

SOME LATE PREHISTORIC VILLAGES SOUTHEAST OF TUCSON, ARIZONA

by

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Now that I find it time to acknowledge the help of those who have contributed to what follows, I am amazed at the number of people the excavation of Arizona BB:14:24, a comparatively small site, has involved. Nor are the individual contributions as a rule of small magnitude. The archaeologist supervising a dig seems, in fact, to serve first as the cement holding together all the individuals and institutions upon whose talents and resources the success of the venture depends. There is not space enough to indicate individually all those who have exposed a surface suitable for gluing.

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still lie concealed on top of that ridge.

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ABSTRACT

Nearly 20 villages and rock shelters are known to exist in the Rincon Valley, southeast of Tucson, Arizona. With one exception, none has been excavated; the exception, Tanque Verde Ruin, was only partially excavated 37 years ago. Other scattered features--bedrock mortars, petroglyphs, and pictographs--are common. Sherd collections indicate the presence of Tucson Hohokam in the Rincon Valley from late Colonial to middle Classic times.

This paper reports the recent excavation of Arizona BB:14:24, part of the same village at the west end of the Rincon Valley as Tanque Verde "Ruin." Throughout an attempt has been made to collect, incorporate, and evaluate the largely unpublished data from Tanque Verde Ruin. Both sites are assigned to the Tanque Verde Phase of the Tucson Basin Hohokam cultural sequence, although some things suggest that they were also occupied during the preceding Rincon and Rillito Phases. A survey in the immediate vicinity of Arizona BB:14:24 yielded evidence of widespread settlement in the Tanque Verde foothills during Tanque Verde times (approximately A.D. 1100-1300).

Available information about excavated and surveyed Tanque Verde Phase sites was examined in order to provide a comprehensive statement about the Tanque Verde Phase and its cultural affinities.

PART I

INTRODUCTION

The waters of the streams that flowed south off the Tanque Verde Mountains have disappeared--only the heaviest rains will pass down the maw of the sandy washes that mark their demise. Thickets of greasewood and mesquite, occasional oaks and Arizona Ash, stand in these channels waiting patiently on the infrequent draughts of water. Once, however, the Tanque Verde streams flowed with some constancy, and the washes were filled with gardens, and people lived on the adjoining ridges that flank the Tanque Verde Mountains about twenty miles from the heart of modern Tucson. That was more than six hundred years ago.

Many passed this way during the years the gardens were silent; few left any indication of their passing. I suppose that most Indians avoided coming too close to these villages in superstitious fear of the dead. The Spanish came up the nearby San Pedro and Santa Cruz Valleys for the glory of Spain and for metals, and in an afterthought, to retrieve the souls of the descendants of the same simple people whose world had been so nearly circumscribed by these mountains. The Old Spanish Trail winds along the east side of the Pantano not a mile west of the Tanque Verde villages. When another frontier embraced the empty reaches of southern Arizona, what a sideshow passed close by where the Tanque Verde villages lay forgotten: the color and ruthlessness of the Old West bumping down rude tracks like Pistol Hill Road, dusty then, in clattering stagecoaches, fording the washes that interrupt both banks

Fig. 1. Students uncovering west wall of House No. 3 at Arizona
BB:14:24. From left to right, Linda Wagner, Portland, Oregon;
Carolyn Leigh Kenny, Berkeley, California.



of Rincon Creek, spurring sweating horses on towards Tucson. The finery and feathers, the bright days, and the pellucid ambitions that prompted them to come have all faded.

Within the last century a Mexican farmer, Eusebio Bindiola, lived down in a defile where the largest wash turns west toward the Pantano. But his house, too, now lies in ruin, the dam he and his partner built across the stream is breached, and his lime kilns are slowly filling with the dust and debris of the desert. The M. M. Sundt Co. opened a stone quarry in recent years a short distance south of Tanque Verde Ruin, the noise of their activity briefly punctuating the calm of the Tanque Verde foothills. Modern houses perch on the Tanque Verde spurs; below, ranches and cattle claim the washes. Surely they realize that their days are numbered. It is the same unchanging story in the flora and senility of individual human lives, in the waxing and waning of human motives, and in the nonage and decay of the things they all leave behind. There are no exceptions.

During the days of our concern with the Tanque Verde ridges, I became painfully aware of the number of people who have passed and continue to pass through the area. It was not a pleasant task to ask each of those we encountered to leave with his shovel and with his paper bag, his pockets bulging with antique sherds. Valuable material yet remains to be unearthed, despite current criticisms identical to those recorded by Frank H. H. Roberts, Jr. a quarter century ago: "To many the archaeology of the Southwest now seems so involved, so cluttered with the minutiae that it has become dull and stupid and can

no longer be regarded as the source for a fascinating story of the cultural and material growth of a primitive people" (Roberts 1937: 3). Many chapters, some assuredly only for the specialist, have yet to be put to the printed page. Each generation does find some interest, oftentimes some lesson, and occasionally something of itself in these ruins, if not in all the published reports. It is, therefore, even more urgent in the approaching days when few prehistoric sites will be left, that we distinguish legitimate interest from treasure hunting. We cannot permit a few selfish thrill seekers to efface an inheritance we share in common.

What is past in this case is prologue to the introduction of Arizona BB:14:24 and our reasons for excavating it. It seemed necessary first to describe the mood of historicity that mantles the Tanque Verde ridges and that as surely produces in the receptive visitor a certain kinship to all that has happened there. Before launching into the details of what I have to tell, it should be made clear that what follows is neither invention, nor entirely inventory. Some explanations which lack complete verification are included in the conviction that it is as important to try to describe how the Tanque Verde people lived as it is to describe what they left. I am aware of the deficiencies of some of the explanations.

The site designated Arizona BB:14:24 in the survey system of the Arizona State Museum (Wasley 1957) is located in township 15 north, range 16 east, in the southwest $\frac{1}{4}$ of the northwest $\frac{1}{4}$ of section 9. The site sprawls atop a single, long, narrow east-west trending ridge taking

Fig. 2. View east across unexcavated portion of Arizona BB:14:24.
Rincon Peak in distance.



its origin at the foot of the Tanque Verde Mountains. Other ridges of similar appearance and size parallel the ridge on which the site is located. Washes bordered by heavy shrub growth dissect the valleys between ridges. A fuller description of the surroundings of the site is presented in Chapter 2.

A poorly defined dirt road, over a mile long, that follows first one of the washes and then the center of the ridge on which the site is located, provides access to the site. The site consists of an occupational area on the flat ridge top and of refuse along the steeply sloping sides of the ridge. Small sherds and fragments of worked stone, particularly prominent where erosion channels have cut through trash deposits, litter the surface. When work was commenced at the site on October 26, 1963, only three rows of stones indicated any subsurface features. Pothunting activity, limited to two room corners, seemed minimal; and we were, therefore, optimistic of a yield of undisturbed cultural material. The first digging season was concluded after 23 days in the field with the mapping of the site on May 10, 1964.

Cultural remains of the Tanque Verde people are abundant on ridges nearby. Professional investigation in the area was early, virtually unpublished, and even then limited to only two sites. The one site, known to archaeologists of the Southwest simply as Tanque Verde Ruin (Arizona BB:14:1; in the Gila Pueblo survey system, Tucson:9:5), is visible from Arizona BB:14:24 (Fig. 3). It was first officially "discovered" in 1925. Testing followed that year and the next. In November and December of 1927, a Mr. E. J. Hand was in charge

Fig. 3. View to northwest from Arizona BB:14:24. Washes and flats, which probably were farmed, in center of picture; Tanque Verde Ruin on first ridge beyond washes; Freeman Site at base of rock outcrop in right background.



of the excavation when the bulk of the work was done by students of the fledgling Archaeology Department at the University of Arizona. They estimated that they uncovered approximately one half of the village (Fraps 1935: 1). Although that was in the days when archaeology was young and the formal techniques were few in number, the results of that work will have an important place in this paper. Out of the dig came only one brief report in The Kiva several years later (Fraps 1935). Some field notes taken by Haury, now in the files of the Arizona State Museum (Haury 1927), a paper delivered by Haury in April 1928 before the regional meeting of the American Association for the Advancement of Science in Flagstaff, Arizona (Haury 1928a), and Haury's unpublished master's thesis at the University of Arizona, The Succession of House Types in the Pueblo Area (Haury 1928b), are the only other sources of information about Tanque Verde Ruin. Virtually nothing is to be gained by a visit to the site, for over the last 38 years rains have washed dirt back into the houses. Shallow basins that once were rooms, a few projecting wall stones, and holes dug by pothunters are all that mark the location of the excavated portion of Tanque Verde Ruin.

The other site, the Freeman Site (Arizona BB:14:3), is located at the base of a small cliff, to the northwest of Arizona BB:14:24, beyond Tanque Verde Ruin (Fig. 3). Haury cut a trench through the rubbish mound at the site late in the '30s and found that the sherds indicated a Colonial and Sedentary period occupation. Haury made some notes on the site on the back of the survey card and the sherd counts are believed to be in the files of the Arizona State Museum, but,

to my knowledge, the site was never referred to in any published report. Despite its location within the confines of Saguaro National Monument, recent illegal digging has left the site an appalling shambles.

As mentioned above, Tanque Verde Ruin, which should have served as the type site for the phase named after it, has never been properly recorded. Both the Tucson and Papaguería sequences of Hohokam prehistory have suffered from neglect, even though there is an abundance of pottery and associated material culture items. It would be an impossibly difficult task at this point, without financial assistance, to identify all the Tanque Verde Phase sites which have been surveyed or dug, and even more involved and risky to offer a definitive synthesis of the phase. This paper does, however, present a fair estimation of the cultural associations of Tanque Verde Ruin and its adjacent site, Arizona BB:14:24, with the long view of paving the way for more extensive attempts to define and delimit the Tanque Verde Phase. A summary of what can conveniently be said about the Tanque Verde Phase is presented in Chapter 7 of this paper.

I was fearful that some of the results of excavating a site of the same time period close to The Tanque Verde Ruin might only duplicate results of the earlier work and would yield no new information. Such, emphatically, has not been the case. From Arizona BB:14:24 we have recovered a full assemblage of material, which taken with what is available from Tanque Verde Ruin, furnishes a surprisingly complete description of the lifeway of the Tanque Verde people. In addition, it was really necessary to have intact sherd collections to

understand the Tanque Verde occupation of these ridges. Though it would be easier and more customary to criticize -- we began work at Arizona BB:14:24 with a strong sense of debt to those, most of them students themselves, who excavated Tanque Verde Ruin. Some of them even the casual reader in the archaeology of the Southwest will recognize as eminent in the study of the prehistoric cultures of Arizona and New Mexico: Byron Cummings, Emil W. Haury, Florence Hawley (now Florence Hawley Ellis), and Clara Lee Fraps (now Clara Lee Tanner). That so little is known of their work at Tanque Verde Ruin is regrettable. Any shortcomings of that work and of subsequent publication fall not on their shoulders, but rather onto the record of the adolescence of the science. The truth is, that with the advantages of modern training and new points of attack, we were hard put to match their accomplishments on the Tanque Verde ridges.

Other, more urgent reasons than the insufficiency of information about Tanque Verde Ruin and adjacent sites have encouraged the excavation of Arizona BB:14:24. The ubiquitous vandal has been at work in the area and a number of houses and trash deposits have suffered considerably from his crime. Although the land on which Arizona BB:14:24 is located is now posted against trespass, and Mr. Royden Lebrecht, who owns the land, and Dr. W. Huyler, who lives on the adjoining property, have taken pains to prevent vandalism, the land is for sale. A new settlement is closing in on the ruins, and for the first time since the departure of the Tanque Verde people, the rich remains of an ancient way of life are in imminent danger of

complete obliteration. It was with some urgency, therefore, that we dug, fearing both the bulldozer and the new landowner who fancies himself the buyer of antiquities along with the title to a piece of the desert.

As a complete statement of the concerns of this paper, and to avoid confusion, the following specific aims are listed in order of diminishing importance:

1. to provide a site report for Arizona BB:14:24, incorporating the scattered and incomplete information about Tanque Verde Ruin: Chapters 2-5.
2. to offer a statement about the nature of the prehistoric occupation of the area surrounding these two sites: Chapters 6 & 7.
3. to offer a comprehensive statement about the Tanque Verde Phase, to which most of the materials from the two sites belong: Chapter 7.

PART II

ENVIRONMENT

The valley into which modern Tucson has settled lies directly to the west of the Tanque Verde ridges-- and beyond, the ragged peaks of the Tucson Mountains rim the valley. To the south stretch the Rincon Valley and the pass filled with the concourse of modern highways and railroads that skirt the Rincon Mountains, of which the Tanque Verdes are a part. Directly to the east, Rincon Peak, silhouetted each morning by the sun, towers to an elevation of 8532ft. The flanks of Box Canyon and the Tanque Verde Mountains terminate the view north. Yet, for all its expansiveness, the area lends itself more to the imagination than to the eye. The alluvial pediments and outwash plains, where most modern buildings have sprung up, give no indication of the rough terrain concealed among and beyond the mountains adjacent to the sites described in this paper.

To those of us who are able to live there now only by virtue of commerce with the industrial and agricultural centers of a nation, and to those who would not care to live there unless encouraged by the comforts of deep wells and water coolers, the desert, even in the foothills, seems an inhospitable place. It was especially difficult to look on the desert with favor after digging for hours under an unrelenting sun at Arizona BB:14:24. The "tierra desplobada", as the Spaniards called it, can, nonetheless, be a place of bounty once its dangers and discomforts are tamed. The Tanque Verde ridges with rich

Fig. 4. Tanque Verde ridges, looking west from rock outcrop.
Arizona BB:14:24 in left center of picture.



floral, faunal, and lithic resources are particularly amenable to improvement.

The resort climate of modern Tucson seems not to differ greatly from the climate the Indians who lived on these ridges experienced. It is fairly certain that an erosional cycle similar to the erosional period which began in this area in the late 19th century, was in progress during the Tanque Verde Phase (Sayles and Antevs 1941: 43; Antevs 1955). Its importance to the Tanque Verde people, however, is less clear. The arroyo cutting characteristic of the erosional periods is usually taken to imply the drought conditions prevailed. Recently published palynological studies of the area indicate, however, that at least summer rains have been persistent in postglacial times, and it is suggested that the arroyo cutting may rather be a function of the imbalance between summer and winter precipitation and runoff (Martin 1963). It is possible that decreased winter rainfall may have contributed to the abandonment of the Tanque Verde ridges, but a fuller discussion of that possibility is undertaken in Chapter 7.

When the houses of Arizona BB:14:24 were built, a reliable water supply must have been available to the Tanque Verde people, possibly in the washes that pass close by the village and join first Rincon Creek, and then the Pantano and Rillito, and ultimately the Santa Cruz that Father Eusebio Kino saw flowing the year round in the 17th century. "The fact that there was living water in Rillito Creek led to the establishment of Fort Lowell on its banks", not far from

its juncture with the Pantano, in 1873 (Granger 1960: 277). Fraps reported that, when Tanque Verde Ruin was dug, a stream ran in one of the valleys and that "heavy foliage in the other, indicates ample water" (Fraps 1935:1). Only 10.4 inches of precipitation on the average for recent years has been recorded by the U. S. Weather Bureau for Tucson; the washes are usually dry except after the heavier rains of the summer and winter rainy seasons. Natural seeps or springs in the nearby mountains might have provided drinking water for the Tanque Verde people, if and when the washes ran dry. There is no evidence now of checkdams in the washes, but that fact is inconclusive, for they would have been destroyed by subsequent erosion.

The American Southwest, like the Sahara, the Arabian Peninsula, and central Australia, is designated in the Köppen system a BWh climatic zone, a hot, low-latitude desert in which evaporation exceeds precipitation (Köppen 1931). Above and beyond the usual necessity in such areas for water economy, the BWh designation offers other insights into life on the Tanque Verde ridges. Certainly the climate must have allowed a concentration of activities out of doors. Ramadas like those the Papagos still construct might have been used for shelter from the hot sun, although we encountered no evidence of them in the course of our work. The houses probably served, for the most part, as repositories for belongings and as focal points for outdoor activities, as well as for sleeping quarters, for as a result of the large diurnal temperature inversion characteristic of BWh climates the nights are cold enough for shelter throughout the year, except for the few summer months

when the seasonal monsoons blow warm, moist winds off the Gulf of Mexico (Sellers 1960: 17).

Arizona BB:14:24 at an elevation of more than 2960 feet above mean sea level falls within the Lower Sonoran Life Zone. Mesquite, palo verde, creosote bush, ocotillo, and a large variety of cactus forms--cholla, prickly pear, and barrel cactus prominent among them--grow abundantly on the adjoining ridges. The fence of Saguaro National Monument, a little over a quarter mile to the north, surrounds one of the thickest stands of the saguaro in the world.

Papago adaptations to the very same environment provide some clues to the importance of these trees and plants to a primitive economy: mesquite and creosote bush for fires; mesquite, saguaro ribs, and ocotillo for building purposes; and various annual plants and cholla for green foods. A few oaks in the area still furnish acorns, the mesquite and palo verde beans, and both the prickly pear and saguaro produce fruits from which a number of edibles can be prepared. In addition, we have rather certain evidence of prehistoric agricultural activity in the form of stone farming tools, which are described in Chapter 4, and in the remains of plants that will now at least only grow there with the aid of man. Masses of charred corn of a type as yet unstudied were found in the fill of House No. 4 at Arizona BB:14:24 and the excavation of Tanque Verde Ruin yielded both charred corn and beans, and also on two potsherds impressions of a "cotton" fabric (Haury 1928a: 5).

The Tanque Verde ridges have rich faunal resources. Even though our hurried activities during the hot days of digging prevented us from seeing the elusive animals who now claim the ridges, the evidence of their presence is everywhere apparent. They have burrowed long tunnels into the ancient rooms; gnawed cacti likewise silently suffer their wounds. Of a sample of 26 animal bones recovered from the excavation of Arizona BB:14:24 all but five were identifiable. Thirteen bones of the sample belonged to the jackrabbit (Lepus californicus), five to the deer (Odocoileus--species undetermined) and one to the Big Horn Sheep (Ovis canadensis), and two were bird bones. Quail and roadrunners are not uncommon in the area, and along with the flying birds were undoubtedly important supplementary foods. One would not ordinarily expect the delicate bones of birds to be preserved in an open site for such a long period of time. Association with cultural features and the fact that five of the bones were charred and most of them in a fragmentary condition strongly suggest that most, if not all, are the bones of animals killed for food, rather than a chance, post-occupational mixture of bones with cultural remains of the Tanque Verde people. Combined, these items mean rich stews of rabbit and vegetables, roast quail and fermented cactus juice, and more frugal, ascetic repasts of meals and venison. Keeping in mind that for every foodstuff for which we now have evidence and which I have already identified, there was undoubtedly another plant product or animal which has left no trace and is not included in the above inventory--normally the

people of the Tanque Verde villages must have wanted neither for variety nor volume in their meals.

Caliche deposits for adobe now outcrop a number of places along the ridge on which Arizona BB:14:24 is located. Clays for pottery and water-worn stones for grinding tools are available in adjacent washes. Just east of the site a large igneous body rich in durable silicates was extruded long before men made their appearance here; this igneous body, in the process of exfoliation, furnished these people slabs for house construction and flakes for tool manufacture. Moreover, the rocky mass rising above the Tanque Verde ridges afforded these Indians a natural prominence of some height, yet easy of ascent and close to the village, from which to watch, if they cared to, for the approach of strangers in the valleys to the west and south. The top of this feature has by chance the qualities of a small amphitheatre, in which capacity it might have served. Natural depressions in its surface collect considerable quantities of water during rainstorms. That the Tanque Verde people had recourse to this elevation is attested by the presence of the usual Tanque Verde Red-on-brown sherds at its base, and by a single, enigmatic petroglyph of a tailed quadruped on the reverse side, that like most petroglyphs is impossible to assign to any time period. Although it seems the custom to associate the settlements of the Hohokam away from the main watercourses with a simpler, more frugal, more want-ridden lifeway, it would perhaps be more valid to stress

the richness and multiplicity of resources available to the Tanque Verde people. Life cannot have been too hard for them--otherwise, why did they come and why did they stay so long, if many needs remained unsatisfied for long periods, when they could have chosen to settle at higher elevations or in other river valleys.

ARCHITECTURE

Five, possibly six houses, were uncovered in the course of the work at Arizona BB:14:24; they do not represent all of the dwelling structures at the site. The excavated houses are described in detail in the following pages. Some 13 rooms comprising something less than 13 houses were excavated at Tanque Verde Ruin, complete descriptions of which may be found in Haury 1928b.

Location and Orientation of Houses

Typically, ridge tops were chosen for the location of houses throughout the area. Although Haury added that "isolated structures may be traced in the low-lying valleys" (Haury 1928a: 1), and I have myself found the outlines of a few rooms down in the flats between ridges, that location seems uncommon. While house remains could lie deeply covered with alluvium in the flats, whereas erosion has made houses on ridge tops conspicuous, I would estimate that most Tanque Verde houses will be found scattered along ridge tops. Several explanations for the selection of ridge tops for homesites seem reasonable:

1. to reserve flats for farming
2. to prevent the runoff following heavy rains from washing down and into houses.
3. to permit greater air circulation (houses in the lee of ridges,

Fig. 5. Plan of Arizona BB:14:24.

