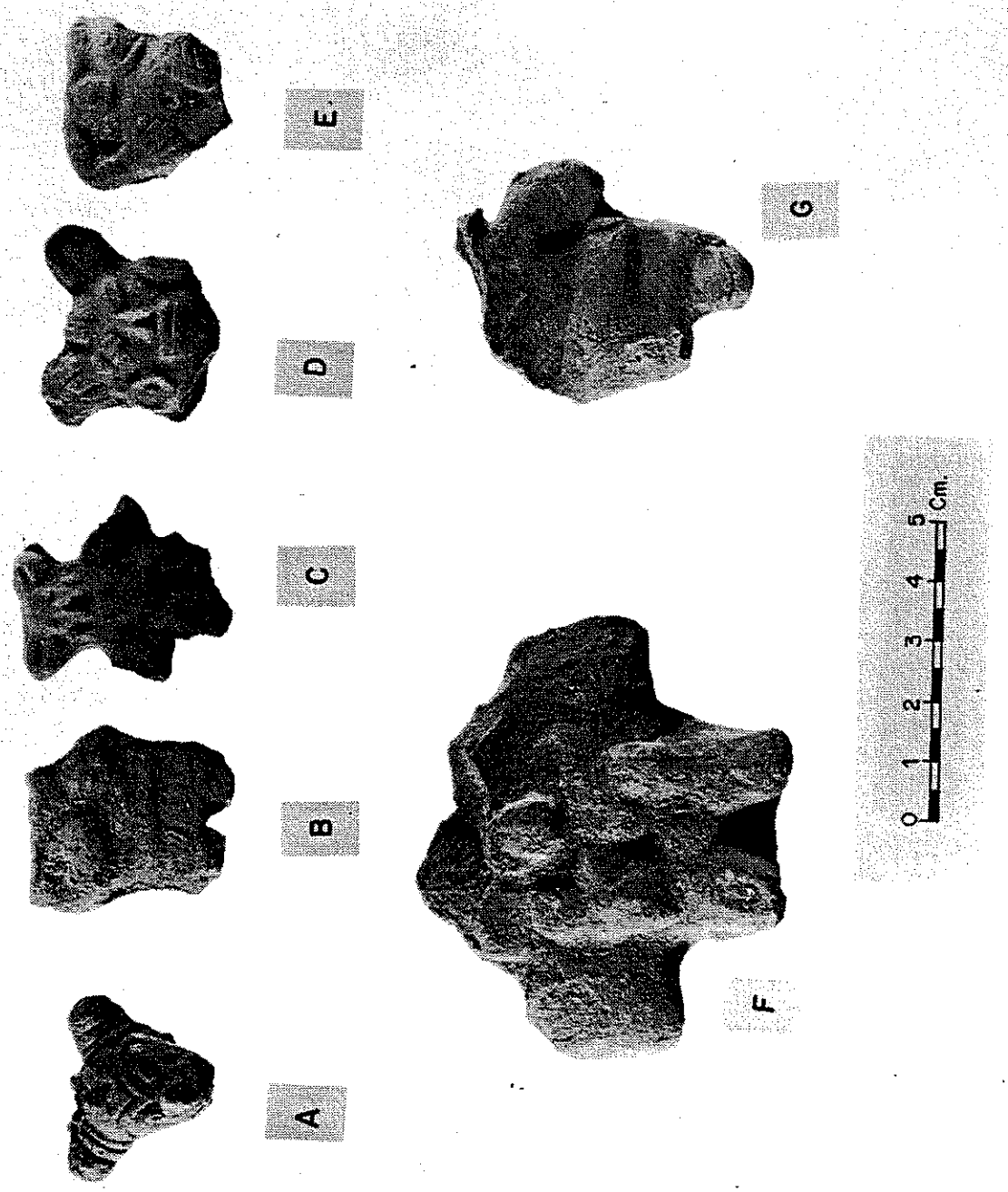


Plate 25