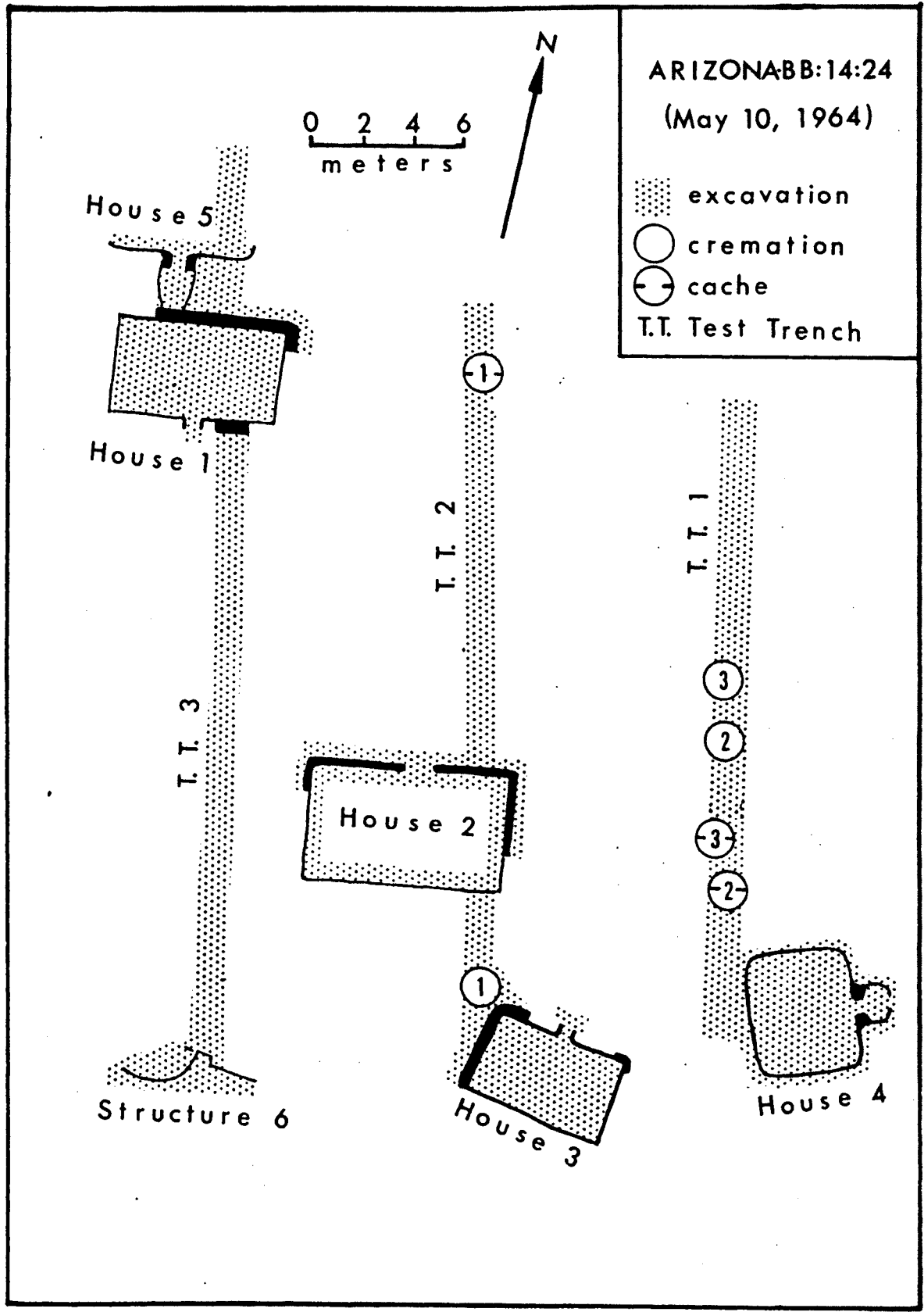


Fig. 6. Plan of Arizona BB:14:1, Tanque Verde Ruin. Reproduced
from Haury 1928b.

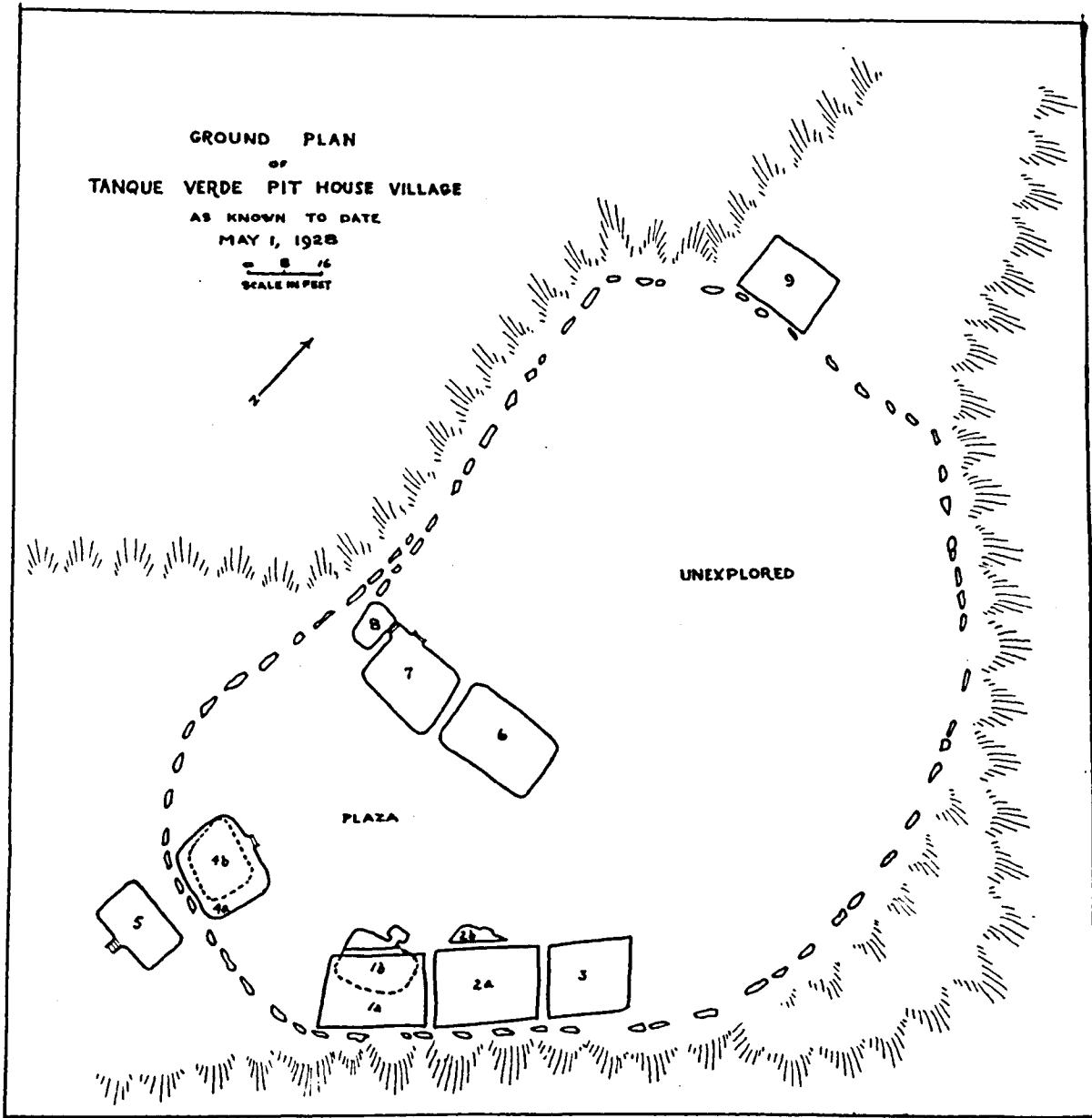


FIG. 8

cut off from breezes, almost certainly would have been uncomfortably warm and stuffy)

4. to take advantage of a view.

The relief of the ridge area the Tanque Verde people selected for settlement is remarkably uniform, which may be circumstantial and insignificant. That they did, in fact, build their houses on these ridges--not in the mountains and not on the plain of the Rincon valley--may be dependent upon some of the following explanations:

1. proximity to a water supply
2. proximity to farmland flooded by seasonal runoff
3. a concentration of wild food plants at this elevation
4. proximity to a wood supply, larger game animals, and lithic resources in the adjacent mountains.

Generally, the long dimensions of houses follow the trend of a ridge, but houses were located along the ridges without plan, each house owner taking advantage of the particular opportunities afforded by the spot chosen for building. Most doorways open toward what must have served as a plaza area in the center of the ridge; no custom required orientation of walls or doorways to cardinal points. In trenching at Arizona BB:14:24 a layer of hard-packed earth was encountered, which may be evidence of an unpaved concourse between houses. The backs of many houses at both sites were near the sides of the ridge, possibly for convenient trash disposal.

House Types

Broad conformity to standards of proper housing was characteristic of the Tanque Verde people; any indication of inventiveness or elaboration on basic styles was meager. Houses were all broadly similar to others of their type, although architectural details were not especially uniform. Possible alternatives included variation in the number and placement of posts for roof support, or in the thickness of walls, or in the number of steps. Entrance rooms were optional. Only one house (Room 7 at Tanque Verde Ruin), which had a separate room (Room 8) connected by stairs and a passageway, seems worthy of individual note (Fig. 6). It is not at all inconsistent now, after noting the uniformity of houses, to enter into a discussion of a pronounced difference in house types belonging to the Tanque Verde Phase, evidence for which was found at Arizona BB:14:24, Tanque Verde Ruin, and the Hodges Site. A chronological review of that evidence is in order at this point.

Haury was the first to identify and describe the two types, carefully delineating the gradual shift from one to the other at Tanque Verde Ruin:

TYPE 1. True rectangular pithouses with more or less rounded corners, excavated to depths varying from 2-4 feet; the faces of the excavated chamber usually plastered with clay; rooms isolated or tending to be grouped; the roof supports, 4 or more in number, were set in from the wall 18-24 inches; rooms averaging 16 by 11 feet in size and entrance gained from the side.

TYPE 2. Rectangular habitations with square corners; the floors uniformly on the same level excavated below the surface in part, i.e. where that was necessary along the sloping edge

of the ridge; the walls on at least 2 sides were constructed of adobe with scattered incorporated rock slabs, other sides of chamber dependent upon excavated face; clay plaster applied to both adobe walls and standing walls; rooms contiguous and unusually large with side entrance; roof supports set in from wall as before, ranging from 4 to 20 in number. (Haury 1928a: 1).

Two types of houses could be dated to the Tanque Verde occupation of the Hodges Site northwest of Tucson, fuller reference to which is made later in this paper:

SLANT WALL TYPE. "...wall a thin plaster coating on fill; slopes back from floor" (Kelly 1961: 20). "Characteristically, the slant wall house is quadrilateral with rounded corners, but occasionally it is almost oval" (Kelly 1961: 26).

STANDING WALL TYPE. "...floor bounded by substantial walls" (Kelly 1961: 20).

Of the 23 houses assignable to the Tanque Verde Phase, 16 were of the Standing-wall type, five were of the Slant-wall type, one was wallless, and no data were available for one. Although Kelly seemed unaware of the types defined by Haury (at least she did not comment on them), I was satisfied after examining an unsorted collection of photographs accompanying the Kelly manuscript that Haury's Type 1 is equivalent to Kelly's Slant-wall Type, his Type 2 is her Standing-wall Type. Since the types are identical to the kinds of houses uncovered at Arizona BB:14:24, I see no reason to invent new terms to identify them. Two houses at Arizona BB:14:24 were definitely Type 1 (Slant-wall) and 3 dwellings clearly were Type 2 (Standing-wall).

Since Haury's description is brief and Kelly's even briefer, and anticipating the unlikely eventuality that future work might require that the types at the three sites be dissociated, I think it prudent to attach the following specific descriptions of the types as represented at Arizona BB:14:24:

Type 1, Slant-Wall Houses

(House No's. 4, 5, and possibly 6)

Lower portions of houses of this type were round-cornered, plastered depressions in the soil. It is unclear whether the depression was dug out before or after erection of the walls; from joints in the walls near the entrance room of House No. 4, I suspect that excavation preceded construction. And there is no evidence to indicate how deeply the houses were excavated into the ridge. Wall stubbs 60cm. high in House No. 4 showed no sign of widening out into thicker surface walls. Steps did not help either, for no ramp end was preserved. A statement made by Kelly with reference to the houses at the Hodges Site may be pertinent here: "Presumably, the actual depth below the surface was of little significance: it must have varied directly with the depth at which suitable foundation soil was found" (Kelly 1961: 17).

There is hardly any evidence for the nature of the upper walls of this type of house. A section of adobe which had fallen into the entrance room of House No. 4 and which seemed to be a portion of the upper wall of the entrance room was 14cm. thick. This may not

represent the full width of the upper entrance room wall and certainly is irrelevant to the upper walls of the main room. Charred butt ends of wood poles, up to 8cm. in diameter, were found in position in the walls of House No. 5 no closer than 23cm. to the floor. It seems reasonable to infer an interior framework of perishable materials for upper walls. The plaster, at least on the lower levels of the walls, was remarkably smooth, even, and fine-grained.

Walls of Type 1, Slant-wall houses do have a slight negative batter, which may or may not be applicable to the entire height of sidewalls. The outward slope of the walls that prompted Kelly to refer to them as "slant" walls, may in reality represent nothing more than a rounding of the lower wall as it approached the floor. Walls probably were quite close to being vertical. Nothing testified to the presence or absence of a bench along the walls. No pole ends, no stray adobe, and no disturbance of native soil was encountered outside the perimeter of the walls, all of which also encourage me to discard the possibility that walls sloped out away from the roof to a point distant from the subsoil excavation, in favor of a true, self-supporting vertical wall.

I cannot on the basis of the two central post holes in House No. 4 and the one corner post in House No. 5 generalize further about post arrangements in these houses. Judging from the amount of ash left after the burning of a room of this type, the posts, along with the walls, must have helped support a substantial roof of poles and branches over which a thick coating of muddy adobe was spread for

water-proofing. Light-colored muddy adobe was found in the fill of houses of both types. A reed or grass layer under the adobe probably prevented it from washing through into the house. Fraps reported the recovery in one of the rooms at Tanque Verde Ruin of "fragments of hardened clay with reed impressions" (Fraps 1935: 3).

Doorways were always located in the longer side of the house. Carefully plastered firepits in front of the doorway probably for small fires or coals to take the chill off room interiors during the winter, small steps, optional entrance rooms, and a short packed-earth ramp must characterize these houses. The doorway itself in all Tanque Verde houses is buttressed by thick columns of adobe. All Type 1 houses were discrete structures, distant from others of their type.

Type 2 Houses

(House No's. 1, 2, & 3)

Undoubtedly, excavation shallower than for Type 1 houses preceded the construction of Type 2 houses, which may explain their slightly larger average size (26.2 square meters of floor space as opposed to 21.0 square meters in the earlier houses). Room corners were square. This type house had much thicker walls, into the lower portions of which occasional rock slabs were inserted. It is difficult to decide whether the rocks were inserted in the walls for stability or simply to take up space as Tuthill suggested (Tuthill 1947: 18-19). The bases of the walls were certainly thick enough to support a solid adobe free-standing wall. Likewise, the thickness of

the walls permitted the roof to be supported entirely on the walls without the use of posts inside the rooms. No post holes were found in House No's. 1, 2, & 3.

Joints and layers are visible in walls of this type house, suggesting the use of forms, which were filled with adobe and then moved from tier to tier as the inferior layers solidified (Fig. 10). A pit in which adobe probably was mixed was discovered under the floor in the northeast corner of House No. 1. The plaster surfaces of these walls were far inferior to the plaster on Type 1 houses (perhaps only because they had suffered more from weathering than the other type).

The use of an entrance room had evidently fallen out of fashion when these houses were built. And being closer to the surface, ramps or high steps were unnecessary except, where as in House No. 1, a room was evacuated on the uphill side of a house. Firepits were identical in size and location to earlier firepits. No contiguous Type 2 houses were found at Arizona BB:14:24, but a long row of stones projecting above the surface just west of Structure No. 6 may be the wall of contiguous houses.

Relationship Between House Types

Both house types were constructed during the Tanque Verde Phase. Although sherd collections or counts from the floors of Type 1 houses at Tanque Verde Ruin are not available, Type 1 houses seem to be identical at both sites and there is nothing to prevent

the assignment of Type 1 houses at Tanque Verde Ruin to the Tanque Verde Phase as at Arizona BB:14:24. A statement in Fraps' report on Tanque Verde Ruin should in itself be satisfactory evidence without the sherds or pottery counts:

Another example of superimposed rooms is to be noted on the southeastern side of the village....There is no perceptible change in ceramic expressions. However, the architectural differences would imply a lapse of time. The lower structure is of a pit type, with definitely rounded corners. It is very irregular in shape. The upper structure, on the other hand, has almost square corners, and the walls are more regular. (Fraps 1935: 2).

Finally, after coming to the very same conclusion myself, before I was aware of the house types at the Hodges Site, I was gratified to find additional confirmation in Kelly's remarks: "Although on grounds of superposition alone, the standing wall house seems consistently later than the slant wall, the Tanque Verde pottery from the two is indistinguishable" (Kelly 1961: 26).

Out of a total of 23 Tanque Verde Phase houses at the Hodges Site, Kelly found one Standing-wall house superimposed over one Slant-wall house (Kelly 1961: 25). At Tanque Verde Ruin both Haury and Fraps described Type 2 houses built over Type 1 houses. With the additional evidence from Arizona BB:14:24, the conclusion is inescapable that the types each belong to different parts of the Tanque Verde Phase and that the Type 1 house was in vogue earlier in the phase. Certainly there must have been a period of transition when some of both types were occupied, but we can feel fairly certain

that by the time the Tanque Verde ridges were abandoned, Type 1 houses had already long fallen into decay.

At Arizona BB:14:24, no cases of superposition were discovered. Yet, other evidence, some indisputable in implication, some circumstantial, verifies the findings at the Tanque Verde Ruin and the Hodges Site. The ramp leading up out of House No. 5, a Type 1 dwelling, was cut off by the rear wall of House No. 1, a Type 2 dwelling. It would seem highly unlikely that House No. 5 would have been inhabited so close to the rear of House No. 1. The upper fill of the Type 2 houses was relatively sterile, while the upper fill of the earlier houses contained large quantities of broken objects, especially pottery, which had been disposed of as trash in the pit resulting from the destruction of the houses. In addition, a burial was intruded into the fill of House No. 4, a Type 1 house. Post-occupational use of destroyed house pits for trash was consistently limited to Type 1 houses.

Methods of Excavation

By far the majority of our time was consumed in excavating the houses at Arizona BB:14:24. Yet, in order to achieve a representative sample, we were forced to take a number of shortcuts, which I felt were justified and which do not detract from the validity of the above generalizations. The fill of three houses was not completely removed. Portions of only two floors were dug up to check for either superimposed houses or floors (it was not felt necessary to do so where trenching along exterior walls would have revealed older house walls).

No screening of fill was attempted, for the houses were so large and so deeply buried that it would have been an impossible task. Undoubtedly, we failed to retrieve a number of artifacts.

Three houses, No's. 1, 3, and 4, were excavated with all the care we could muster short of screening fill. The fill was divided into three arbitrary sections: upper fill, in which post-occupational mixing had taken place; lower fill, which contained trash thrown into the house after its abandonment; and floor fill, some of the material in which was directly associated with the house. Separation of floor fill from lower fill could be controlled visually in House No's. 4 and 5, where an ash deposit represented burned roof materials; otherwise, we allotted about 10-15cm. of fill to this level. Objects from the lower fill of burned houses which showed signs of burning themselves were recorded as being on the roof of the house. The floor fill of the west half of House No. 4, due to the exceptional amount of cultural material in it, was divided into approximate meter squares and the material from each section was bagged separately. This procedure facilitated the reconstruction of the smashed pottery vessels from there. We divided the rest of the fill equally between upper and lower levels, after examination of an initial test pit sunk to the floor. Since we were never able to complete removal of the floor fill in any house in one day, we were not able to photograph objects associated with the floor in position. Any artifact left where it was found almost certainly would have vanished during the days of our absence. As it was, one firepit was damaged by careless feet

and a mano used to buttress the north post of House No. 4 was stolen.

House Descriptions

Detailed descriptions of individual houses follow. Associations listed are only those materials recovered from the floor, floor fill, or lower fill which sometimes contained objects stored on the roof. Pottery counts from houses are tabulated in the section on pottery analysis in Chapter 4 (Table 2).

House No. 1

(Figs. 5, 7, 8, 9, 10)

Dimensions: north wall 6.58m., east wall 3.66m., south wall 6.50m., west wall 3.51m.; wall thickness varies from 46-50cm.; doorway in south wall, 84cm. wide, 2.87m. from west wall.

Features: circular adobe-lined firepit, 26cm. in diameter, 11cm. deep; 5 holes, each about 5cm. in diameter, in floor east of firepit; 2 steps, first one 13.5cm. above floor level, second about 50cm. (?) above floor level, in doorway; caliche mixing pit, about 90cm. in diameter, base 18cm. below floor level, under northeast corner of floor.

Associations: floor smoother-polisher (Fig.25,b) on floor, incomplete stone tool and slug for projectile point in floor fill.

Remarks: The upper fill in the southwest corner of House No. 1 was disturbed by recent unauthorized digging, but the disturbed area seemed to extend no farther down than into the lower fill. There are no precedents to explain the 5 holes in the floor, mentioned

Fig. 7. Students completing excavation of House No. 1 at Arizona
BB:14:24. From left to right, Murray Wolbach, III, Chicago, Ill.;
Dorothy King, Los Angeles, California; Lars Hans Hellman,
Crystal Lake, Illinois.



Fig. 8. House No. 1, Arizona BB:14:24. a, firepit; b, step in doorway; c, step (?) in doorway; d, holes in floor; e, subfloor caliche-mixing pit; f, wall, caliche and rock slabs; g, floor smoother-polisher (Fig. 25, b).

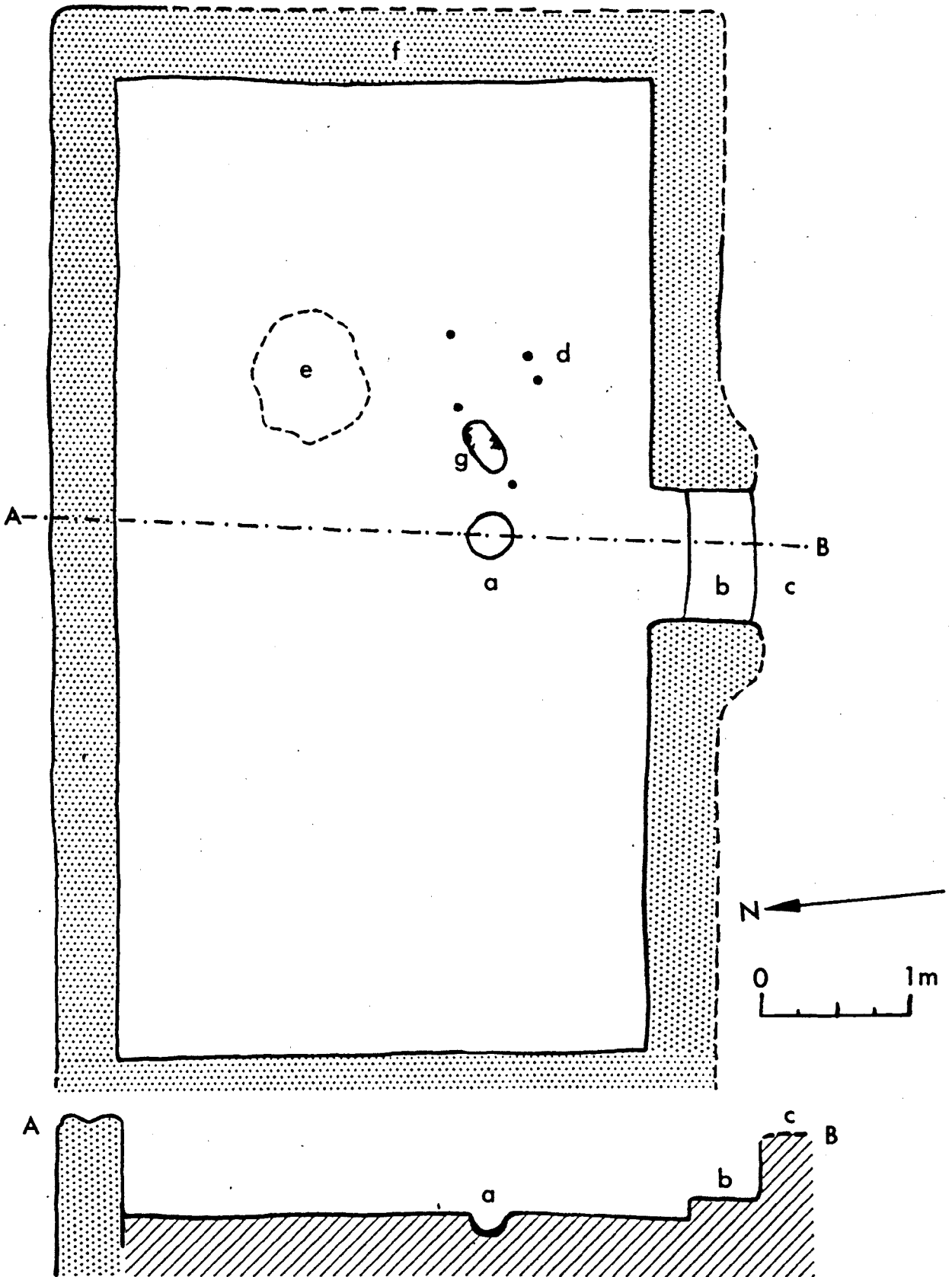


Fig. 9. Features on floor of House No. 1, Arizona BB:14:24.
Firepit in foreground; looking east to five holes in floor;
replastered east wall, background; length of trowel, 25cm.



Fig. 10. North wall, interior side, House No. 1, Arizona
BB:14:24, showing constructional details. Two vertical
joints and three tiers of adobe; vertical reinforcing slab
in wall interior, right side of picture; meter stick on top
of wall.



above. Most of them were lipped where the floor adobe was smoothed around the poles that evidently once fitted in them. Walls and the floor of House No. 1 were patched and replastered several times. At least 6 layers of adobe were visible on the floor in the west side of the room. The house eventually was burned: a layer of ash and charcoal was found several places in the fill 5-15cm. above the floor level and adobe from upper walls showed in its brick-red color the effects of the fire on its interior surface. Three things suggest burning after abandonment: (1) in only a few spots did charcoal, ash, and burned adobe rest directly on the floor, for dirt and sand had evidently sifted into corners and burned materials then fell onto this wind-blown debris, (2) everything of value had been removed from the room, (3) charred wood, though scattered in large lumps throughout the room, did not seem to exist in quantities sufficient to be certain that all roofing materials were in place at the time of burning. Perhaps it was the sport of mischievous children, or the desire to remove an eyesore from the village, that was responsible for the final destruction of this house.

House No. 2

(Fig. 5)

Dimensions: north wall 7.79m., east wall 4.67m., south wall 7.93m., west wall 4.32m.; wall thickness varies from 21-28cm.; doorway

in north wall, 86cm. wide, 3.56m. from west wall.

Features: undetermined.

Associations: bone awl (Fig. 29, h), trough metate fragment, in floor fill.

Remarks: As a result of its evident similarity to House No. 1, House No. 2 was not completely excavated. Trenches were dug along the interior wall surfaces down to the floor level, and along the exterior side of the north and east walls.

House No. 3

(Fig's. 1, 5, 11)

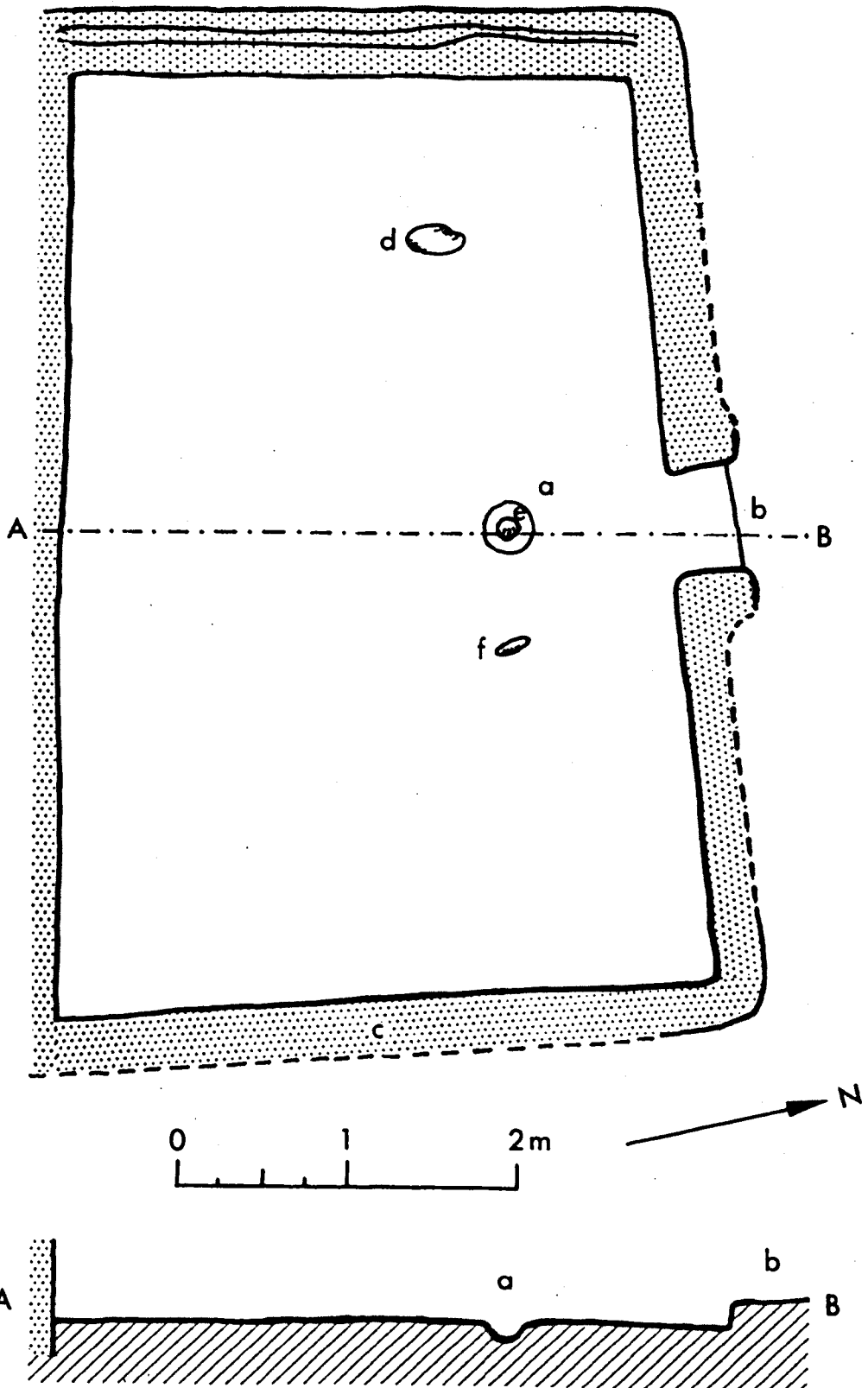
Dimensions: north wall 5.36m., east wall 3.91m., south wall 5.54m., west wall 3.30m.; wall thickness varies from 26-39cm.; doorway in north wall, 61cm. wide, 2.36m. from west wall.

Features: circular, adobe-lined firepit, 25cm. in diameter, 12cm. deep; 1 step 10cm. above floor level, in doorway.

Associations: floor smoother-polisher, mano (Fig. 22, c) small pestle (Fig. 27, h), on floor; round stone, 15cm. in diameter, of unknown use, in firepit (see Hayden 1957: 50 for an identical situation); spindle whorl (Fig. 21, d) under floor.

Remarks: House No. 3 closely resembled House Nos. 1 and 2, with the exception that it seemed not as deeply excavated into the ridge. There was no indication of burning. The floor was in poor condition; large quantities of weathered adobe and rock slabs littered lower and floor fill levels. The west wall,

Fig. 11. House No. 3, Arizona BB:14:24. a, firepit; b, step in doorway; c, wall, caliche and rock slabs; d, floor smoother-polisher; e, round stone in firepit; f, mano (Fig. 22, c).



which had a trough in its interior approximately 6cm. wide, may have been remodeled, or what is more likely, interior supporting slabs may have been pulled out of the wall after the occupants left, perhaps for re-use in another house. Taken together, all information suggests voluntary abandonment of the house and subsequent destruction mostly by the elements.

House No. 4

(Fig's. 5, 12, 13, 14)

Dimensions: east and west walls 4.04m. apart; east ends of north and south walls 5.16m. apart; west ends of north and south walls 5.26m. apart; entrance room approximately 91.5 x 130cm.; wall thickness varies from 9-15cm.; doorway in east wall, 66cm. wide entering entrance room from main room, 70cm. wide opening from entrance room to the outside, 2.13m. from north wall.

Features: circular, adobe-lined firepit, 23cm. in diameter, 11.5cm. deep; 2 post holes aligned long axis of main room, north one 22cm. in diameter, south one 52cm. in long measurement; 2 stone-capped steps in doorway of entrance room, first one 13.5cm. above floor level, second one 25cm. above floor level.

Associations: see separate inventory (Table 1).

Remarks: House No. 4 was the most unusual examined at either site on the Tanque Verde ridges. A brief description of it follows; inferences drawn from its condition are contained in Chapter 5. Approximately 78 artifacts were associated with it, which total

Fig. 12. House No. 4, view to southeast, Arizona BB:14:24.



Fig. 13. House No. 4, Arizona BB:14:24. a, firepit; b, post-holes, south one reset; c, entrance room; d, stone steps in doorway; e, wall, caliche plaster; f-l, artifacts on floor of house: f, rubbing stone; g & h, Tanque Verde Red-on-brown jars (h is Fig. 17); i, Tanque Verde Red-on-brown bowl (Fig. 18, d); j, broken mano (Fig. 22, a); k & l, re-used Tanque Verde Red-on-brown bowl fragments (l is c in Fig. 18);. Placement of g, h. & i is uncertain, for, along with 2 other fragments of Tanque Verde Red-on-brown bowls (re-used for jar covers?), they were broken and found mixed together.

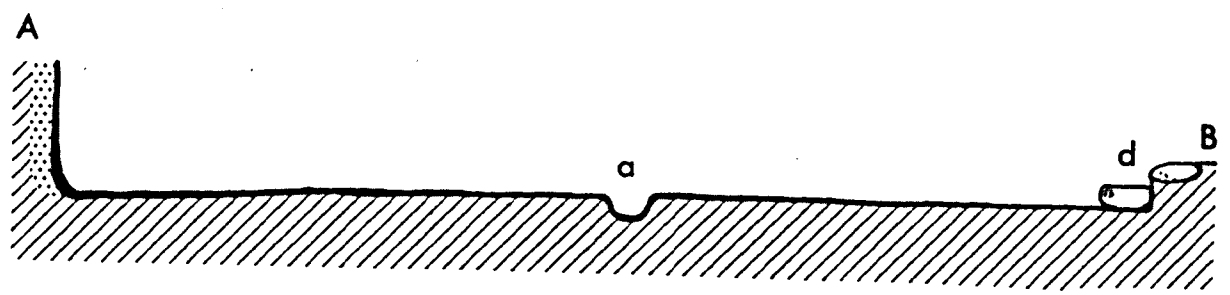
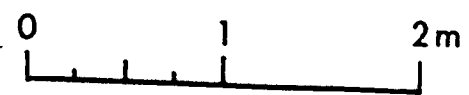
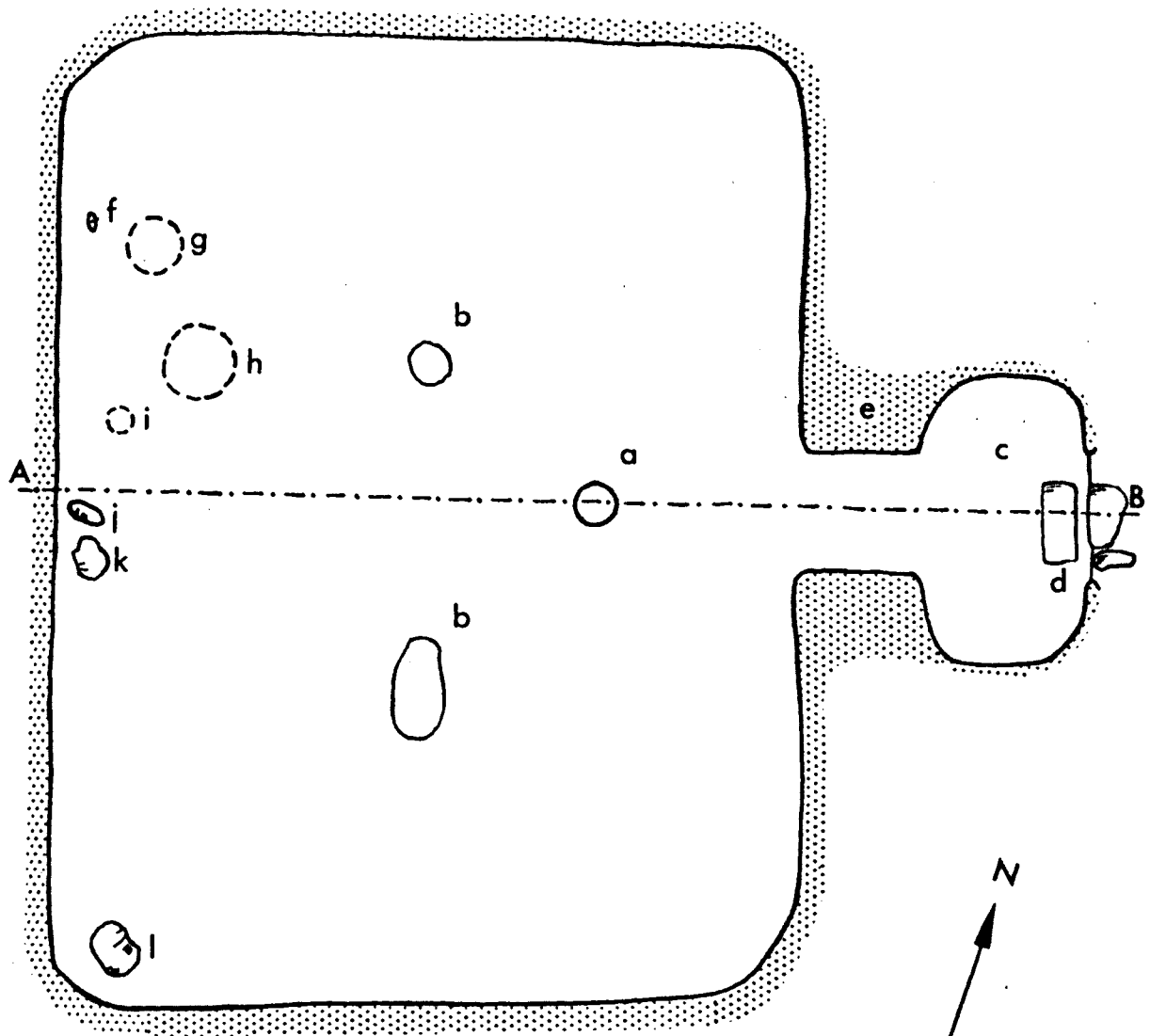


Fig. 14. Artifacts, originally on roof of House No. 4,
Arizona BB:14:24, in position in lower fill of House.
Sherds, two manos, saw, charred corn; floor of house exposed
in upper part of picture, meter stick to right.



Table 1. Inventory of artifacts associated with House No. 4,
Arizona BB:14:24. First number indicates whole items; second
number indicates fragmentary items.

Inventory of Artifacts Associated with House No. 4

	on floor	on roof	Lower trash	Upper trash	wall test
jars	2-0	3-0			
bowls	1-0	1-0	0-3		
bowl parts	4-0				
spindle whorls		3-0			
worked sherds		1		1	
metates			0-1		
mano blanks		5-0			
manos	1-0	9-0	0-1		0-1
polish., abrading, rubbing stone	1-0	7-0	1-0	1-0	
floor smoothers/polishers				1-1	
grooved handstones		1-0			
hammerstones		4-0		1-0	1-0
choppers		1-0			
hoes		2-0			
saws		2-3	0-2	0-1	
projectile points		2-0			
paint palettes				0-1	
stone discs			0-1		
pebbles, minerals, etc.		4		1	
unident. stone tool fragments		1	2	1	
stone items of unknown use	1-0	1-0	3-0	1-0	
raw stone for tools		12			
horn flakers		0-2			
bone rasps		0-1?			
shell beads			1-0		
shell bracelets			0-3		
nose skewers			1-0		
Glycimeris shells		3-0			
charred corn		X			

far exceeds the number recovered from any other house at either site. Belongings stored on the roof lay either in or immediately above the ash deposit which composed most of the bottommost 25cm. of fill in the house. Other than being burned, most artifacts were undamaged. Objects removed from the floor had all been consistently smashed. The condition of the house and of the associated artifacts, as well as the location of artifacts, strongly suggest that the house was being lived in at the time it was burned. House No. 4 had not experienced the gradual decay evident in some other houses. The plaster on wall stubs was still even and smooth. The floor was difficult to clean off, for the firing caused it to flake; but, a carefully smoothed, almost polished surface often came to light in the course of removing fill dirt. House No. 4 is a fine example of a Type 1 house. Careful workmanship was everywhere employed in its construction. A mano had been tamped in on the north side of the north post to steady it; the south post had evidently been reset.

House No. 5

(Fig's. 5, 15, 16)

Dimensions: south wall 5.61m.; wall thickness 12cm.; doorway in south wall, 60cm. wide, 2.4m. from west wall.

Features: 1 post hole, 13cm. in diameter, in southeast corner of floor; 1 step, 13cm. above floor level, in doorway; packed-earth

Fig. 15. House No. 5, Arizona BB:14:24. a, posthole;
b, step in doorway; c, packed-earth ramp; d, wall, caliche
plaster; e, unexcavated fill.

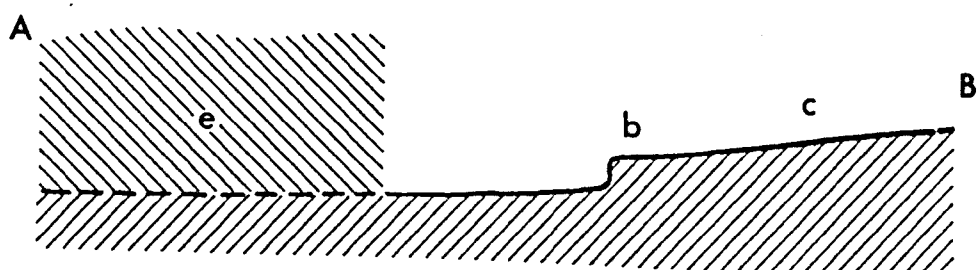
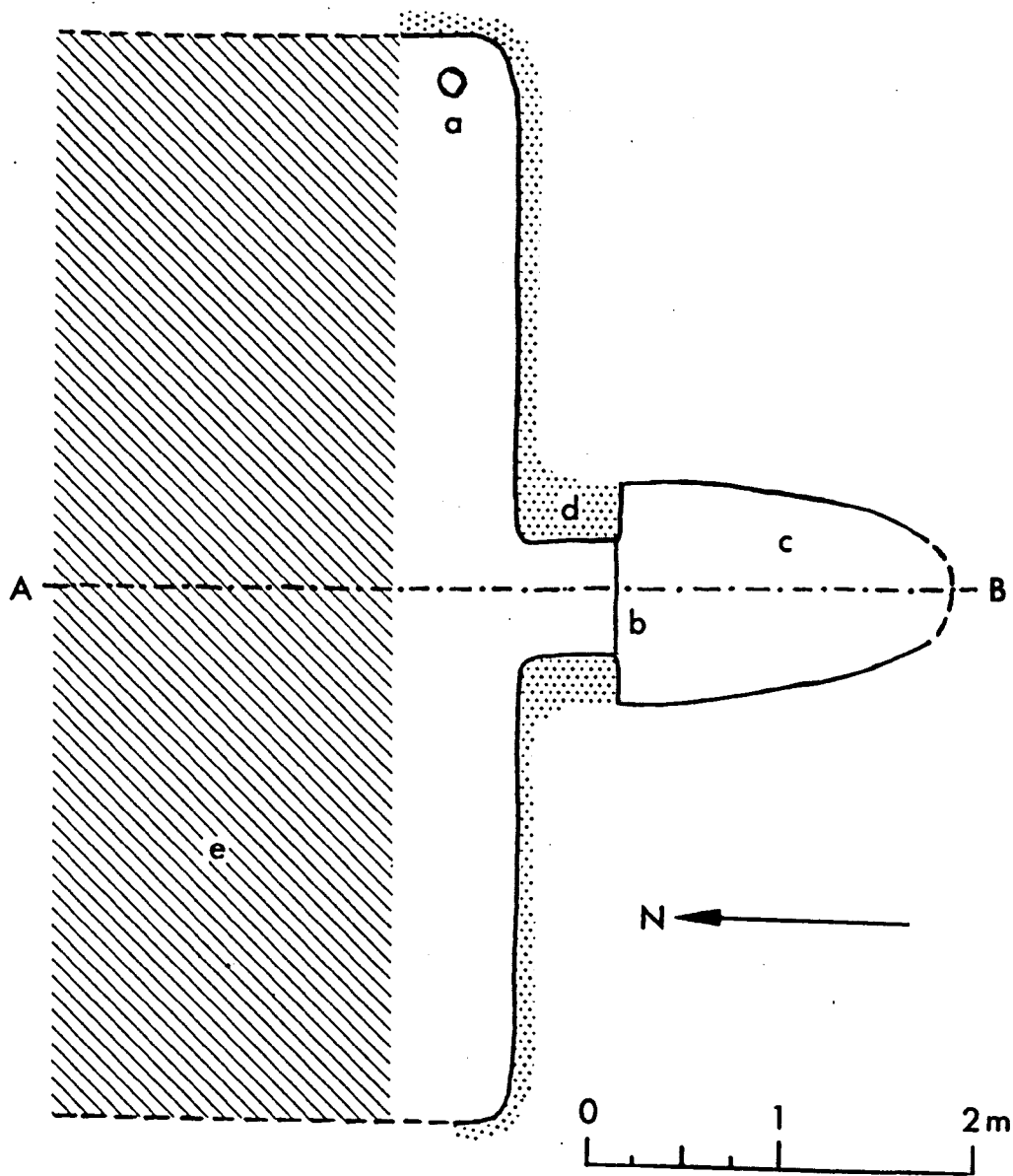
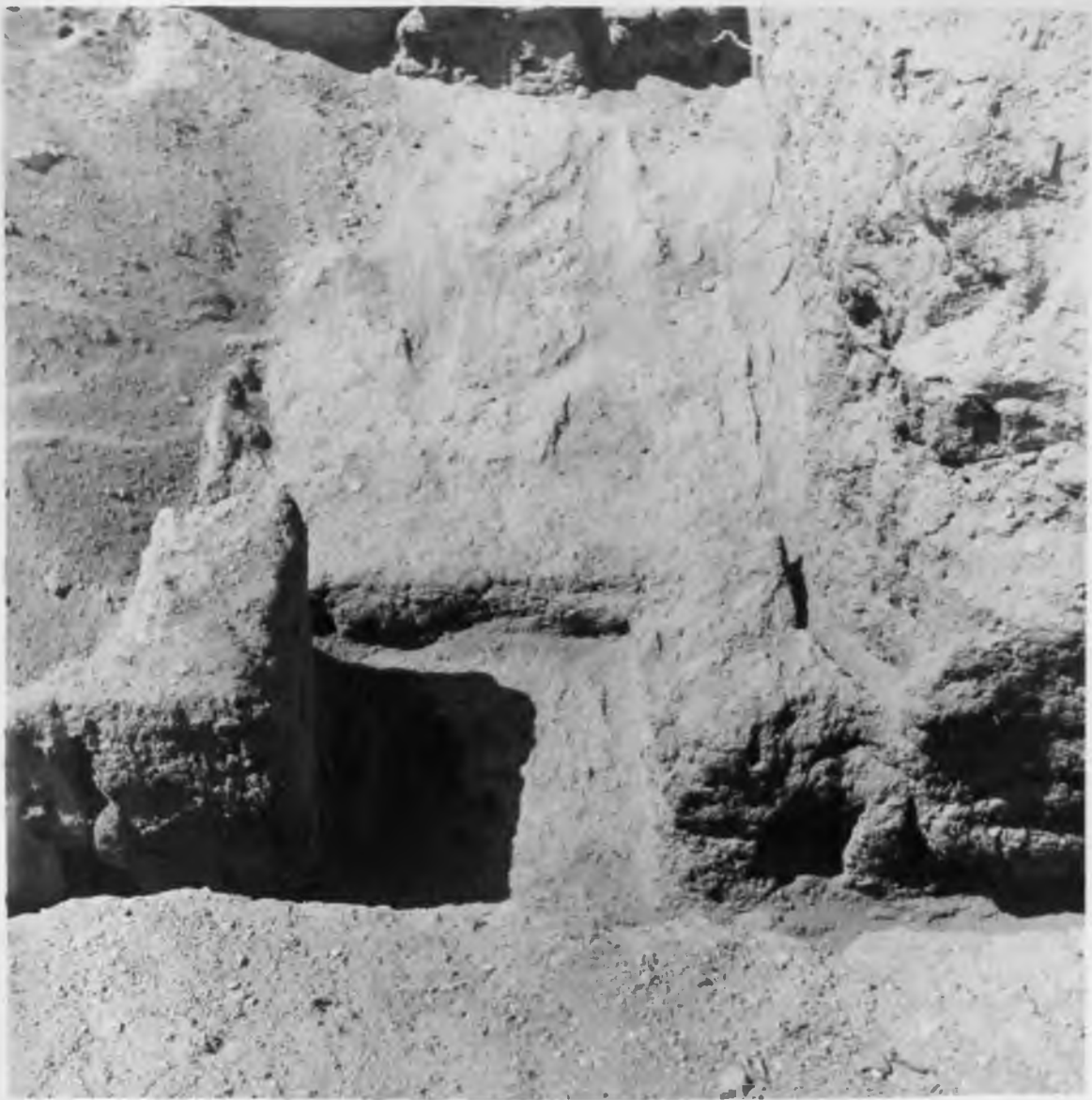