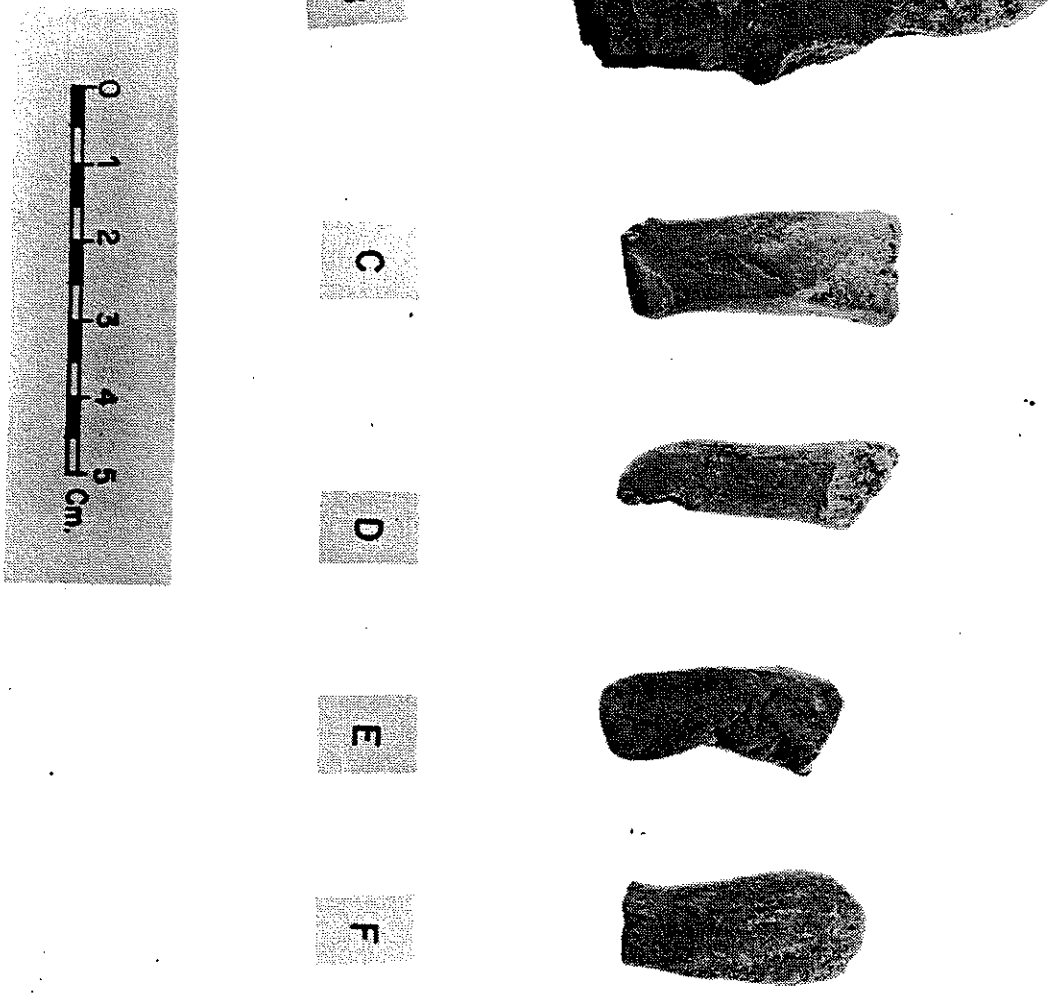
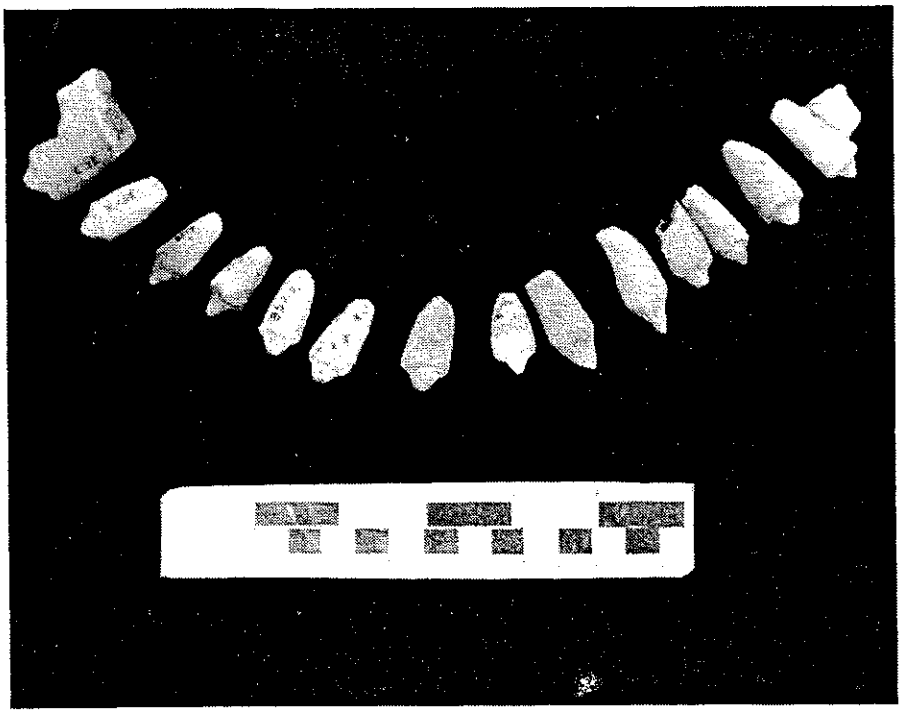