Fig. 16. Doorway and packed-earth ramp of House No. 5, Arizona
BB:14:24. Step in center of picture; north wall of House No. 1
cutting across ramp, upper part of picture; width of doorway,
60cm.



ramp 1.1m. across in widest part, in front of doorway; other features undetermined.

Associations: burned anvil (Fig. 26, i) in ash deposit above floor, probably from roof.

Remarks: House No. 5 was not completely excavated for several reasons--(1) it seemed similar to House No. 4, (2) it was deeply covered with fill on the south side, while portions of the north side must certainly have been destroyed by an erosion channel which ran down over the bank from its interior, and (3) time did not permit additional work. It did yield important evidence, however. It did not have a separate entrance room like House No. 4, but the remnants of a packed-earth ramp were clearly visible, leading up from the door to what must have been the original ground level. Like House No. 4, No. 5 was burned, leaving the same kind of thick ash deposits. Perhaps it was burned for similar reasons--further examination might have yielded other whole, burned tools, etc., like the burned anvil removed from the ash deposit. The position of House No. 5 strongly suggests that it is earlier in time than House No. 1.

Other Architecture

A detailed description of structure No. 6 has not been provided, because it was impossible even to be certain that it was a house. Generally, it resembled a Type 1 house in the thinness, in the slight negative batter, and in the rounded contours of walls.

It may be an earlier house, more completely obliterated in the course of the later occupation of the site. The presence of Rincon Phase pottery types in lower trash layers nearby adds some weight to the latter point of view.

"One very small room which was excavated at Tanque Verde seems to have been a storage room. It is six feet by seven feet, and situated just off a larger room" (Fraps 1935: 3). This must be the previously-mentioned room listed by Haury as No. 8. It is without parallel elsewhere on the Tanque Verde ridges. All other structures have the appearance of dwellings. Nothing else can be said about storage rooms, whether they be separate or incorporated into houses. One certainly wonders, though, where surplus foods were stored. Perhaps in houses no longer being used as dwellings, or perhaps surpluses were not as ample as I have chosen to imagine.

Haury's map (Fig. 6) shows a wall encompassing all but two of the houses at Tanque Verde Ruin. No wall was apparent on the surface or later uncovered at Arizona BB:14:24. I do not recall, either, seeing anything that resembled a wall elsewhere on the Tanque Verde ridges. Several site cards for Tanque Verde Phase sites in the Arizona State Museum note encircling walls, but I wonder how much more than piles of stones removed from the dwelling area these might have been. Walls probably were not regular features of early Tanque Verde villages. It is possible that they became more prevalent as the idea of dwelling compounds developed.

MATERIAL CULTURE

A total of 258 items of material culture--pottery, stone, bone, and shell manufactures--were recovered from Arizona BB:14:24 and given a field number. Of these 47 were subsequently discarded. In addition, a total sample of 7504 pottery sherds was analyzed. These few artifacts are cryptic reminders of the activities that once occupied the time of the Tanque Verde people.

Without historic parallels it is difficult to identify the purpose for which a tool or other artifact was intended. It is often impossible (and often, when attempted, of dubious validity) to describe the activities or complex of activities associated with an artifact. Ideally I have tried, therefore, to follow two basic rules in describing artifacts: (1) use a functional term only where there is a demonstrable historic parallel, (2) use a descriptive term to refer to an artifact which does not have an historic equivalent. At times, however, for the sake of easy reference and clarity the two rules were tempered by a desire to adhere where possible to existing terminology.

Use identifications have often been proposed for some tools, etc., on the basis of intuitive reasoning alone. This seems acceptable, providing the item is not described in functional terms. The inductive logic of an excavator should not be dispensed with

entirely, for as a result of close familiarity with the artifacts he is in the best position to guess about their use.

As a group, the artifacts from The Tanque Verde ridges seem to indicate behavior related to many of the activities one would expect a primitive people to have engaged in:

activity--artifact:

war--projectile points, arrowshaft straighteners

hunting--projectile points, arrowshaft straighteners

butchering--knives

working of skins--bone awl

agriculture--hoes

food storage--large pottery jars

plant food preparation--manos, metates, pestles, anvils

cooking and serving food--most other pottery vessels

pottery manufacture--grooved handstone(?), sherd scrapers (?), paint palette, polishing stones (?)

stone tool manufacture--hammerstones, abrading stones, horn flakers

house construction, maintenance, and repair--saws, rubbing stones (?),

floor-smoother-polishers

weaving--spindle whorls

gathering of firewood--saws, axes

personal ornamentation--ring, shell bracelet fragments, nose skewer, bead

body painting (?)--paint palette

entertainment (?)--bone rasp fragment

religious, curing ceremony (?)--minerals, small stones, bone rasp
fragments

disposal of the dead--crematory urns

Pottery

No whole vessels were recovered from Arizona BB:14:24, although substantial parts remained of 19 ceramic vessels, of which three jars and one bowl were nearly completely restorable. Of the 19 vessels, 13 were Tanque Verde Red-on-brown wares, five were plainwares, and one was corrugated. Of the 19 vessels, four were large jars, three were small jars, ten were bowls or bowl parts, one was a miniature bowl, and one was a tray. The uses to which the 19 vessels were put can be tentatively identified: for storage (4), for cooking (1), to contain food (11), as containers for cremated human bone (2)--the use of the miniature bowl is unknown. Descriptions of the 19 vessels follow:

Large jars: of the four jars of this size, the largest measureable was 35.3cm. high, 38.8cm. in maximum diameter, diameter at rim 19cm., neck height 4.5cm. All necks were slightly outflaring. Three of the four jars were decorated in the Tanque Verde Phase style, the banded design in all cases carefully executed, extending on two jars from the rim, on one from the base of the neck, to a poorly defined shoulder area approximately three-fourths of the way down the side of the vessel (Fig. 17).

Small jars: all three of these were nearly equal in size. Average maximum diameter ranged from 18-20cm. Necks were short, 2-2.5cm. high, and either straight or outflaring. Two were plainwares, one plain corrugated. Two of the three small jars, the corrugated jar and a plainware jar with one lug projection on the rim, were used for crematory urns. (Fig. 18).

Bowls: six in all, generally hemispherical shaped, but occasionally with elongated straight sides, carefully manufactured to produce thin, even-surfaced vessels, whose depth varied from 8-16cm., and whose measured or calculated diameter ranged from 16-32cm. One of the six bowls was plainware, while the other five were red-on-brown, four definitely Tanque Verde Red-on-brown. Four decorated bowls had both interior and exterior designs, one had only an exterior design.

Designs were in every case pendant from the bowl rims and extended down on the outside from 3cm. to a point near the base of the bowl. Interior designs varied in width from 1.3-3.5cm (Fig's. 18 & 19).

Bowl parts: four of these, large sherds with edges occasionally rounded off, were found on the floor of House No. 4, so as to suggest re-use of broken bowl fragments as scoops, trenchers, plates, or jar lids. The largest measured 27x21x7.5cm. deep, the smallest, 18x22x4cm. deep. All were parts of Tanque Verde Red-on-brown bowls. (Fig. 18; Fig. 19, b).

Miniatures: about $\frac{1}{2}$ of a small, crude, coarsely tempered plain miniature bowl, estimated diameter 9.6cm., depth 5cm. (Fig. 19).

Fig. 17. Tanque Verde Red-on-brown jar from floor of House
No. 4, Arizona BB:14:24. Height of jar, 35.3cm.



Fig. 18. Jars and bowls from Arizona BB:14:24. a, plainware cooking pot; b, plainware crematory urn; c, fragment of Tanque Verde Red-on-brown bowl re-used as bowl; d, Tanque Verde Red-on-brown bowl. Rim diameter of d, 17.5cm.



d



c



b



a

Fig. 19. Bowl and tray fragments from Arizona BB:14:24.

a, b, c, f, g, Tanque Verde Red-on-brown bowls; d, smudged
Tanque Verde Red-on-brown tray; e, miniature plainware
bowl. Length of d, 27cm.



Tray: one sizeable fragment of a tray whose estimated diameter was 37cm., depth unknown, polished but undecorated exterior, smudged Tanque Verde Red-on-brown design on the interior.

Counts of all other pottery sherds from Arizona BB:14:24 are contained in Table 2. Explanation of the counts is incorporated into the discussion on pottery that immediately follows.

Discussion of Pottery

Two types of pottery constitute the overwhelming bulk (80.80%) of ceramic material recovered from Arizona BB:14:24. More abundant of the two (72.00% of all sherds) was a plain usually unpolished brownware, commonly known as Gila Plain. The second most abundant type (8.80% of all sherds), an occasionally polished brownware decorated with dark red designs, was, of course, Tanque Verde Red-on-brown. Judging from the abundance of the two types, I can feel certain that they were manufactured on the Tanque Verde ridges by the Tanque Verde people. All types of pottery recovered from Arizona BB:14:24 are listed here in order of decreasing frequency:

- Gila Plain (72.00%)
- Tanque Verde Red-on-brown (8.80%)
- Rincon-Rillito Red-on-brown (2.00%)
- textured wares (1.80%)
- redwares (.70%)
- intrusive types (.10%)

Fig. 20. Sherds from Arizona BB:14:24 and Tanque Verde Ruin.
a, b, c, d, Tanque Verde Red-on-brown; e, red-on-brown sherd
with pronounced white slip; f, slipped Tanque Verde Red-on-
brown; g, h, i, k, l, Rincon-Rillito Red-on-brown; m, Hohokam
polychrome; n, o, p, intrusive sherds -- n, red-on-buff, o,
Roosevelt Black-on-white, p, Mimbres Incised or Playas
Incised (?). All sherds except o from Arizona BB:14:24; o from
Tanque Verde Ruin.

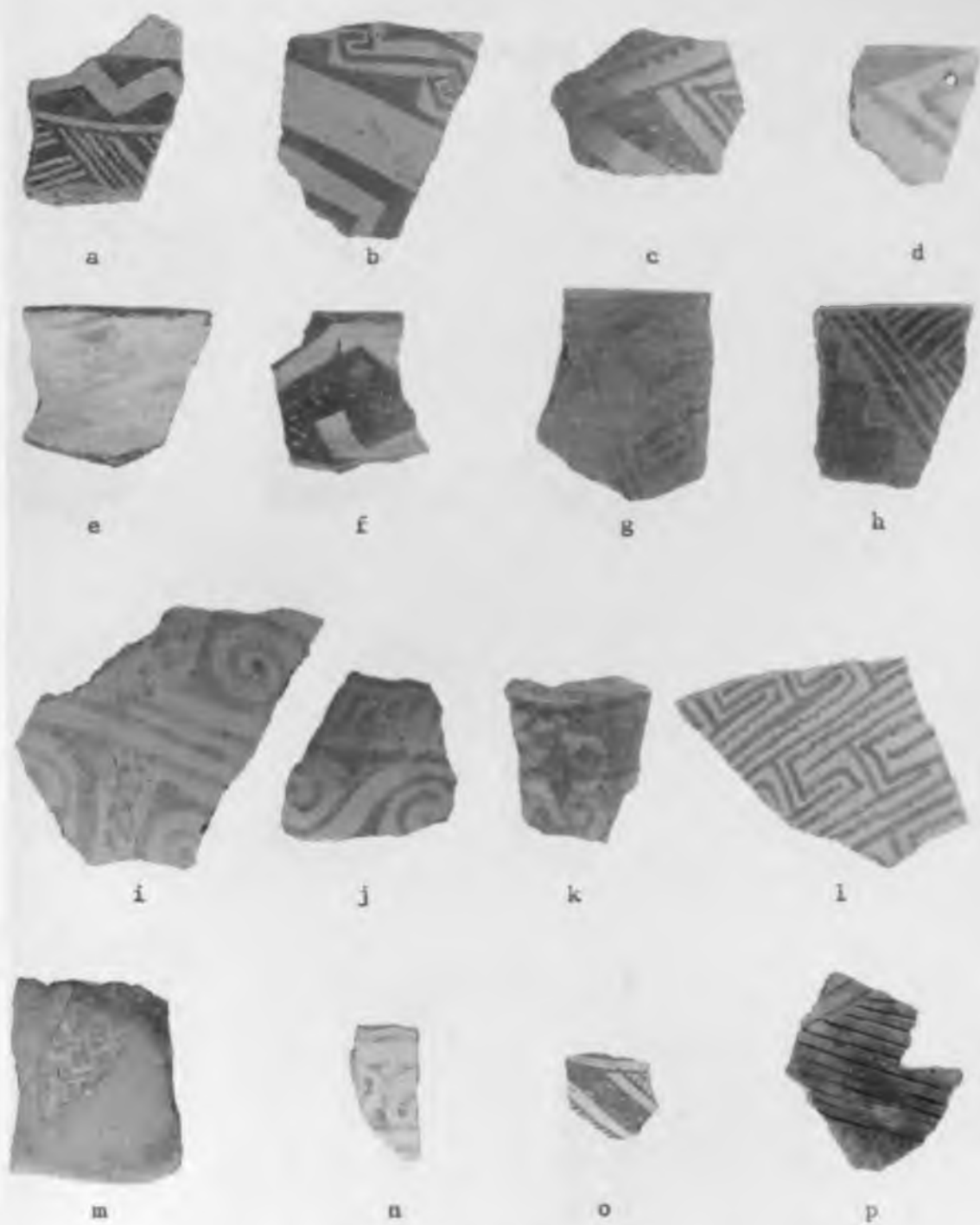


Table 2. Sherd Counts, Arizona BB:14:24. (u = upper level;
l = lower level).

Sherd Counts, Arizona BB:14:24

	Total	Plainware	Corrugated	Other textured	Redware	Tanque Verde Red-on-brown	Rincon-Rillito Red-on-brown	Unidentified Red-on-brown	Hohokam Polychrome	Intrusive	Worked Sherds	Unknown
Surface	(see Table 3)											
Test Trench 1 N. (u)	225	172	11		1	12	1	28				
Test Trench 1 S. (u)	478	401	8		5	54	8		1		1	
Test Trench 1 N. (1)	59	52				1		5				1
Test Trench 1 S. (1)	35	18				4	1	11			1	
Test Trench 2 N.	72	57	1			4		8		1		1
Test Trench 2 S.	218	153	3		4	10	5	43				
Test Trench 3 N. (u)	96	64	1		1	5		25				
Test Trench 3 S. (u)	778	600	6		4	41	32	95				
Test Trench 3 N. (1)	47	36				6		5				
Test Trench 3 S. (1)	125	91	2			5	9	18				
Cache 1	112	85				14		13				
Cache 2	98	62	1		2	21		12				
Cache 3	22	8	1				12			1		

Sherd Counts, Arizona BB:14:24 (cont'd)

	Total	Plainware	Corrugated	Other textured	Redware	Tanque Verde Red-on-brown	Rincon-Rillito Red-on-brown	Unidentified Red-on-brown	Hohokam Polychrome	Intrusive	Worked Sherds	Unknown
Cremation 1	18	10	1				4	3				
House 1 - other fill	578	436	6		3	36	10	87				
House 1 - floor fill	172	108	3		4	9	1	47				
House 1 - subfloor	6	4				1		1				
House 2 - other fill	97	72	2		2	6	1	14				
House 2 - floor fill	22	19				1		2				
House 3 - other fill	425	280	4		6	26	23	83		2	1	
House 3 - floor fill	123	79	9		1	10	7	17				
House 3 - subfloor	10	6	1			1	2					
House 4 - other fill	1952	1354	35	9	14	229	23	274	2	3	9	
House 4 - floor fill	405	275	9			38	1	80		1	1	
House 5 - other fill	191	137	3		1	21	2	27				
House 5 - floor fill	74	54				11		9				
Test between House 1 & 5	53	36	3			3		10			1	
Test - Structure 6	190	132	2			19	3	33			1	
Total	6681	4801	112	9	48	588	145	950	3	8	15	2

Hohokam polychrome (.04%)

Other (includes unidentified red-on-brown, unknown,
worked) (14.56%)

Pottery Produced Locally

The term Gila Plain (see Colton 1955: 21 for references) is of doubtful validity. Throughout the Hohokam area plainwares show widespread uniformity, and there are long periods during which change in styles was at a minimum. Vessel forms did change, but the changes are difficult to observe in sherd material. Whether additional terms are required to describe this pottery, whose dates range from A.D. 300-1300 (Breternitz 1963: 352) is uncertain at present. Consequently, I have little to say about the type, other than to comment on its frequency (72.00% of all sherds), the general crudeness of its manufacture--although some pieces evidenced careful workmanship--and the greater number of jar forms than bowl forms (170 rim sherds to 62 bowl rim sherds, 2.7 times as many jar as bowl rims). Some sherds seem to have been parts of smudged vessels, but many more were darkened by use and could not be distinguished from smudged sherds. Of the Gila Plain sherds 5.7% were heavily darkened either from smudging or from post-firing use.

Before discussing the decorated pottery types, I think it pertinent to refer to Kelly's comments on the painted pottery of the Tucson valley:

Tucson pottery appears to be intermediate between Hohokam Red-on-buff and Mogollon Red-on-brown, an ambivalence entirely

expectable from its intermediate location. On the one hand it has pronounced Mogollon affinities in its close-grained paste, its polish, its relative absence of slip, its utilization of smudging; and, in certain vessel forms and a preference for geometric ornament. The Gila Basin rose-colored paste with its excessive porosity, its chalky slip, its fugitive pigment, and its mat surface seems generally foreign to Tucson.

On the other hand, shape and ornamentation adhere closely to Gila Basin patterns. The relationship between the two areas must have been intimate, for in some of our Tucson excavations intrusive Gila Basin sherds run as high as 40% of the decorated ware. Moreover, Gila Basin importations occur with frequency in cremations. (Kelly 1961: 9).

Essentially, only one correction in Kelly's generalizations need be made now after many years: slipped varieties of the decorated types have been identified.

Tanque Verde Red-on-brown has been adequately described elsewhere: Gabel 1931: 45-49; Fraps 1935: 4; Kelly 1961; Scantling 1940: 27-30; Haury 1950: 348-9; Frick 1954: 54-56; DiPeso 1956: 315-319; Danson in Hayden 1957: 220-224. Additional comments on its range and dates are presented in the final chapter of this paper. The sample of Tanque Verde Red-on-brown recovered from Arizona BB:14:24 (588 sherds, 8.8% of all sherds) was sufficiently large to confirm the earlier descriptions. Although adherence to the basic design style was rigid--angularity of pattern, banding, etc.--the type shows a great deal of variety, indicating no doubt a desire to achieve new decorative effects not by experimenting with design but rather by altering the background. Three varieties of background treatment should be mentioned: a highly polished background (frequency not determined), vessels smudged over the painted design leaving a black

background (19.4% of all Tanque Verde Red-on-brown sherds), and a surface showing a thin, watery, but pronounced white slip. A description of all variations has been incorporated into the descriptions contained in the references just mentioned. DiPeso has the best presentation of variations, although I do not think all of his varieties need have names (Tanque Verde Red-on-black, Tanque Verde Red-on-brown Etched, Tanque Verde-Rincon Red-on-brown Transition, Tanque Verde Polychrome--see DiPeso 1956: 319).

The majority of Tanque Verde Red-on-brown vessels were bowls (136 bowl rims to 16 jar rims, 8.5 times as many bowl rims as jar rims). The larger storage jars and cooking pots probably were painted less frequently because they were utility vessels (some holding water?) and because painting such large vessels required a great expenditure of effort, whereas the smaller decorated vessels probably were used more frequently and used in a way in which their decorations could be appreciated.

Twenty sherds of an unusual type of Tanque Verde Red-on-brown were discovered together in a cache. They have the general angularity of normal Tanque Verde Red-on-brown, but having some prominent curvilinear elements, retain some similarities to pottery manufactured during Rincon times. If, as I am about to suggest, Arizona BB:14:24 did have a continuous occupation running from Rincon through Tanque Verde times, the discovery of a somewhat transitional ware should be no surprise. DiPeso identified 18 sherds of a transitional variety at the Paloparado Site (DiPeso 1956: 319).

Two other earlier painted pottery types from Arizona BB:14:24 were identified. They were Rincon Red-on-brown and Rillito Red-on-brown. As is the case with all the earlier cultural remains in the Tucson Valley, they have been neglected and lack good descriptions. I have counted the two types together (145 sherds, 2.0% of all sherds, 8.7% of all local painted sherds). In such a small sample and working with small sherds, it would have been extremely difficult to distinguish between the two types. The line of demarcation between them is very indefinite. Rincon Red-on-brown, more like Tanque Verde Red-on-brown of course in form and background, is often characterized by large curvilinear designs, or by small curvilinear designs enclosed in larger angular patterns. The diagnostic feature of Rillito Red-on-brown is an all-over design usually composed of numerous small repeated elements. Most sherds could not be sorted, however, using these facile rules.

There was a large enough sample of Rincon-Rillito Red-on-brown concentrated particularly in the southeast corner of the site to identify reliably at least a Rincon Phase occupation at Arizona BB:14:24. How the stray pieces of Rillito Red-on-brown came to be there I do not know, unless trash should reveal more Rillito Red-on-brown and therefore a Rillito Phase occupation, or unless the sherds were fragments of heirloom pieces or were left there by people living in Rillito Phase villages in the vicinity.

A large quantity of unidentified Red-on-brown was left after the other 3 Red-on-brown types had been identified. There is little

doubt that the unidentified pieces were local red-on-brown types-- probably most of them Tanque Verde Red-on-brown whose small size or inconclusive design pattern did not permit them to be sorted.

Pottery Whose Location of Manufacture is Uncertain

Some of the redwares appear locally produced. Both Gila Red and Sells Red were identified in the samples. It is impossible to say which--or if both of the latter two types were local products. I suppose one would expect Sells Red to be a local product and the Gila Red a complementary import with the Gila Buffwares. The Tanque Verde people also attempted to redden the surface of some corrugated wares and of some plain utility vessels. Of the entire sample of pottery from Arizona BB:14:24, 48 sherds or .7% of all sherds were counted in the red-slipped category. Of the redware sherds, 7 were smudged and 23 were polished. Of the redware rims, all 6 were definitely bowl rims. All of the red-slipped sherds were retained and need additional study. Pending petrographic analysis of these sherds and comparison with other redwares from the Gila Basin and the Papaguería, little else can be said about this minor pottery style.

The understanding of the textured wares (121 sherds, 1.8% of all sherds) will have to remain equally limited. The differences in corrugated wares could be polarized around three types: a plain corrugated, in which coils were left unaltered except for some smoothing (10 sherds, 8.3% of all textured sherds); an indented corrugated which had pronounced indentations put on the coils prior

to smoothing (2 sherds, 1.7% of all textured sherds); and an obliterated corrugated which had the coils almost but not completely smoothed out (100 sherds, 82.6% of all textured sherds). Most of these corrugated sherds, judging from the paste and thickness of the vessels of which they were once a part (i.e. they were too large and heavy to be carried for any distance, and therefore were too cumbersome to be traded) seem to have been local products. But a few thin corrugated pieces, some of them smudged, may have been traded in from the east where the stimulus for producing corrugated wares probably originated. Although again smudging was difficult to identify, 35 of the corrugated sherds or 31.3% of corrugated sherds were counted as being smudged. Brushing occasionally left shallow striations on plain pottery. And a type of pottery which had a lumpy irregular surface (represented by 9 sherds-- 7.4% of all textured sherds) seems to be the only other example of attempts to surface texture plainwares.

Three sherds of a rare Sacaton Phase Hohokam Polychrome, identified by Haury, were recovered from Arizona BB:14:24 (Fig. 20). They were found deep in trash and probably should be assigned to the Rincon Phase of the site. The type lacks a published description, for only a few sherds have been found at fewer than a half dozen sites. One whole piece of this polychrome was recovered from the St. Mary's Ruin west of Tucson and is now on display in the Arizona State Museum. The three sherds from Arizona BB:14:24 have rose-red paint on them in addition to the normal maroon paint applied over the buff background.

Intrusive Pottery

Only eight sherds (0.10% of all sherds) that could positively be identified as intrusive were recovered from the excavation of Arizona BB:14:24. A similar situation seems to have prevailed at Tanque Verde Ruin: Haury noted only 3 intrusive sherds--none of them polychrome, and asserted that, being from the surface, they were not intruded during the occupation of the village (Haury 1928a: 5).

Intrusive sherds from Tanque Verde Ruin have not been identified, except for one piece of Roosevelt Black-on-white that I picked up there on the surface last year. Intrusive sherds from Arizona BB:14:24 were identified by Emil W. Haury, Jon Young, and Richard Sense:

2 sherds Gila Buffwares

1 sherd Roosevelt Black-on-white

1 sherd San Carlos Red-on-brown

4 sherds reminiscent of Mimbres Incised or Playas Incised

It has already been explained that some corrugated wares and some of the redwares almost certainly were traded in.

Two kinds of pottery were conspicuously lacking from Arizona BB:14:24: Gila Black-on-red and the Mexican painted types. I may have failed to distinguish sherds of Gila Black-on-red in going through the large quantities of Tanque Verde Red-on-brown, but I doubt it. As for the lack of Mexican painted pottery at a time when Mexican influence, though waning, was still strong--the distances separating

the two areas were so great as to prevent a convenient exchange of pottery. Moreover, it has been pointed out that it is a "well-known fact that most Southwestern trade emphasized religious and ornamental items" (Jennings 1956: 96).

In comparison with other Southwestern sites, both Arizona BB:14:24 and Tanque Verde Ruin are remarkably deficient in sherds of traded wares, which circumstance makes the dating of the sites even more difficult. The lack of intrusive sherds may not, however, mean that the Tanque Verde people did not trade widely. Perhaps they traded their pottery for perishable items. Trading pottery for pottery doesn't make much sense anyhow. None of the non-perishable industry at the two sites seems, except perhaps for the vesicular lava, volcanic glass, and jasper tools, foreign to the Tanque Verde ridges. There is no way of knowing whether fur pelts, scarce plant products, etc., might have been traded for the Tanque Verde Red-on-brown which shows up elsewhere intrusively in considerable quantities in other sites of the same time period far from the Santa Cruz Valley (see Chapter 7 for the range of Tanque Verde Red-on-brown).

Re-used Sherds, and Other Ceramic Products

Some sherds showed evidence of secondary use after the vessels of which they had originally been a part were broken. Mending holes were seen on four sherds, three of which sherds were pieces of bowl rims. Evidently dry materials were stored in the repaired bowls, for it is dubious that they could have been mended well enough with strips

of leather or with twine drawn through the mending holes to retain fluids. The re-use of large parts of broken bowls has previously been mentioned. But other than in these two cases, pottery was discarded after damage, seemingly out away from the house, for house floors presented a general appearance of neatness. Sherds were often used, however, other than as containers. They were ground into disc shapes, and some of the discs pierced for spindle whorls. Some sherds seem to have been used as pottery(?) scrapers, some in an abrasive fashion, and occasionally particularly concave sherds might have held pigments like a palette. One round palette-like sherd was found associated with House No. 4, but having no paint on its surface, could not be identified as such.

Artifact: sherd spindle whorls.

Illustration: Fig. 21.

Sample: 2 whole, 1 broken, 1 fragment(?).

Provenience: 2 whole and 1 broken spindle whorl from lower fill of House No. 4; fragment in trash.

Manufacture: 2 manufactured from plainware sherds, 1 from a Tanque Verde Red-on-brown sherd, 1 from a Red-on-brown sherd. Edges and lower sides of sherd spindle whorls were slightly thinned and ground smooth.

Description: diameter of sherd type whorl ranged from 3.9-5.3cm., while diameter of center whole of 3 was .5cm. (diameter of center whole in fragment was 1.3cm.).

Suggested Use: weight for stick on which fibers were spun--see DiPeso 1956: 355-401.

Fig. 21. Spindle whorls and sherd discs from Arizona BB:14:24.
a, b, c, sherd spindle whorls; d, e, modeled spindle whorls;
f, unfinished sherd spindle whorl; g, sherd disc. Diameter
of g, 6cm.



a



d



e



b



f



c



g

Artifact: modeled spindle whorl.

Illustration: Fig. 21.

Sample: 1 whole, 1 fragment.

Provenience: whole one under floor of House No. 3, fragment in trash.

Manufacture: plastic ceramic material probably modeled around an old spindle, the spindle then withdrawn, and the whorl fired.

Description: diameter of the whole biconical modeled plainware spindle whorl was 3.3cm., diameter of the hole in its center was .5cm., and its thickness was 2cm.; diameter of the fragmentary bead-like ellipsoidal modeled plainware spindle whorl was 2.3cm., its hole also .5cm., and its thickness also 2cm.

Suggested Use: same as for the sherd spindle whorls.

Artifact: sherd discs.

Illustration: Fig. 21.

Sample: 8.

Provenience: all from trash.

Manufacture: 7 from roughly rounded sherds (6 plainware sherds, 1 red-on-brown sherd), edges chipped but not ground smooth, one sherd having the beginning of a hole in its center; 1 a carefully rounded concave polished plainware sherd had its edges ground remarkably smooth.

Description: diameter of 7 roughly rounded sherd discs varied from 2.8-7cm.; diameter of the one carefully worked large sherd disc varied from 6-6.5cm.

Suggested Use: some probably were intended for spindle whorls (as incipient drilled hole in one suggests), but the use of the others unknown.

Stone Artifacts

Lithic materials, with a few exceptions, seem to be of local origin. It would be my guess that siliceous, light-colored, fine-grained igneous rocks of plutonic origin were preferred for most tools. Basalts, occasional porphyries, acidic glasses, and vesicular lava are notable exceptions. Gneisses and rocks of sedimentary origin, such as sandstone and quartzite, are more sparingly represented. Generally, rocks were selected for texture, durability, cleavage, and occasionally perhaps for their chromatic qualities. The rocks for larger tools seem to have been obtained from nearby washes; quarrying would have been required for few of their tool needs. Many cortical surfaces show the effect of water action. Some tools were manufactured from exfoliated flakes from a nearby rock outcrop. Some pieces of stone were used as tools almost unmodified; others required extensive and careful alteration to transform them into tools. Stone working techniques included chipping, pecking, grinding, and pressure flaking.

I have refrained, for the most part, from giving petrographic identifications with stone tool descriptions. A field archaeologist is not, as a rule, qualified or equipped to make the identifications. Certainly he cannot do it accurately by sight. It is extremely difficult, unless the stone selected for each tool type tends to be uniform, to be sure what kind of stone was used. A correct analysis requires a freshly fractured surface to work with and often, in addition, laboratory materials to confirm visual estimates. Whole stone tools worn smooth and discolored by the oils in human hands, which sometimes

after burning have lain in the soil for over 600 years and have become coated with lime, tools which finally have been passed through an acid cleaning bath, are far from being adequate samples for a petrologist to work with. The results are inaccurate and time-consuming. And it takes a specialist to wade through the proliferation of terms, especially those currently in use for igneous rocks.

The task of identifying stone used in tools from the Tanque Verde ridges was hampered because all three types of stone were used, some from primary deposits and some from stream beds or weathered outcrops. Igneous rocks, highly metamorphosed rocks, and sedimentary rocks were all represented in the manufactures of the Tanque Verde people. And as I have already mentioned, they did not always use the same type of stone for a particular tool, although occasionally they were rigidly selective (e.g. stone for hammerstones, projectile points, knives, etc.). Lacking a professional survey of the local lithic resources and realizing myself the problems of identification, I have used only the most general terms in describing stone in artifacts.

Artifact: anvils.

Illustration: Fig. 27.

Sample: 1 whole, 1 fragmentary anvil.

Provenience: 1 anvil in the ash deposits of the roof of house No. 5, the other in trash.

Manufacture: One round anvil had first been used as either a mano or a rubbing stone; the fragmentary anvil had been thinned and rounded from a flat piece of stone.

Description: Anvils were difficult to identify--and probably more stone items served for anvils than the 2 described here. Only the battering of a level surface betrayed the nature of their use.

Both were more or less round: the one was 10cm. in diameter and 2.5cm. thick; the fragment measured 10.5 x 12.8 and was 4.5cm. thick.

Suggested Use: a surface on which to crack nuts or pulverize minerals.

Artifact: hammerstones.

Illustration: Fig. 23.

Sample: 12.

Provenience: 3 associated with houses; the others were picked up on the surface or in trash.

Manufacture: prepared by chipping and rounding chunks of a tough, dense, aphanatic gray basalt-like rock.

Description: The tool type is common in the Southwest. The Tanque Verde people selected their hammerstones with unusual care, however, and as a result, almost all of the 12 hammerstones are alike with the single exception that they occur in a wide range of sizes. Some would have required two hands for use. Hammerstones measured from 6-11.5cm. in diameter. All showed bruised and battered surfaces and projections, and almost certainly had either been discarded or were approaching disposal. Since they were easily produced, they probably were thrown away as soon as the sharp edges were worn away.

Suggested Use: used to work (peck) stone to produce other tools.

Artifact: hoes.

Illustration: Fig. 24.

Sample: 3 whole, 5 fragmentary hoes.

Provenience: of the total, 2 were associated with houses, 3 were in caches, and 4 were in trash contexts.

Description: hoe length varied from 18-25.5cm., width varied from 13-16.5cm. Maximum thickness was 2cm.

Suggested Use: used probably for tilling the soil in gardens.

See additional remarks under saws.

Artifact: manos.

Illustration: Fig. 22.

Sample: 6 whole mano blanks, 4 fragmentary mano blanks, 16 whole manos, 23 fragmentary manos.

Provenience: the whole mano blanks were removed from House No. 4 fill and Cache No. 3; the fragmentary mano blanks from trash; 13 of the whole manos were associated with houses or caches, while all but 3 of the fragmentary manos were in trash.

Manufacture: mano blanks were loaf-like pieces of stone, showing little wear on either the upper or lower surface, with the bottom often heavily pecked to give the tool a rough surface. They appear never to have seen use. All of the fragmentary mano blanks represent manos broken right after or during preparation for use. Fine-to medium-grained igneous rocks were selected for manos. Most were oblong and carefully shaped, although some, especially two-handed ones, were long irregularly shaped stream cobbles and some were kidney shaped. One-handed manos

tended to be rounder. The upper surfaces of all manos usually were rounded and occasionally showed pronounced hand holds.

Description: mano blanks varied in length from 17.4-22.6cm., in width from 9.5-11.5cm., and in thickness from 5.5-7.5cm. Manos were about equally divided between the one- and two-handed types. All but 1 of the whole ones and all but 5 fragments showed unifacial wear, probably because the use of both sides made the mano more difficult to grasp. The two-handed manos varied in length from 17.9-24.0cm., in width from 9.1-11.5cm., and in thickness from 3.5-5.5cm. The smallest one-handed mano measured 11.5 x 8.6 x 4.0cm.; the largest measured 15.0 x 8.8 x 5.0cm.

Suggested Use: the hand-held grinding stone pulled back and forth in the trough of metate to mill corn and perhaps other seeds.

Artifact: metates.

Illustration: none.

Sample: 2 nearly complete metates, 14 metate fragments.

Provenience: 9 associated with houses, 1 in trash, and 6 of the fragments from the surface of the site.

Manufacture: Eleven metates (7 of coarse-grained igneous rock, 4 of fine-grained igneous rock) seem to have been produced from boulders from nearby washes; 5 carefully shaped metates (4 of vesicular lava, 1 of a porphyritic igneous rock) seem to have been manufactured from pieces of stone procured elsewhere than in the washes. The boulder type metate was occasionally lightened by chipping pieces off the sides

and bottom. The troughs, especially of metates manufactured from fine-grained rocks, show some pecking in order to roughen the grinding surface. The finest metates--even surfaced, lighter and more portable--were produced from vesicular lava.

Description: Only trough metates were used at Arizona BB:14:24. The trough was open at both ends and often a little concave. Dimensions of the metates were quite uniform. The width of the troughs varied only from 19-22cm. The length of the troughs was not determinable. The thickness of trough bottoms varied from 3-14cm., depending on the amount of use they had seen. The thickness of the sidewall varied from 1.5-9.5cm. and the height of the sidewalls, again varying with use, ranged up to 10cm.

Artifact: pestles.

Illustration: Fig. 27.

Sample: 2 whole, 1 fragmentary pestle.

Provenience: One of the whole pestles was removed from the floor fill of a house, the whole one and the fragment were recovered from trash.

Description: roundish oblong stones, sometimes with both ends battered from use and worn smooth on the sides by contact with the hand. One whole pestle was 11.4cm. in length and 4.3cm. in diameter; the other 15.8cm. long and 7cm. in diameter.

Suggested Use: for crushing or cracking foodstuffs and perhaps minerals.

Artifact: projectile points.

Illustration: Fig. 28.

Sample: 3 finished projectile points; 2 pieces of stone possibly intended for points.

Provenience: 1 in a wall test, the other 2 from the lower and floor fill of House No. 4.

Description: 2 points chalcedony, the third a clear variety of quartz. All 3 were roughly triangular shaped; only 1 had lateral notches. Edges had been carefully retouched and 1 point showed some evidence of basal thinning. The points measured 2.5 x 4cm., 1.5 x 2.2cm., and 1.1 x 2.6cm.

Suggested Use: to tip arrow shafts.

Artifact: rubbing stones (also called whetstones, polishing stones).

Illustration: Fig. 26.

Sample: 14.

Provenience: in association with houses, caches, and trash.

Description: generally oval, flat stones with surfaces irregularly smoothed from use and with smooth round edges. The largest measured 14 x 8 x 2.5cm., while the smallest were only tiny stream pebbles.

Suggested Use: The tools described here together as rubbing stones certainly were not all used for like purposes. One had traces of hematite on one face and might have been used to grind paint. The smaller rubbing stones probably were used to polish pottery; the

larger ones, held in one hand, may have served as a flat surface on which to rub other stone and wooden items smooth.

Artifact: saws.

Illustration: Fig. 24.

Sample: 2 whole, 11 fragmentary saws.

Provenience: 7 saws were associated with houses, 1 with a cache, and 5 were in trash or had been washed out on the surface.

Description: saw length varied from 20-22cm., and width varied from 11-12.5cm.

Suggested Use: There has been some confusion in the literature about the differences between and the use of saws and hoes, and there are therefore no functional terms which satisfy the demands of impartiality. Traditionally, size differences allowed the tools to be separated into either the saw or hoe category. But Hayden examined the tools and concluded, size not being a good indicator of use, that "shoulder flakes are hoes, and tools with longitudinal striations on the cutting edge are... 'saws' and 'saws with serrate edges'" (Hayden 1957: 144).

DiPeso, however, has insisted that the saws were used as fleshing knives:

Fleshing knives with serrated edges have been termed 'saws.' The presence of these tools in a cache of fleshing knives containing two blades with serrated edges suggests that the artifact under discussion was made as a specialized tool used in the process of fleshing or in preparing skins. This tool may well have been used to scrape the hair from hides in the preparation of skins for clothing. (DiPeso 1951: 151).

After experimenting with one of the serrated "saws" from Arizona BB:14:24, I feel that the tool would have been awkward to use as a

scraping tool and unnecessarily large for a fleshing tool, but that they do in fact, as a cut on the edge of a wooden laboratory table attests, well fulfill the requirements of a saw. Here I have termed "saws" all the thin flakes of sandstone or aphanitic igneous rocks showing little or no battering of the edges from use, with longitudinal striations on the ground cutting edge. I have restricted the use of the word "hoe" to the thicker, heavier granitic flakes, which often show both retouched and battered edges.

Other Stone Artifacts

The previously described stone tools occurred in quantity and their use was identifiable with some certainty. Those that follow were not represented by numerous examples; or in many instances the nature of their use is either unknown or is uncertain. Along with them I should mention several one-of-a-kind stone items that were recovered from Arizona BB:14:24, which gave evidence of little or no preparation and only brief and inconsistent use. These were given a field number, but were subsequently discarded; no further mention is made of them here. Several fragments of stone appear to have been broken in the process of manufacture, and a few seem to have been thrown away before they were finished. These fragments, too, were discarded in the laboratory for it was nearly impossible to ascertain for what use they might have been intended. Some pieces of stone were found which probably had been collected for making tools; 12 of these were picked up from the roof debris from House No. 4. The pieces

of raw stone were not catalogued and were thrown away after they had been examined.

Abrading stones: four abrading stones were found which might have been used to shape or sharpen other stone tools, three of them in trash and one in the floor fill of a house. They had rough, granular and therefore abrasive surfaces. A typical example measured 11.5 x 8 x 3.5cm. (Fig. 26).

Arrow-shaft straighteners: two fragments of this well-known tool type could be identified. One was taken from a wall test and the other was picked up on the surface. Both seem to have been used as rubbing stones before they were used to straighten and polish wooden arrow shafts. One, with two grooves worn in it, was 8cm. across and 3.7cm. thick; the other, with only one groove, was 10.4cm. across and 4.4cm. thick. (Fig. 27).

Bifacial choppers: two were recovered from house fill and one from the surface. These differed from the hammerstones in that they had a distinct cutting edge. They varied in size from 6.5-9cm. across. (Fig. 23).

Disc or pendant: it was impossible to decide whether a fragment of stone with part of a hole in it had originally been a disc or a pendant. It had been manufactured from a very thin flake of slate-like material; if a disc, it measured 2.3cm. from edge of center hole to outer edge.

Floor smoother-polishers: three whole ones and two fragments of these were recovered, two of the whole ones resting directly on the floor

of two different houses. The other whole one and the two fragments were taken from the fill of houses. I have been unable to find a precedent for these in the literature of the area, but I am suggesting that they may have been used with a little sand and water, to even, to smooth, and perhaps even to polish floor surfaces. One had a little caliche-like material still adhering to it, when it was first picked up off the floor of House No. 1. Heavy, fine-grained igneous rock was used for these tools. In general appearance the finished tools resembled large manos, except for their greater size and in that lateral faces had been rounded by chipping. Most had both faces ground smooth, but one had one pecked surface suggesting that the tool may also on occasion have been used for an anvil. Two of these tools were almost identical in size: 29 x 14.5 x 5.3 and 29 x 14.5 x 5.7. The smallest whole floor smoother-polisher measured 20 x 12.7 x 5.6cm. (Fig. 25).

Grooved handstone: only one of these was found, suggesting that the tool was either only seldom used or that it was a personal item kept for long periods. The one example seems to have been stored on the roof of House No. 4. In casting around for a likely use for this handstone, I began to wonder if it might not have been the thinning anvil used in constructing pottery vessels, the larger, flat and slightly round surface having been pressed against the inside of the vessel. The groove thus resulted from constant turning with fingertips. Its diameter was 7.5cm. and it was 3.6cm. thick. (Fig. 27).