Plate 26

Plate 27



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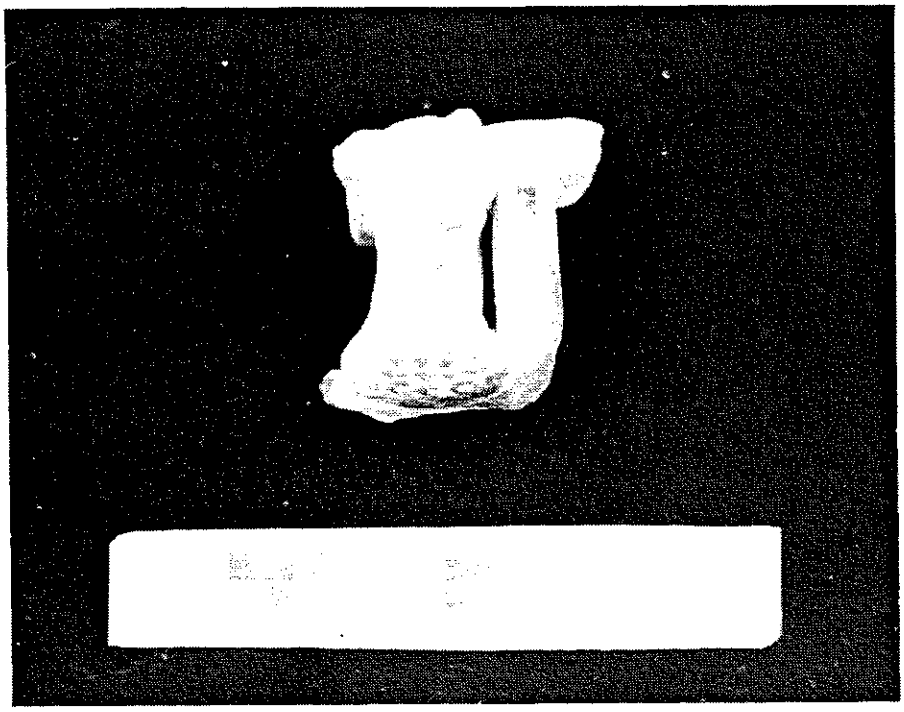
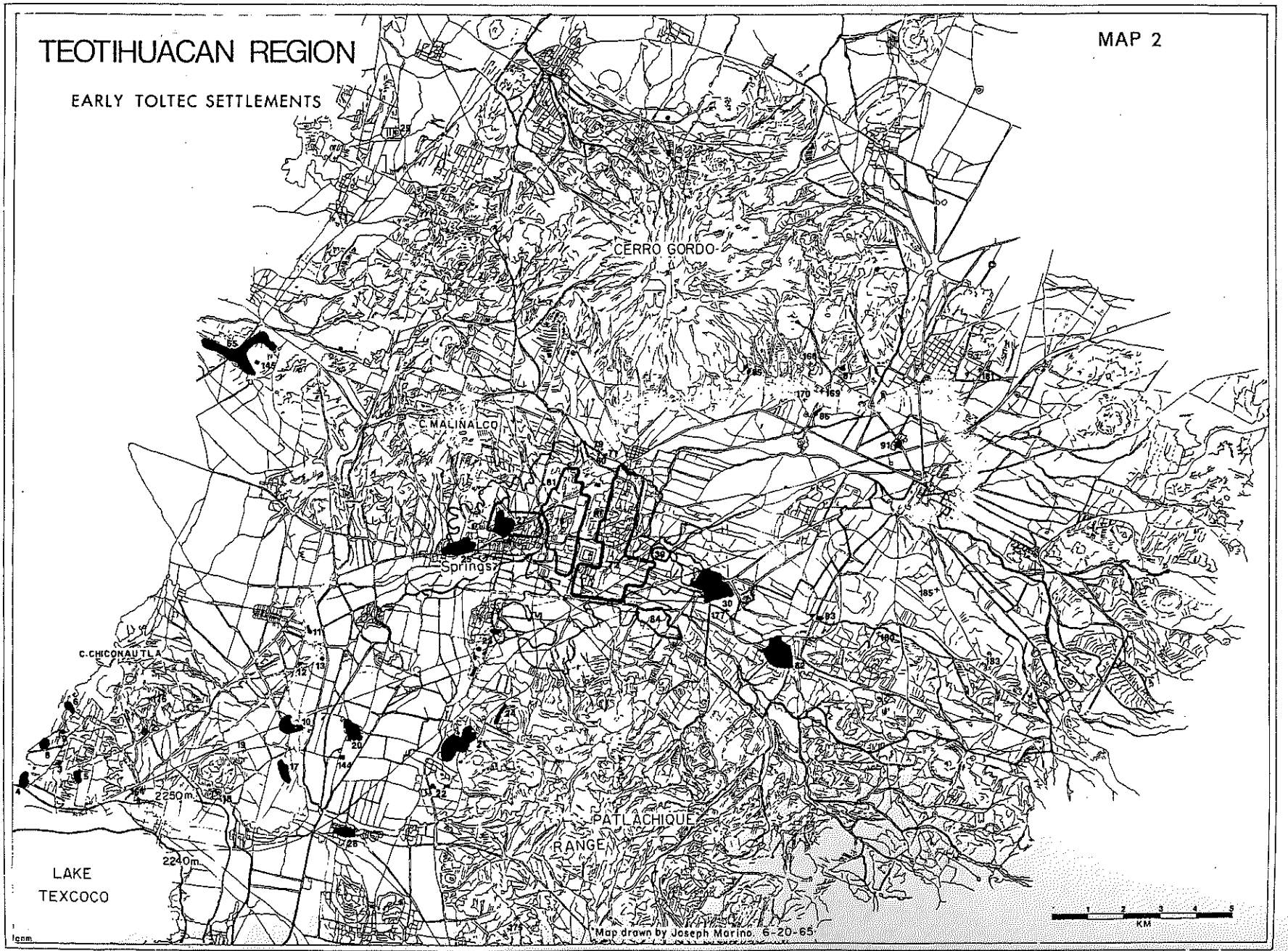
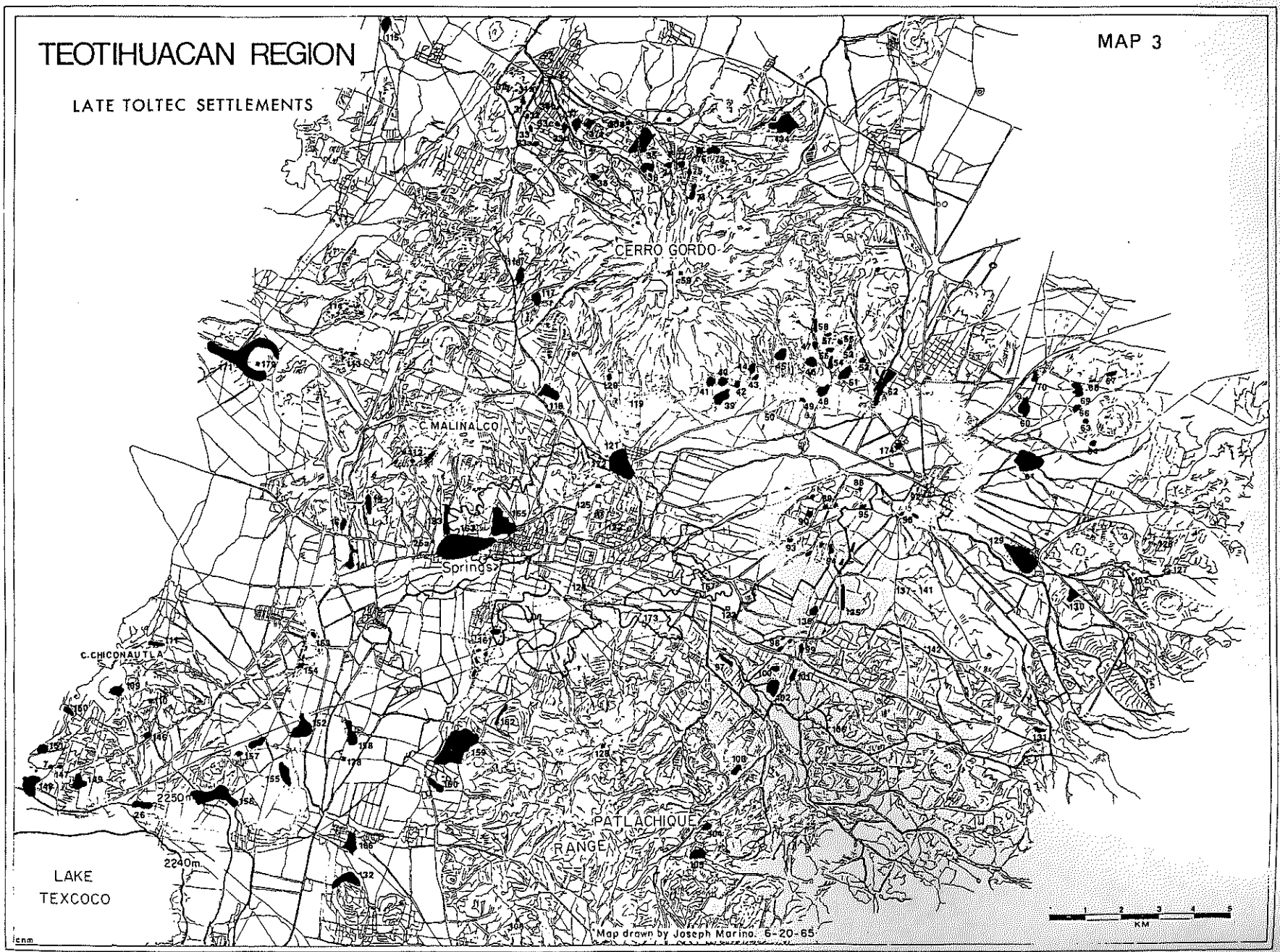


b

Plate 28


TEOTIHUACAN REGION
EARLY TOLTEC SETTLEMENTS
MAP 2
CERRO GORDO
C. MALINALCO
Springs
C. CHICONAUTLA
2250m.
2240m.
PATLACHIQUE
RANGE
LAKE
TEXCOCO
1cm.
KM
Map drawn by Joseph Marino. 6-20-65


TEOTIHUACAN REGION
LATE TOLTEC SETTLEMENTS
MAP 3
CERRO GORDO
C. MALINALCO
Springs
C. CHICONAUTLA
2250m
2240m
LAKE
TEXCOCO
PATLACHIQUE
RANGE
Map drawn by Joseph Marino. 6-20-65
KM