Knives: three (2 whole, 1 fragmentary) items were recovered which probably were used for knives, and which I will call knives rather than blades, for there is no indication that they were hafted. All of them had been manufactured from handsome pieces of gray chalcedony, and red jasper or jasper porphyry. All were picked up from trash. Two of the 3 showed extensive retouching to thin, round and sharpen the original flake, but the third, perhaps unfinished, was thicker and its edges had not been retouched. Knife measurements were (1) 2 x 4.5cm., very thin flake (2) length unknown, width 2.6cm., thickness about .6cm. (3) 3.5 x 6.3, thickness about 1cm. One unworked flake of a finely granular igneous rock (6.5 x 4.2cm.) may have been intended for a knife or a scraper, although it had not been retouched. (Fig. 28).

Miscellaneous small stones and minerals: three pebbles and one piece of biotite were found in the fill of House No. 4. They were noticeably different from the usual angular pieces of stone weathered out of the top of the ridge. A red pebble was 4cm. in diameter, a dark basalt-like pebble was 1.5cm. in diameter, and a small crescent-shaped stone was 4.5 x 9cm. The piece of biotite was measured 5.2 x 3.2 x .9cm. (Fig. 28).

Paint palette: one fine specimen was removed from the fill of House No. 4; it was broken into two pieces and probably had been thrown away. It had been manufactured from a thin piece of gray slatey material which had an attractive silky luster. It had been worked

into the approximate shape of a rectangle, the edges ground smooth, and a raised border on the upper surface ornamented with cross-hatched lines. It measured 13 x 7.5 x .6cm. (Fig. 28).

Planing tool(?): one was discovered while testing along the outside of a house wall. It had been manufactured from a dark, dense igneous rock, and featured one smooth, retouched cortical surface. It was roughly round, measuring in maximum diameter 9.5cm. (Fig. 27).

Bone and Horn Artifacts (Fig. 29)

Five pieces of bone (two deer bones, one jackrabbit bone, two bones of unidentified animals) and two deer horns were recovered that had been altered by the people who lived at Arizona BB:14:24 to make tools or ornaments. The two horn tools and two of the bone items were closely associated with houses; three bone artifacts were found in trash contexts.

Bone awl: 14.5cm. long, manufactured from right deer ulna.

Bone scraper: 5cm. long half-section of a jackrabbit femur, with edges sharpened; probably used for scraping.

Bone rasp: small (2.5cm.) fragment of a longbone, with notches cut along one side; a stick was probably run along notched side to produce a rasping sound.

Bone ring: fragment of a thin, well-worn bone ring 1cm. in width.

Drilled bone: short bone with hole drilled in its side; use unknown.

Horn flakers: 2 burned tips of horns, points showing wear from use, probably used in the pressure flaking of stone.

Shell Artifacts (Fig. 29)

A total of 16 pieces of shell were recovered from Arizona BB:14:24. Of these, 14 had been worked in some way, while 2 were unmodified. Eight pieces of shell were found in the lower or floor fill of House No. 4, three pieces were found in trash, and five pieces were picked up on the surface.

Bracelets: a total of 11 fragments of Glycymeris shell bracelets, nine of which were uniformly thin (none over .5cm. thick), two of which were parts of thicker bracelets (up to .9cm. thick); one of the thicker bracelets was ornamented with a series of transverse notches; the thinner bracelets generally had angular edges, while the larger ones had more rounded edges.

Nose skewer: one polished, crescent-shaped piece of shell (4.6cm. long and .4cm. thick) with tapering ends--identified by Haury as a nose skewer.

Bead: one small (outside diameter .4cm., inside diameter .2cm., .25cm. long), tubular shell bead.

Partially modified shell: one small Glycymeris shell whose exterior side showed a flat, ground surface.

Unmodified shells: two very small Glycymeris shells.

Fig. 22. Manos and mano blank from Arizona BB:14:24.

a, b, c, d, unifacial two-handed manos; e, two-handed mano blank; f, h, i, j, unifacial one-handed manos; g, bifacial one-handed mano; length of time mano used increases from bottom to top of picture. Length of d, 22cm.



a



f



b



g



c



h



d



i



e



j

Fig. 23. Hammerstones and choppers from Arizona BB:14:24.

a, b, c, hammerstones; d, e, f, choppers. Maximum diameter of c, 12cm.



a



d



b



e



c

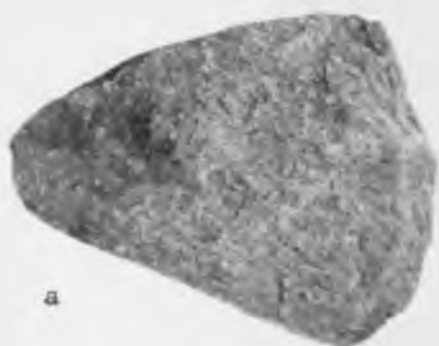


f

Fig. 24. Stone hoes and saws from Arizona BB:14:24.

a, b, c, hoes; f, g, saws; d, blade-like saw fragment;

e, serrated saw fragment. Length of c, 25.5cm.



a



d



b



e



f



c



g

Fig. 25. Floor smoother-polishers from Arizona BB:14:24.

Length of a, 29cm.



a



b

Fig. 26. Rubbing and abrading stones from Arizona BB:14:24.
b, c, d, abrading stones; a, fragment of abrading stone
with holes drilled from both sides; e, f, rubbing stones,
for polishing pottery (?); g, h, i, rubbing stones. Length
of h, 11.5cm.



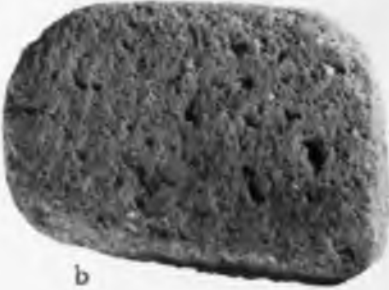
a



e



f



b



g



c



h



d



i

Fig. 27. Assorted small stone tools from Arizona BB:14:24.

a, grooved handstone; b, small stone held between finger tips;

c, fragment of arrow-shaft straightener with 2 grooves;

f, plane; d, e, anvils; g, h, pestles, Length of g, 16cm.



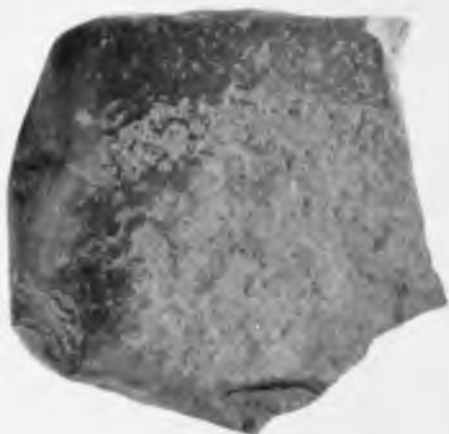
a



b



c



d



e



f



g



h

Fig. 28. Smaller stone items from Arizona BB:14:24.

b, c, d, projectile points; a, unfinished projectile point;

e, paint palette; f, biotite; g, h, ceremonial (?)

pebbles; i, k, knives; j, knife fragment. Length of

palette, 13cm.



a



b



c

d



e



f



g



h



i



j



k

Fig. 29. Shell, bone and horn items from Arizona BB:14:24.

a, modified Glycymeris shell; b, c, unmodified Glycymeris shell; d, shell bead; e, shell nose skewer; f, g, shell bracelet fragments; h, bone awl; i, horn flaker fragment; j, bone rasp fragment; k, bone scraper. Length of h, 14.5cm.



FUNERARY PRACTICES

The funerary customs associated with Arizona BB:14:24 closely parallel those of Tanque Verde Ruin. Three cremations were uncovered at Arizona BB:14:24 --two of them in mortuary urns. All three were placed in pits seemingly scattered at random through the village. One inhumation was intruded into the fill of House No. 4.

Cremation No. 1 (in Test Trench 2 - south end; 37cm. below the present ground surface): an adult, probably female, bones deposited in trashy soil, most of them in a small pocket, but some of them scattered over an area 30cm. across. (See Fig. 5).

Cremation No. 2 (in Test Trench 1 - south end; 23cm. below the present ground surface): adult female, bone fragments placed in remnants of a plainware urn and urn then buried near center of ridge on which site is located, with its undamaged side down and mouth turned to the north. (See Fig's. 5; 18, b; 30).

Cremation No. 3 (in Test Trench 1 - south end; 17cm. below present ground surface): adult female, bone fragments placed in bottom portion of a corrugated urn and then urn buried near center of ridge. (See Fig. 5).

Inhumation No. 1 (intruded into the ashy deposits resulting from the destruction of House No. 4; 70cm. from north wall, 90cm. from east wall, and 15cm. above floor): child 1-3 years old, a few cranial fragments and cervical vertebrae, in very poor condition due

Fig. 30. Cremation No. 2 in position in Test Trench 1-south
end. Mouth of urn opens to north; length of trowel, 25cm.
(Urn is b, Fig. 18).



Fig. 31. Cache No. 1, Arizona BB:14:24, when first exposed in Test Trench 2-North end. Rocks, mano fragment, hoe fragment, sherds, sherd with hole in it, uppermost; measuring stick shows size of cache in inches.



to fragility of bones and disturbances by plant roots and rodents; as a result, it is with only limited validity that the burial position can be described as supine, head east, face up; no associated funerary objects.

Although the bone fragments from cremations were painstakingly removed from their containers and the urn contents sifted, nothing in the way of ornament or offering was found mixed with the bones. The cremation sample is too small to deny the inclusion of personal belongings and small offerings with the deceased prior to ignition of the crematory fire. The urn in which No. 2 was placed shows evidence of having passed through the fire: darkened with soot, warped, and one side fragmented by the fire's heat or by the weight of wood placed above it. The corrugated urn which served as the container for Cremation No. 3 seems to have been dealt with similarly, although the upper portions may be missing as a result of its placement close to the present ground surface. Probably in both cases, ashes and bone fragments were gathered up and placed in whatever container happened to be handy--in these two instances the remnants of pottery offerings. Perhaps the absence of an urn in the case of Cremation No. 1 may indicate nothing more than that accompanying pottery offerings were too completely destroyed by the crematory fire to be useful as containers for the bone fragments.

The discovery of pieces of cremated human bone at six other places at Arizona BB:14:24 suggests that disturbance after the bones had been deposited was not unusual (whether through natural or human

agencies, or whether during or after the occupation of the site could not be determined). Five of the six bone lots were found in trash contexts; two pieces of a burned human femur, however, were removed from the lower and floor fill of House No. 4. For want of a better explanation, I will have to suppose that they were carried down to that level by some burrowing animal.

Eighteen cremations were recovered from Tanque Verde Ruin, 17 of them in urns, one uncontained (Haury 1928a: 5). No inhumations were found. Although it was reported that the cremations were removed from two "burial grounds", one at the south end of the village and the other near the northeast corner (Fraps 1935: 3), I imagine that more extensive digging would have revealed cremations scattered around throughout the dwelling area with a slight tendency to concentrate them in areas with less traffic at the time of cremation. Certainly the proximity of the cremations to houses on both ridges indicates that the Tanque Verde people had no fear of the dead. Keeping in mind that no extensive broadsides were undertaken at either site to remove cremations and that many more must still be there, the number of cremations is sufficiently large to preclude the possibility that there are burial grounds elsewhere.

A discrepancy exists between the number of crematory urns (17) mentioned by Haury and the number of vessels from Tanque Verde Ruin catalogued as crematory urns in the files of the Arizona State Museum (15). There is a further incongruity in that Haury described five of the 17 as "Red-on-buff" (now called Red-on-brown), one as

corrugated, and 11 as being plain and unslipped (Haury 1928a: 6), whereas seven of the 15 now in the museum are Red-on-brown, one is corrugated and seven are plainwares. I have no idea what the explanation for the inconsistency may be. In the face of the well-known vagaries of the early catalogue at the museum, I would prefer to consider Haury's count more valid. What is pertinent here though, is that there was no seeming preference, other than for size, for particular types of vessels for crematory urns. Only a few of the 11 urns I examined seem burned.

Again, in the cremations from Tanque Verde Ruin, no single object of a personal nature, or small offering could be positively identified: "Charred and broken fragments of bones, and occasionally a small piece of an object which might once have been a bit of personal adornment, make up the burial jar contents. ... It is impossible to determine the nature of the materials burned with the dead, for such small and so few fragments have been preserved." (Fraps 1935: 3). Recent re-examination of the contents of one urn turned up two pieces of bone objects tentatively identified as hair ornaments (Krotser & White 1964). Either the burning was effective in destroying all such objects, or more likely, the Tanque Verde people only rarely put them into the crematory fire (or possibly, too, only rarely picked them up after the fire to deposit them with the bone fragments).

Neither Arizona BB:14:24 nor Tanque Verde Ruin yielded any certain evidence of the method or place of cremation. We discovered thick white ash deposits in the fill along the north wall of House No. 4

and along the east wall of House No. 5, and it is possible, though certainly not likely, due to the danger of setting fire to adjacent houses, that the depressions resulting from the destruction of these houses were used as crematoria, as they were for trash disposal. "A large pit with many evidences of burning within it" was examined near the northeast "burial ground" at Tanque Verde Ruin (Fraps 1935: 3). But any definite statement about the method and place of cremation, as well as about true preferences for deposition of the ashes, will have to await additional work.

In lieu of evidence of a post-Tanque Verde Phase occupation anywhere in the area, the single inhumation recovered from the Tanque Verde ridges can be assigned to the Tanque Verde Phase. The cremations generally cannot be dated, except where pottery types of containing urns indicate time placement. Thus of the 21 cremations from both sites, only the six of those seven enclosed in painted urns (I will have to use the Museum's count here, because I have no way of knowing which are the five described by Haury), could be assigned to the Tanque Verde Phase (Krotser & White 1964). The decorative style of the seventh urn suggested that it was made during the Rincon Phase. There were Rincon Red-on-brown sherds near Cremation No. 1 at Arizona BB:14:24, but that circumstance is inconclusive, for the bone fragments may have been intruded later into Rincon Phase trash.

Two other kinds of information seeming to have some bearing on funerary practices were discovered during the excavation of Arizona BB:14:24. In both cases I will first state the nature of the evidence,

which is unassailable--and then, tender interpretations which admittedly will have to remain open to discussion.

Three caches of material were encountered in digging test trenches:

Cache No. 1 - (in Test Trench 2-north end; bottom of cache 40cm. below present ground surface): cache 30cm. in maximum diameter; contents composed of 112 large and small sherds, including 14 sherds Tanque Verde Red-on-brown, $\frac{1}{2}$ of the rim in 3 pieces of a large plainware jar whose mouth was 24cm. in diameter, 1 large sherd with a hole in it; 1 rock slab, 11 other rocks, 1 mano fragment, 1 whole hoe (Fig. 24, a) and 2 fragments of stone hoes, 1 incomplete stone tool; several large lumps of charcoal (see Fig. 31).

Cache No. 2 - (in Test Trench 1-south end; bottom of cache 30cm. below present ground surface): cache 60 cm. in maximum diameter; contents composed of 98 sherds, including 20 sherds of what appears to be an early type Tanque Verde Red-on-brown and 1 Tanque Verde Red-on-brown of the usual type, 4 rim sherds; 6 large fire-cracked rocks and 54 smaller ones, 1 large smashed, irregular shaped rock, 1 rubbing stone, 1 saw fragment; several lumps charcoal along with ashy material.

Cache No. 3 - (in Test Trench 1-south end; bottom of cache 60cm. below present ground surface): cache more scattered than the other two, contents composed of 22 sherds, including 12 large rim fragments of Rincon Red-on-brown jar and bowl; some rocks, 1 mano blank, 2 manos (one of which is b, Fig. 22).

For several reasons I have discarded the notion that the caches might have been nothing more than trash thrown into old cooking or storage pits. The pits themselves usually were impossible to define--cooking pits certainly would have left some trace of fire-burned earth. Moreover, "No outside fireplaces were found" at Tanque Verde Ruin (Fraps 1935: 3). And, it would be a poorly constructed storage pit that did not have identifiable walls or at least a sharp line of demarcation between the walls and trash thrown into it later. I suspect that the caches might have been offerings intended for the use of the dead.

The sherd with a hole resembling a "kill" hole drilled into it is the most convincing argument for burial association. Perhaps the tool fragments, the smashed stone, and the broken pottery rims represent another form of killing. At any rate, there is a remarkable similarity in the composition of at least two of the caches, which rules out random deposits of trash in natural depressions. All the caches were deposited in the same general areas as cremations and in pits at levels similar to those of the cremations. It would seem not at all unlikely that some food, now decayed, was placed with the tools, pottery fragments, and charcoal, which might help explain the presence of the rocks as an attempt to thwart the efforts of animals to dig up the food. The inclusion of charcoal in the bottom of the pits is interesting; it may have been intended either for the lighting of a torch to guide the individual on his journey, or for the kindling of a new fire in the other world, wherever they imagined it to be. All

these traits have demonstrated parallels in the Southwest culture area: seeming belief in an afterlife, care for and feeding of the dead, ceremonial offerings of comforts and necessities, the sacrifice of pet(?) animals as guides(?) for and the provision of torches for the journey. Admittedly, this is a tenuous web of reasoning, but I welcome any alternative explanations which I have failed to find in a search of the literature of the archaeology of the Hohokam area.

At the Grewe Site, a Gila Hohokam village near Casa Grande Ruin, an offertory area was exposed:

Just east of Cremation Area II, test work brought to light various small deposits of artifacts of pottery, bone, stone, and shell of exactly the same character as those encountered in the burial ground. At first, because of the similarity of the appearance of the deposits when exposed to view, to the deposits over the cremation pits, it was deemed that another group of graves had been found. However, further work showed clearly that these deposits were not related in any way to any burials within that particular area.

These small heaps of pottery, paint palettes, mirror bases, arrowheads, bone tools, deer antlers and mountain sheep horn cores were found at irregular intervals, yet they seemed to have been regularly formed. Certain pottery vessels for example had not been cast haphazardly upon the piles, instead they had been broken into four or five pieces and each piece had been placed, one at a time upon various parts of the deposit.

The deposits were approximately six inches thick and three feet in diameter. They all rested on what appeared to have been the original surface of the ground at the time of their origin. They were grouped together fairly closely, yet without any apparent order or arrangement. ...

The only large stone axes found on this site were recovered, badly burned and shattered, from one of these deposits. (Woodward 1931: 14).

The resemblance between these deposits and the caches uncovered at Arizona BB:14:24 are sufficiently close to warrant mention. And it has been suggested to me that such deposits or

caches possibly have been found at other Hohokam sites, but their significance not appreciated (conversation with J. Cameron Greenleaf). The two Sacaton Phase "crematory mounds" at Snaketown could represent offertory areas (Gladwin, Haury, Sayles, Gladwin 1937: 95).

The other information which I mentioned is concerned with the circumstances surrounding the destruction of at least one, and possibly two of the houses at Arizona BB:14:24. As described earlier, House No. 4 was burned with a large number of items of material culture in place. Every object removed from the floor of that house had been smashed, while most of the objects that seemingly originally lay on the roof were, except for the pottery, still undamaged despite their fall into the room interior. At first I thought that the weight of the roof had smashed everything inside the room, until I began restoring the pottery and for the first time noticed two important things. First, one of the large storage jars had been smashed by a sharp blow concentrated on such a small area of the exterior as to leave a hole in the vessel wall similar to a "kill" hole. And then, a number of sherds from another jar had retained their original colors, I suppose, by having been protected from the fire by the uppermost sherds. From which evidence it is possible to infer with some accuracy that the damage to at least these two jars was deliberate and preceded the fire.

An enemy attack, accidental firing, vandalism, or a funerary rite could have been responsible for the destruction of the house.

The enemy attack theory can be discarded, for it would seem highly unlikely that the people of the Tanque Verde settlement would have continued to live there in their exposed situation, if the enemy were strong enough to make forays into their villages and with such deliberate care damage their possessions and set fire to their homes. (Recall that House No. 4 is an earlier type and there is nothing to suggest a gap in occupation during the Tanque Verde Phase at either site). Accidental firing would not explain the deliberate destruction of the objects on the floor, and in addition, I cannot think of these houses as being, except for the roof, especially flammable, with adobe being the chief building constituent. Haury's field notes mention only one house (No. 9) at Tanque Verde Ruin as having been burned and this was confirmed in a conversation with Haury. Vandalism seems altogether an unsatisfactory explanation.

It is my estimate that House No. 5, had it been completely excavated, would have yielded the same evidence as House No. 4. We encountered the same thick ash deposits above the floor, a few burned objects associated with its roof, and large segments of the adobe plaster turned a brick-red color by the intense heat of the fire. Together, the two houses lead me to connect their destruction with a funeral rite intended to destroy all the belongings of the deceased, possibly to free their spirits for use by the deceased in the next world. The practice, although ascribed to the Pima in historic times, would seem to have passed out of fashion by the end of the Tanque Verde Phase. The only obstacle I can anticipate to accepting the funerary

association is the puzzling fact that no Type 1 houses excavated at Tanque Verde Ruin, according to field records, were found in the same condition as House No's. 4 and 5 at Arizona BB:14:24. Perhaps the custom was not mandatory, and perhaps only accorded to a few important individuals or to the last surviving member of a family or to the head of an extended family. Perhaps it was an older tradition preserved only by the families who lived at Arizona BB:14:24, or perhaps a house was burned only when someone actually died inside it.

Room 5, D4 at University Indian Ruin, also a Type 1 Tanque Verde Phase house,

... appeared to have been destroyed by fire, for the walls and floor were burned black, and the floor bore a quantity of black ash and several pieces of charcoal. On its north side was a mass of burned twigs. No sherds were found upon the floor, but three intact vessels rested upon it. A plainware jar, upright, was half-filled with black and grey ash and charcoal, and contained a trace of decayed vegetal matter in its bottom. Another, smaller, plainware jar lay on its side 50cm. north of the first. Near the corner of the room lay an inverted Pantano Red-on-brown dipper (Hayden 1957: 50-51).

But I am still puzzling over Kelly's statement that at the Hodges Site "with a few exceptions only the late Tanque Verde Phase houses produced restorable decorated vessels..." (Kelly 1961: 7). I do not claim that either of these two situations has a bearing on my interpretation of the two burned houses at Arizona BB:14:24, but I mention them should someone else later be able to verify the practice in other Tanque Verde villages.

PART III

SURVEY

As soon as it became apparent that the material from Arizona BB:14:24 closely resembled materials recovered from Tanque Verde Ruin and that the two adjoining ridges were occupied at the same time, it seemed advisable to examine other ridges nearby for other contemporary remains. Preliminary to this, I wanted to find out how many sites within a distance of a few miles were already known. I soon realized that it was going to be a task of some proportions. No archaeologist had systematically explored the area, but I was able to obtain some reliable information about a few sites. Everywhere it was a casual thing--most sites were recorded only after someone had stumbled on them by accident. Therefore, the sites listed here should not be misconstrued as an exhaustive inventory of the prehistoric settlements along Rincon Creek and the central Pantano.

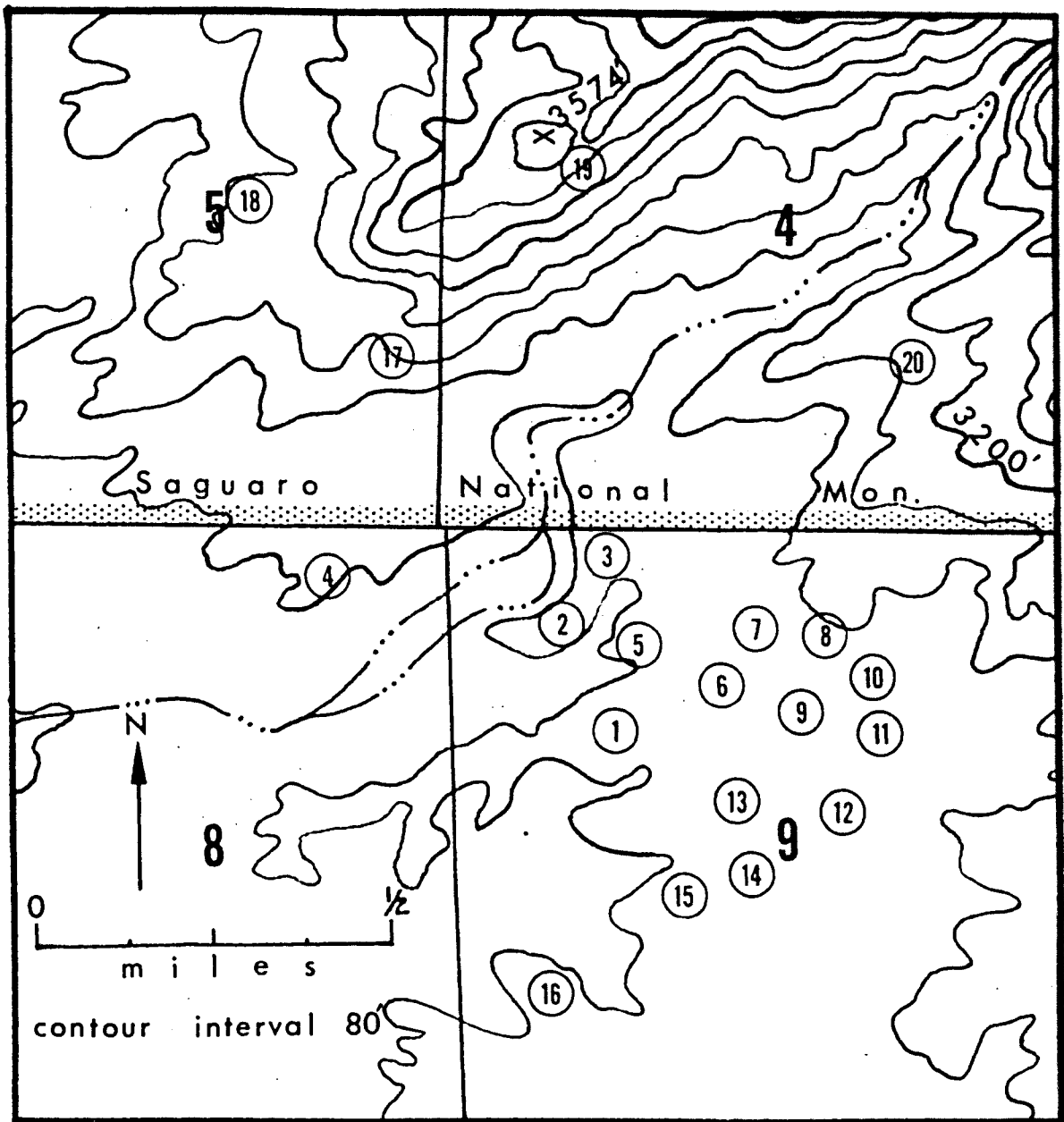
More than 20 sites, some of which showed a Tanque Verde Phase occupation and to which the inhabitants of Tanque Verde Ruin and Arizona BB:14:24 might easily have walked, have been known for many years. The location of these sites is shown in Fig. 33-- although a few of the sites may not be accurately located, for I did not visit them and early records of them are often extremely vague. Information about the sites and other unrecorded ones, none of them much over ten miles from Arizona BB:14:24, was obtained from three sources: the Arizona State Museum, Saguaro National Monument Headquarters, and the

limited survey conducted by myself. Though the most comprehensive of all sources, the Museum files are deficient chiefly in that most of the sites were recorded long ago, when little was known about the archaeology of the area, and in that no recent attempt has been made to look for more sites there. A base map and a folder of notes on the archaeology of Saguaro National Monument, on file at the Visitor Center, were a second source. They were of little value, for again no one had taken extensive pains to record sites even on the Monument. Only six sites were shown on that base map; no marked sherd collections were available. A National Park Service contract for a survey of the Monument is in progress, but for the time being practically nothing is known about what cultural remains are to be found there. Although we did look at some sites on the Monument, we were prohibited by federal law from making surface collections. Finally, through the generosity of local land owners and by prior arrangement with the Arizona State Museum where state land was involved, we were able to conduct a careful survey of the ridges in the immediate vicinity of Arizona BB:14:24 during the summer of 1964. This survey can be considered reliable and complete for sections 8 and 9 of township 15 south, range 16 east.

Something should be said about the survey procedures we adopted on account of the unusual terrain and the area to be covered in the time available. We found that pottery littered almost every ridge top in the immediate vicinity of Arizona BB:14:24, but had also been washed into and down many stream beds. Moreover, surface pottery

Fig. 32. Arizona BB:14:24 and adjacent sites in sections 4, 5, 8 & 9, T15S, R16E.

- | | |
|----------------------|------------------------------------|
| 1. Arizona BB:14:24 | 11. Survey, No. 4 |
| 2. Tanque Verde Ruin | 12. Survey, No. 3 |
| 3. Arizona BB:14:2 | 13. Survey, No. 10 |
| 4. Survey, No. 15 | 14. Survey, No. 2 |
| 5. Survey, No. 14 | 15. Survey, No. 1 |
| 6. Survey, No. 7 | 16. Survey, No. 13 |
| 7. Survey, No. 6 | 17. Arizona BB:14:3 |
| 8. Survey, No. 12 | 18. Arizona BB:14:21 |
| 9. Survey, No. 11 | 19. Survey, No. 8 |
| 10. Survey, No. 5 | 20. Saguaro National Monument 1002 |



**Table 3. Sherd counts, Sites Surveyed Summer 1964. NC = no
count.**

Sherd Counts, Sites Surveyed Summer 1964

	Total	Plainware	Corrugated	Other textured	Redware	Pantano Red-on-brown	Tanque Verde Red-on-brown	Rincon-Rillito Red-on-brown	Unidentified Red-on-brown	Hohokam Polychrome	Intrusive	Worked Sherds	Unknown
Surface Arizona BB:14:24		NC	28		16	1	390	40	345		1	1	1
Site 1	139	109			4		5		21				
Site 2	2						1	1					
Site 3	96	92					2	2					
Site 4	15	8					2	2	3				
Site 5	160	121	5		1		25		8				
Site 6	94	63	3				18		10				
Site 7	104	41	6				37	7	12				1
Site 8	3	1							2				
Site 9	No collection												
Site 10	75	59	1				5		10				
Site 11	25	22					1		2				

Sherd Counts, Sites Surveyed Summer 1964
(cont'd)

	Total	Plainware	Corrugated	Other textured	Redware	Pantano Red-on-brown	Tanque Verde Red-on-brown	Rincon-Rillito Red-on-brown	Unidentified Red-on-brown	Hohokam Polychrome	Intrusive	Worked Sherds	Unknown
Site 12	187	164	4		1		5		13				
Site 13	47	35			1		1	3	6				1
Site 14	25	NC	6		NC		9	2	7		1		
Site 15	56	47			2		3	1	3				

Table 4. Sites in the Rincon Valley, Southeast of Tucson,
Arizona. Type of site indicated in third column: V = village,
RS = rock shelter or shallow cave, P = petroglyphs.

Sites in the Rincon Valley Southeast of Tucson, Arizona

<u>Site Designations</u>		<u>Type Site</u>	<u>Phases Represented</u>			<u>Map References</u>	
<u>Arizona State Museum</u>	<u>Other Designations</u>		<u>Tanque Verde</u>	<u>Rincon-Rillito</u>	<u>Cochise</u>	<u>Figures</u>	
						32	33
Arizona BB:13:10		V	X				
Arizona BB:14:1 (Tanque Verde Ruin)	Tucson 9:5	V	X	?		2	1
Arizona BB:14:2	Tucson 9:6	V	X	X		3	1
Arizona BB:14:3 (Freeman Site)	Site No. 9	V		X		17	2
Arizona BB:14:7		RS	X				13
Arizona BB:14:8	Tucson 9:1	V	X	?			14
Arizona BB:14:9		RS	X				15
Arizona BB:14:10	Tucson 9:2(?)	V	X				9
Arizona BB:14:11		V		X			10
Arizona BB:14:14		?			?		17
Arizona BB:14:15		?	X				18
Arizona BB:14:16		V?	X	?			19
Arizona BB:14:20		RS	X				

Sites in the Rincon Valley Southeast of Tucson, Arizona (Continued)

<u>Site Designations</u>		<u>Type Site</u>	<u>Phases Represented</u>			<u>Map References</u>	
<u>Arizona State Museum</u>	<u>Other Designations</u>		<u>Tanque Verde</u>	<u>Rincon-Rillito</u>	<u>Cochise</u>	<u>Figures</u>	
						32	33
Arizona BB:14:21	S. N. M. 1006	P	?			18	3
Arizona BB:14:22		V		X			
Arizona BB:14:24		V	X	X		1	1
	Tucson 9:3	V	X				8
	Tucson 9:4	V	X				8
	S. N. M. 1001	?	*				16
	S. N. M. 1002	?	*			20	4
	S. N. M. 1003	?	*				7
	S. N. M. 1004	?	*				11
	S. N. M. 1005	?	*				12
	Site No. 1	V	X			15	
	Site No. 2	?	X	X		14	
	Site No. 3	V	X	X		12	
	Site No. 4	V	X	X		11	

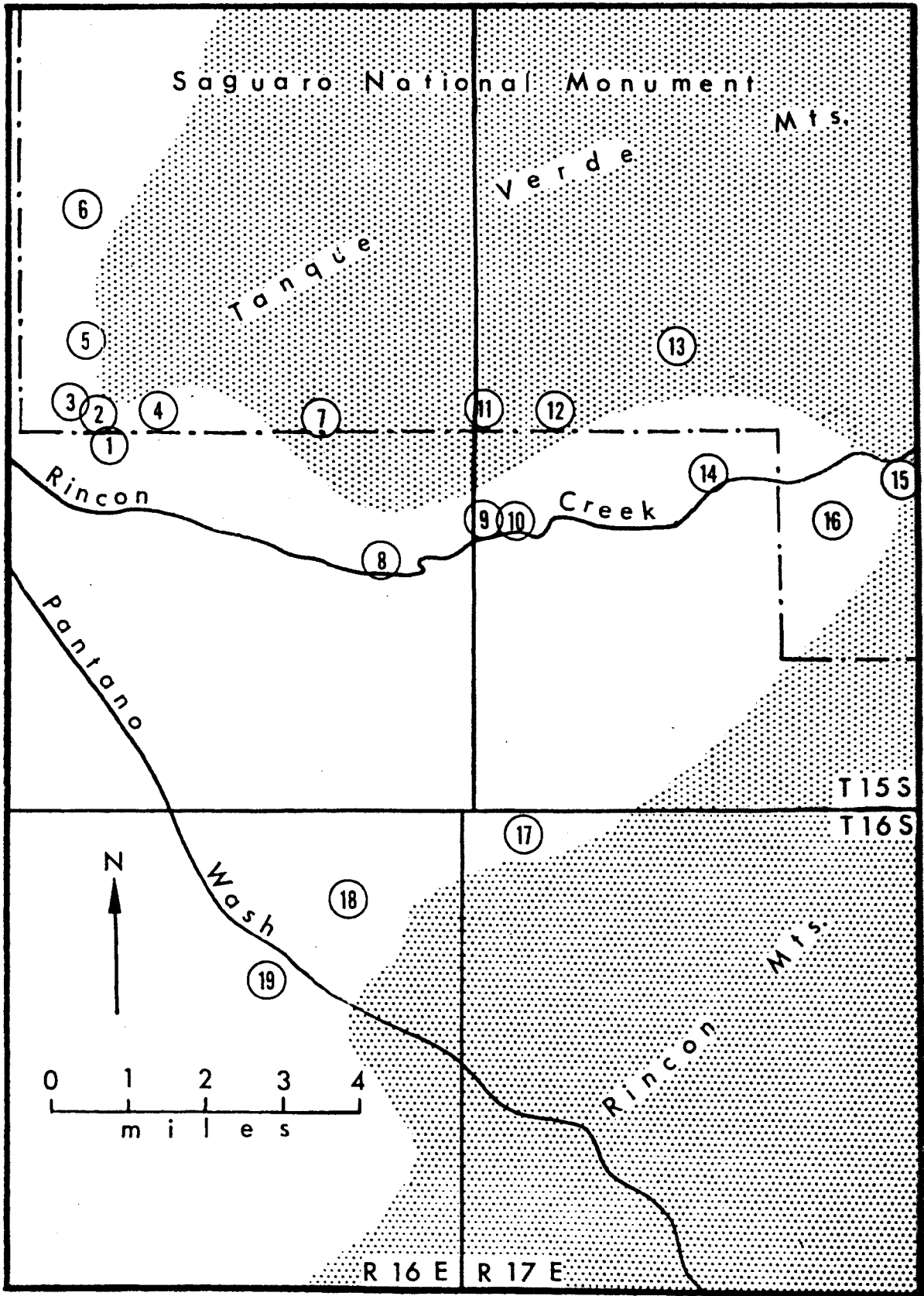
*No sherds available

Sites in the Rincon Valley Southeast of Tucson, Arizona (Continued)

<u>Site Designations</u>		<u>Type Site</u>	<u>Phases Represented</u>			<u>Map References</u>	
<u>Arizona State Museum</u>	<u>Other Designations</u>		<u>Tanque Verde</u>	<u>Rincon-Rillito</u>	<u>Cochise</u>	<u>Figures</u>	
						32	33
	Site No. 5	V	X			10	
	Site No. 6	V	X			7	
	Site No. 7	V	X	X		6	
	Site No. 8	RS	?	?		19	
	Site No. 10	V	X			13	
	Site No. 11	V	X			9	
	Site No. 12	V	X			8	
	Site No. 13	V	X	X		16	
	Site No. 14	V	X	X		5	
	Site No. 15	V	X	X		4	

Fig. 33. Sites in the Rincon Valley, southeast of Tucson, Arizona.

1. Arizona BB:14:24, Tanque Verde Ruin, Arizona BB:14:2
2. Arizona BB:14:3
3. Arizona BB:14:21
4. Saguaro National Monument 1002
5. Saguaro National Monument, no number
6. Saguaro National Monument, no number
7. Saguaro National Monument 1003
8. Tucson:9:3, Tucson:9:4
9. Arizona BB:14:10
10. Arizona BB:14:11
11. Saguaro National Monument 1004
12. Saguaro National Monument 1005
13. Arizona BB:14:7
14. Arizona BB:14:8
15. Arizona BB:14:9
16. Saguaro National Monument 1001
17. Arizona BB:14:14
18. Arizona BB:14:15
19. Arizona BB:14:16



assuredly had been mixed by human collecting activity over the years. Collecting sherds on the basis of terrain made no sense, because often ridges were obviously part of the same occupational unit. If we were to think of a site as an area of contiguous and contemporaneous dwellings erected by some social unit such as a village, then to have observed this on the ground would have been extremely difficult. Trying, under these circumstances, to locate the end of one temporally limited area of occupation and the beginning of another would have unnecessarily consumed a great deal of time.

Instead, we settled on making sherd collections from places where they seemed most abundant (usually, but not always from only one ridge), and then numbering the samples in the order of recovery. We then located these numbers on an enlarged portion of a U. S. Geological Survey map and made some notes about the location from which the samples were taken. In this way we were able to cover the ground rapidly, to collect the pottery that would answer our questions about the extent of each prehistoric occupation, and to provide datum points that could be grouped together on the basis of pottery analysis and labelled as one site, or could be considered in themselves coterminus with a site.

The collections reveal a number of things, but leave far more unsaid. The main occupation of the area around Arizona BB:14:24 occurred during the Tanque Verde Phase. At only seven datum points in our survey was there any indication of earlier settlement during

the Rincon and Rillito Phases. Although it could be that counts of survey pottery are misleading because the superior Tanque Verde trash has buried most of the earlier material, the full, widespread, exploitation of the ridges seems not to have taken place until the Tanque Verde Phase. The Colonial Period Hohokam pottery types at the Freeman Site (Arizona BB:14:3) and a single Pantano Red-on-brown sherd from Arizona BB:14:24 provide initial and terminal dates respectively for the area. According to the existing chronology, this would mean the presence of considerable numbers of prehistoric people in the Tanque Verde foothills during the period beginning sometime after A.D.500 and ending before A.D.1300.

The Tanque Verde occupation is the only one about which there is sufficient information based on survey and excavation. The settlement pattern then is an interesting one. We shall have to abandon the notion that there were several small villages scattered across the ridges; Tanque Verde Ruin is not, according to the evidence, a small village set apart by itself. Rather, like Arizona BB:14:24, it is only one cluster of houses on a flat ridge top. What the cluster represents is not presently susceptible to a clear answer. Extended families, or perhaps clans, might have occupied the groups of houses. Perhaps the houses, except for contiguous rooms, represent the rebuilding of houses over the years by a single family, with only a few houses occupied at any one time. It is equally feasible that the distribution of the Tanque Verde people over the ridges was completely

at random, based on no kinship or other coresidence principle. I am intrigued with the possibility that styles of pottery decoration might indicate something about a continuity of occupation in the dwellings of one ridge. Large samplings of pottery closely associated with houses from many different ridges might allow us to associate some designs with particular house clusters, and to trace the designs changing through time as particular preferences for decorative effects, within the limits prescribed by the fashions of the times, were passed from generation to generation. According to reports (Johnson 1964: 128), analysis of this kind has yielded evidence of matrilineal descent groups elsewhere in the Southwest.

Coordinating information from all sources, I offer the following tentative outline of the prehistory of the Rincon Valley. Only one intrusion by preceramic peoples at Arizona BB:14-14 is known and it almost certainly is unrelated to the later cultural events of the valley. Assessing the scanty evidence available now-- it seems that the valley was first entered by large numbers of people, Hohokam emigrants who left the larger watercourses during the late Colonial Period to utilize the opportunities for floodwater farming presented by the numerous small streams that once flowed out of the mountains and through the low, but highly eroded, foothills that rim the Rincon Valley on all sides at the 3000-4000ft. level. The early villages seem to have been compact, small in size, and located near the larger streams. Gradually, as population increased and the people became more familiar with their surroundings, their numbers

augmented perhaps by additional arrivals from the Hohokam communities to the northwest, subsidiary villages were established. The population increase ultimately culminated in the Tanque Verde Phase in widespread, dispersed settlement areas whose considerable extent is hardly yet appreciated. The bulk of this occupation seems concentrated on the north side of the Rincon Valley, but I suspect that extensive survey efforts would yield additional Tanque Verde Phase sites on the south side and at the east end of the valley. Prior to the arrival of the Salado tradition in the Tucson area and for reasons which are at best uncertain, it is consistently clear that the Tanque Verde Phase peoples gradually drifted away, seemingly peacefully, abandoning their villages in the Rincon Valley to the empty years ahead.

Sherds and projectile points have been collected in the mountains on whose west flanks the Rincon Valley rests. Rock shelters, sometimes with pictographs on their walls, and small caves, such as at Survey No. 8 (See Fig. 32), usually near the 4000' level, have been known for years. Fostered by the tortuous topography of the Rincon Mountains, stories of masonry ruins and walled-in caves in the more inaccessible reaches of seldom visited canyons persist. It is quite possible that some infiltration of these areas took place from the direction of the San Pedro Valley, but although prudent enough to refrain from discounting the stories a priori, I still put little stock in the possibility that any prehistoric people stayed there very long. Certainly the Tanque Verde people, with their

demonstrated preference for a sedentary, agricultural way of life did not. The elevations above 5000', where few plants of food value grow, are inhospitable to a neolithic economy, and are especially so during the winter months. Undoubtedly, the ancient peoples who farmed the Rincon Valley made hunting forays into the mountains, camping there for brief periods. Perhaps the mountains afforded them refuge during periods of social duress, or when water sources failed. I do expect, however, that an exhaustive survey will support my belief that the mountains have few secrets to reveal.

THE TANQUE VERDE PHASE AND CONCLUDING REMARKS

In only one sense is this the final chapter of this paper. Interpretation in depth of the prehistoric remains in the Rincon Valley, despite all the intervening years between the first and the most recent excavations, has not yet been initiated. It is also true, and far more important, that the archaeology of the southern part of the Southwest is currently in a state of flux, with strong theoretical stances holding the field for a time, which gradually then slip away into professional abattoirs presided over by numerous new names and fitted out with new ideas. This is exactly as it should be: the time has come to dispatch with as little blood-letting as possible many old schemes, old theories, and old professional rivalries. The Hohokam and Mogollon cultural sequences do need systematic reappraisal. I am equally cognizant of the fact that what is not needed is another novel, intricate local cultural sequence applicable to a single river valley. It is this kind of provincialism that has produced vague and contradictory answers prosecuted by strong champions.

Archaeology, like life, is the "art of drawing adequate conclusions from inadequate premises." I recognize my duty, but it is not without some fear and trembling that I venture out onto a sea of controversy and contradictions, obscured by the mists of nescience and speculation. The following unresolved problems are so vital,

that I almost despair before beginning of ever coming to any adequate conclusions about the people who lived on the Tanque Verde ridges.

The Snaketown chronology has never been settled, and it is rightly or wrongly by comparison with the Gila basin phases that the other riverine manifestations of Hohokam culture, including those at Tucson, have been dated: the recently completed re-excavation of Snaketown should provide firmer dates for all Hohokam phases. In the meantime the inferential dating for all areal phases in the southern part of the Southwest is generally crude and unreliable, with intrusive items for the most part providing the only clues to time correspondences. At the same time slight consideration has been given to the length of time required for the migration of cultural traditions, and to the possibility that both material and non-material cultural traits might be expected to show up much later in a refuge than in the home area. Conservatism and stagnation might deny extinction to a specific trait that had already waned in its home area. The cultural influences and migrations that washed over the Tucson Valley in prehistoric times seem to have come primarily from the north, and only secondarily and sporadically from the south. We should expect sloping time horizons from both directions.

Who were the Hohokam, and what affinities do they possess to adjacent peoples? The Hohokam-Mogollon problem is not only less near settlement, but the lines of interpretation have been extended in very different institutionalized directions. Might they have recognized

some tribal ties, or should they be considered separate and distinct peoples? Were the Hohokam indigenous descendants of the Cochise people as the Mogollon seem to be, or were they oppressors immigrant into a land where a people known to us only as the Ootam lived? What is the extent and nature of Anasazi (Western Pueblo) infiltration of this area? Who precisely were the Salado, and what relationships did they have with the people in the Tucson Valley? Or was the constellation of traits, traditionally called Salado in the orthodox school of thought, derived from the Sinagua area? And finally, what connections existed between the Hohokam and the prehistoric peoples of Sonora, Mexico?

To return to the Hohokam, it is sadly true that the archaeology of the Papaguería has suffered long neglect, and as a result, our lack of certainty about the kinds of similarities and differences between the two branches of the Hohokam culture is critical. But, as others insist, were the people of the Papaguería desert dwellers who accepted only a thin veneer of Hohokam culture, whose lifeway resembled more that of the desert Patayans and Sonorans to the west and south? The problem of the succession of peoples in the Pimería Alta from prehistoric to historic times still plagues us. When did Athabascan speakers arrive to harass the natives of this area? Or were the Yuma partly or wholly responsible for Salado and Hohokam movements during the 13th and 14th centuries? These and related questions feed a thriving semantic

thicket from which any investigator is bound to emerge with numerous scratches. I shall confine myself to things that I can say with some certainty and try to avoid injury. (See Jennings 1956, Chapter 12 in Hayden 1957, and Rouse 1962 for a more thorough treatment of these broad problems.)

The remains of villages that were occupied at the same time as Tanque Verde Ruin and Arizona BB:14:24 once were common in the Tucson area. In fact, sites of the Tanque Verde Phase probably far outnumbered those of any comparable time period. Great quantities of prehistoric materials lay in the fields and under the modern settlements in the valley. But the years have taken their toll. The first settlers were careless of artifacts and Indian villages--they often had living and perfidious example enough of aboriginal American culture for their liking. Then came the farmers, who also did not care, and the exurbanites who did. The modern residents of the city by digging illegally and unskillfully in the exercise of leisure time were as effective in the destruction of the remains as the bulldozers and plows. And what the city dwellers did not take, nor the farmers plow up, nor the bulldozers raze, the flood waters of the valley streams capriciously carried away. It will not be long until there will be nothing of particular value left.

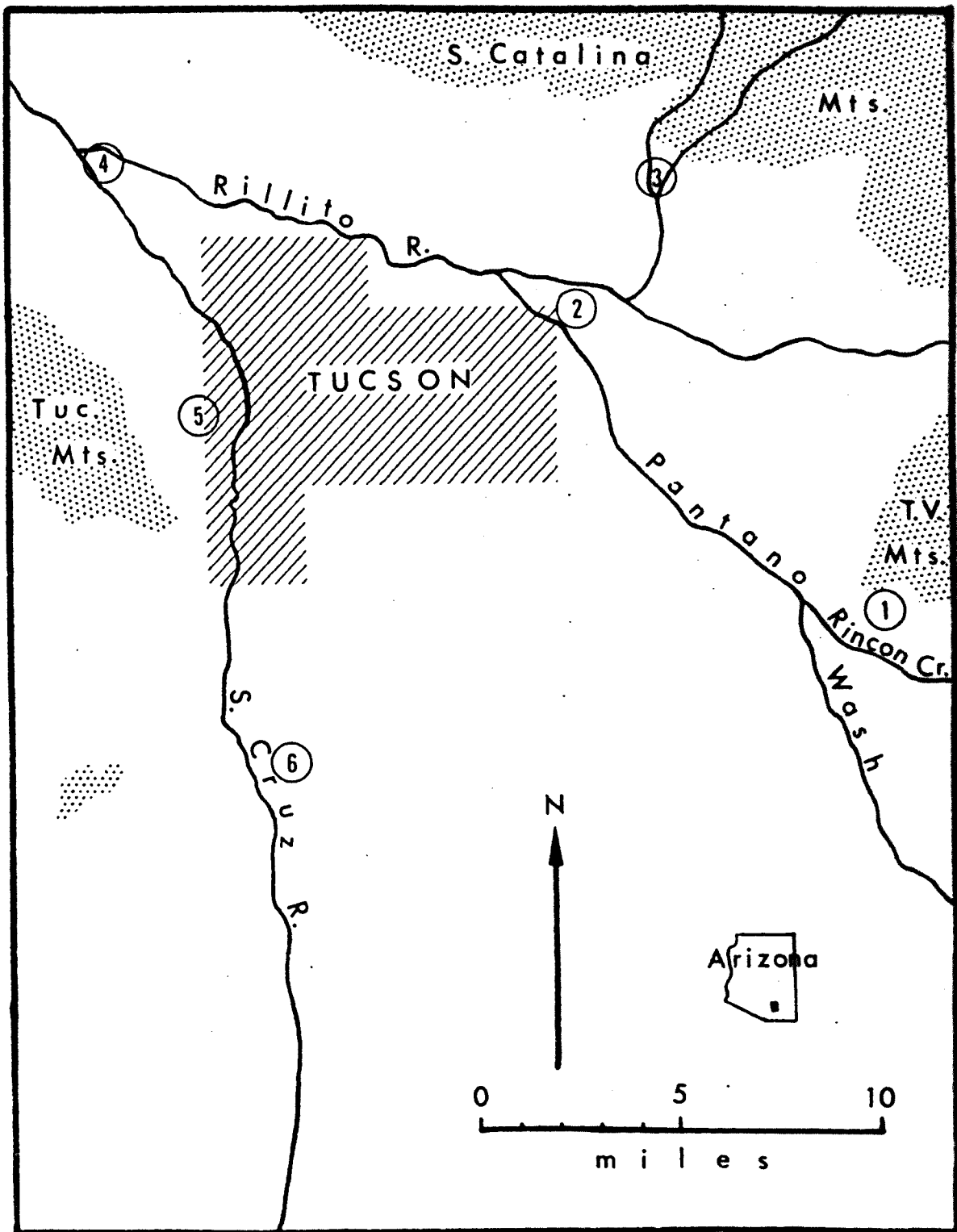
It is, therefore, difficult at this late date to estimate the original extent of the abundant Tanque Verde Phase villages. It is even arduous to describe Tanque Verde material culture, although

thousands of manufactures of the Tanque Verde people languish on closet shelves in the homes of modern Tucsonans. Somehow local archaeologists, professional or otherwise, have an easy familiarity with Tanque Verde Phase materials from numerous but uncollected examples, but they have no readily available report to which to refer to comprehend a full assemblage of the industries of the Tanque Verde people, and certainly they are lacking a full description of the Tanque Verde lifeway. Few sites are left, fewer are left untouched--and soon there will be no remedy for this peculiar malady that has for so many years sorely afflicted our understanding of the Tanque Verde Phase. The widespread acquaintance with Tanque Verde materials is scarcely a satisfactory arrangement, when knowledge of the Tanque Verde Phase as a discrete, describable way of life with spatial and temporal boundaries is extremely limited. In the paragraphs that follow, I have tried to collect together all that is known, in a general sort of way, about the Tanque Verde Phase.

The most thorough work on a site showing an extensive Tanque Verde Phase occupation was performed by Isabel Kelly for Gila Pueblo at the Hodges Site from 1936-38. A large village northwest of modern Tucson near the confluence of the Rillito and Santa Cruz Rivers (Fig. 34), the Hodges Site, was evidently occupied from Sweetwater times through the Tanque Verde Phase (Kelly's dates are A.D.300-1300). Kelly's report (Kelly 1961) has never been completed or published; the manuscript revised by James E. Officer in 1961

**Fig. 34. Major late prehistoric excavated or published sites
in the Tucson Valley.**

- 1. Arizona BB:14:24 and Tanque Verde Ruin**
- 2. University Indian Ruin**
- 3. Sabino Canyon Ruin**
- 4. Hodges Site**
- 5. St. Marys' Ruin**
- 6. Martinez Hill Site**



is on file in the library of the Arizona State Museum at the University of Arizona.

The Tanque Verde Phase was represented at University Indian Ruin northeast of Tucson on Pantano Wash. In 1940 two pithouses were excavated under the supervision of Julian D. Hayden and were assigned by Hayden to the late Tanque Verde Phase (Hayden 1957: 49-54). The descriptions of both of these rooms contain no data, other than the appearance of large amounts of Pantano Red-on-brown sherds, to prevent classing them with the Type 1 houses at Arizona BB:14:24, Tanque Verde Ruin, and the Hodges Site. Two other pithouses, which Hayden called "transitional", seem to be pure Tanque Verde Phase houses of the Type 2 variety (Hayden 1957: 10-14, 54-47). Cummings and his students had previously excavated a group of 17 rooms which seem to have been built during the late Tanque Verde Phase, but occupied into the Tucson Phase (Hayden 1957: 130). Unfortunately, as is the case with Tanque Verde Ruin, very little precise information is available for these rooms, which could have yielded so much valuable information. A brief accounting of the work appeared in The Kiva a few years later (Kelly 1936). Some notes and sherd counts from this work which I have been unable to locate are believed to be somewhere in the files of the Arizona State Museum.

Martinez Hill, south of Tucson, has yielded excellent pieces of Tanque Verde Red-on-brown, but the architecture there is for the most part like that at University Indian Ruin, and Gila Polychrome is present. Therefore, most of the excavated materials probably

belong to the Tucson Phase. Tanque Verde Phase peoples lived in that vicinity, but it is impossible to glean anything pertinent to the Tanque Verde Phase from Norman Gabel's unpublished master's thesis at the University of Arizona (Gabel 1931). The excavated portion of the nearby Zanardelli Site seems likewise to belong to the Tucson Phase (Wright and Gerald 1950).

I have already mentioned Tanque Verde Ruin and the sources of information about it. This virtually completes the inventory of professionally excavated sites. A Mrs. F. O. Knipe, recently deceased, who with her husband lived on a ranch at the upper end of the Rincon Valley in the early years of the present century and who later deeded the University Indian Ruin to the University of Arizona, did some digging in Tanque Verde Phase Villages in that area with the help of Carl Miller. If any notes were taken, they have failed to reach the year 1965. Likewise, almost nothing is known about two other villages which probably had people living near them or in them during the Tanque Verde Phase: St. Mary's Ruin (Tucson 4:10), west of the Santa Cruz and Tucson, and the Sabino Canyon Ruin (Arizona BB:9:32?). St. Mary's Ruin proper seems to be a Sedentary Period site, but unexcavated Tanque Verde Phase sites are nearby. Arizona BB:9:32, northeast of Tucson on a mesa near the confluence of Sabino and Bear Canyons, would seem to fit the description of the Sabino Canyon Ruin. A map of the site is on file at the Laboratory of Tree-Ring Research and at the Arizona State

Museum, University of Arizona (Douglas and Leonard 1920-1).

"Rectangular rows of rooms marked off by rows of stones," the three compound-like units shown on the map, and the absence of polychrome pottery argue for a late Tanque Verde Phase date. As long ago as 1938 Haury commented on the survey card that the site had been "picked over." I am sure that more than 20 years of "picnicking" in the Sabino Canyon Recreation Area have not improved the condition of the site.

Judging from their location some published fortified hill sites may belong to the Tanque Verde Phase: the Black Mountain Site near Martinez Hill village and possibly the Tumamoc Hill fortifications near St. Mary's Ruin. Ten sherds of Tanque Verde Red-on-brown were associated with the Black Mountain Site and some ten Tanque Verde Phase sites are nearby (Fontana, Greenleaf, and Cassidy 1959: 47, 49). This type of site has previously been discussed with the trincheras sites of the Papagueria and Sonora, but the true reasons for their existence and their generic origins are unknown. It has been suggested that the Black Mountain Site and Tumamoc Hill were defensive, and that a signaling system might have permitted whoever kept watch there to warn others of the approach of strangers or enemies (Fontana, Greenleaf, and Cassidy 1959: 49), although these intruders or the reasons for their incursions into the Tucson area remain unidentified.

Surveys of Tanque Verde Phase sites are as limited in scope as excavations in sites of that phase. "An Archaeological Survey

of the Rillito Drainage" was begun in 1937 by Frank Mitalsky (Midvale), but evidently it never reached completion. Many site cards filled out by Mitalsky are in the survey files of the Arizona State Museum. Later, Frick examined some 45 Tanque Verde Phase sites, as well as 10 Tucson Phase sites, 58 Rincon Phase sites, and 67 Rillito Phase Sites in the central Santa Cruz Valley just north of Tubac, Arizona, and he concluded:

It is believed the area with which this report is concerned is located toward the southern margin of the Tucson Basin Culture Area. Analysis of the site data and material culture indicates that there are few differences between the area and the more northern portions of the Tucson Basin Culture Area during the Rillito, Rincon, and Tanque Verde Phases. There appear to be some marked differences during the Tucson Phase. (Frick 1954: 128).

Some other sites which have in the past been discussed with Tanque Verde Phase sites, should not properly be considered as belonging to that phase. They do show strong similarities to the villages in the Tucson Valley and have occupations reaching into the same period of time. They are, however, at best peripheral manifestations of the phase--villages strongly influenced by contact with the Tanque Verde people and their ancestors, but likely not actually occupied by people from the Tanque Verde settlements. These include Ventana Cave (Haury 1950) and Jackrabbit Ruin (Scantling 1939, 1940). Other sites appear to represent blends of local traditions and the Tucson branch of Hohokam culture, to be explained by occasional, peaceful intrusions of the Hohokam into these areas: Texas Canyon (Fulton 1934-8), Tres Alamos Site (Tuthill 1947), and sites in the

southern Santa Cruz area, the Paloparado Site included (DiPeso 1956).

The Paloparado Site is one of the thornier problems, mostly because DiPeso has organized and interpreted his data in a way hardly calculated to simplify and coordinate what is known about the archaeology of southern Arizona. The Paloparado Site appears to be very close to some sort of cultural boundary between the Tucson Hohokam and the indigenous southern Arizona Mogollon or Ootam. There certainly was a period of intense Hohokam influence, but that the site should not be considered truly Hohokam is perfectly evident by comparison with the burial practices and the architectural sequence in the Tucson Valley. Even the Tanque Verde Red-on-brown variety that was manufactured there has the look of an imitation, particularly in design elements and seems more frequently and heavily polished (DiPeso 1956: 316). Danson, too, seemed inclined to extend the Tanque Verde phase southward up the Santa Cruz (Danson 1946), but I think excavation would reveal that those sites have traditions as mixed as the Paloparado Site.

This brings me to the necessity of establishing both temporal and spatial boundaries for the Tanque Verde Phase, a thing which cannot now be managed with satisfactory accuracy. As a result of the paucity of carefully excavated and published sites, one might be tempted to equate the Tanque Verde Phase with the range and dates for Tanque Verde Red-on-brown pottery. This produces spurious results, for Tanque Verde Red-on-brown was manufactured over a long period of

time (at least 300 years) and was widely dispersed and imitated throughout the southern part of the Southwest. In this case, the eponymous pottery is one of the poorest indicators of the phase. On the other hand, there being no other alternative, it seems advisable first to establish the range and dates for Tanque Verde Red-on-brown, and then to eliminate certain parts of its distributions from the boundaries of the Tanque Verde Phase considering other information from excavated sites.

In 1950 Haury spoke of Tanque Verde Red-on-brown as "occurring (sic) widely through south-central Arizona" (Haury 1950: 348) --"distribution extends through the Tucson area and into the San Pedro Valley" (Haury 1950: 7). Hayden, several years later, however, established limits which will probably stand the test of additional work:

Known to occur throughout the Santa Cruz River drainage, west into the Papagueria where it is the principal painted ware of the Sells Phase, and east into the San Pedro, where it is considered to be a traded pottery type which makes up 11% of the painted wares and 1.16% of the total sherds. Trade sherds are found in the Gila-Salt basin, the San Simon Valley, and northeast in the Point of Pines area in east central Arizona. (Hayden 1957: 223).

Several recent surveys provide some rather precise details to add to Hayden's general description, particularly to the south and west of the Tucson Valley. These surveys are mentioned here for reference:

To the west: Gladwin & Gladwin 1929, Gladwin & Gladwin 1930, Schroeder 1952, Ezell 1954, Breternitz 1957, Schroeder 1961.

To the south: Danson 1946, Frick 1954, Hinton 1956.

To the east: Swanson 1951, DiPeso 1953.

The surveys of Gila Pueblo, the Arizona State Museum, and the Amerind Foundation have provided adequate data for the areas especially north and northeast of the Tucson Valley. Information from all sources is incorporated into Figure 35.

The dates for Tanque Verde Red-on-brown are more difficult to establish. Haury stated that the "inclusive dates for Tanque Verde Red-on-brown in the Tucson area may be put from about A.D.1200-1300" (Haury 1950: 349). Danson placed the date for Tanque Verde Red-on-brown at "Ca. 1100-1250 or 1300, dating by intrusive pottery only." (Hayden 1957: 221). DiPeso has varied widely in his dating of the ware:

"The end date for the occupation of the Tanque Verde Village is about A.D.1200. The University and Martinez Hill Ruins were occupied until the later part of the 14th Century A.D. Thus, Tanque Verde Red-on-brown, with a few minor technological variations, lasted some two hundred years, or roughly A.D.1200-1400" (DiPeso 1951: 221).

By 1958 DiPeso had changed his mind saying that:

"This type belongs to the indigenous Ootam Red-on-brown tradition and has a long life in Pimería Alta. It is an art style which continued to be an expression of the Ootam people in historic times. It has been placed by Colton in the Santa Cruz Series of Mogollon Brown Wares." (DiPeso 1958: 147).

By making Tanque Verde Red-on-brown one of the chief ceramic components of the early part of his Ootam Reassertion Period A.D.1250-1300 to 1691; (see DiPeso 1958: 5), he was in effect pushing the chronology for the area up some 200 years.

Haury explained that his dates for Tanque Verde Red-on-brown were "based on its repeated association with Gila Polychrome of the Salado culture, which, in turn has been dated by tree-rings" (Haury 1950: 349). Tanque Verde Red-on-brown, however, was manufactured long before, during, and probably for some time after the appearance of the Salado wares, of which Gila Polychrome is the most prominent. I have made a list of a few pottery types, other than the Gila buffwares and Papaguera types, intruded into sites representative of the earlier (non-Gila-Polychrome) period of manufacture of Tanque Verde Red-on-brown; dates suggested by Johnson & Thompson (Johnson & Thompson 1963: 473-474) and Breternitz (Breternitz 1963), and a recent reference are included:

Alma Plain, A.D.300-1300 (Hawley 1950: 104-5).

Babocomari Polychrome, A.D.1250-1350 (DiPeso 1951: 123-9).

Mimbres Black-on-white A.D.1050-1250(?) (Smiley, Stubbs & Bannister 1953, Fig. 4).

Roosevelt Black-on-white, A.D.1200-1350 (Pomeroy 1962: 70).

San Carlos Red-on-brown A.D.1275-1400 (Olson 1959).

St. John's Polychrome, A.D.1175-1300 (Carlson 1961: 97-126).

The clustering of dates for intrusive pottery types associated with Tanque Verde Red-on-brown (without Gila Polychrome) falls during

the 13th Century. All of the dates for Tanque Verde Red-on-brown are misleading and should be regarded with suspicion. As matters stand now, Tanque Verde Red-on-brown seems indicative (correlated with other traits) of the change from the Rincon Phase to the Tanque Verde Phase in the Tucson Valley. The ware was manufactured there throughout the Tanque Verde and Tucson Phases, and was also manufactured in the Papaguera during the corresponding Topawa and Sells Phases, but may have persisted in the latter place for a much longer period of time. The ware was traded widely and shows up in the areas previously mentioned, in villages of the same time period.

Therefore, the Tanque Verde Phase cannot be considered synonymous with either the range or the dates for Tanque Verde Red-on-brown. For reasons touched on later, as a term, the Tanque Verde Phase should be limited to the Santa Cruz drainage, particularly in the Tucson Valley, from the time of the appearance of significant and uniform changes at the end of the Rincon Phase, to the arrival of a northern (Salado?) tradition in the valley. Although Tanque Verde Red-on-brown continued for an undetermined period of time side by side with new pottery types, the phase should be considered terminated with the appearance of the northern tradition which so completely submerged the Tanque Verde people and profoundly altered the Tanque Verde way of life. Pantano Red-on-brown, however, is not valid as an indicator of ceramic change from one phase to the other. The type itself is useful only in the understanding of the history

of University Indian Ruin and its relations with other local villages, and at no time did the ware supplant Tanque Verde Red-on-brown of which it appears to be only a late, local, heavily micaceous variant.

Tuthill assigned a "Tanque Verde" phase at the Tres Alamas Site based on only 23 Tanque Verde Red-on-brown sherds to the 12th century (Tuthill 1947: 64). Kelly equated the Tanque Verde Phase with the Soho Phase in the Gila Basin, allotting it therefore to the 13th century (Kelly 1961: 10). Everyone, except DiPeso, seems agreed that the Tanque Verde Phase is an early Classic manifestation of Hohokam culture, which, now that the Santan Phase is defunct in the Gila Basin, would permit it to be roughly bracketed by the years A.D. 1100-and 1300. I can see no other alternative, adhering to the existing chronology, to accepting these approximate figures for beginning and terminal dates for the Tanque Verde Phase. Considering information from all the sources previously referred to, and data recovered from the excavation of Arizona BB:14:24, I offer the following summary of the Tanque Verde Phase.

Summary of the Tanque Verde Phase

sites

Type Site: Tanque Verde Ruin (Haury 1927, 1928a, 1928b; Fraps 1935).

Excavated Sites: Tanque Verde Ruin, Hodges Site (Kelly 1961), parts of University Indian Ruins (Kelly 1936, Hayden 1957), Arizona BB:14:24 (Part II, this paper).

Surveyed Sites: Sabino Canyon Ruin (Douglas & Leonard 1920-1), Black Mountain Site(?) (Fontana, Greenleaf, & Cassidy 1959), and many sites in the files of Gila Pueblo and Arizona State Museum; individual surveys by F. Mitalisky, P. S. Frick (Frick 1954), and J. L. Zahniser (Chapter 6, this paper).

Kinds of Sites: large and small villages, rare trincheras sites(?), collection sites sometimes with bedrock mortars, campsites (?), small caves and rockshelters, petroglyph sites.

phase boundaries

Area: heaviest concentration in Tucson Valley along central Santa Cruz, Rillito, lower Pantano, and Rincon drainages, but extending on the north to Tortolita Mountains, on the east to Rincon Mountains, on south to vicinity of Tubac, Arizona, and on the west to the west slopes of the Tucson Mountains.

Time: approximately A.D. 1100-1300; phase equivalents are Soho Phase (Gila Basin), late Topawa and early Sells Phases (Papaguera).

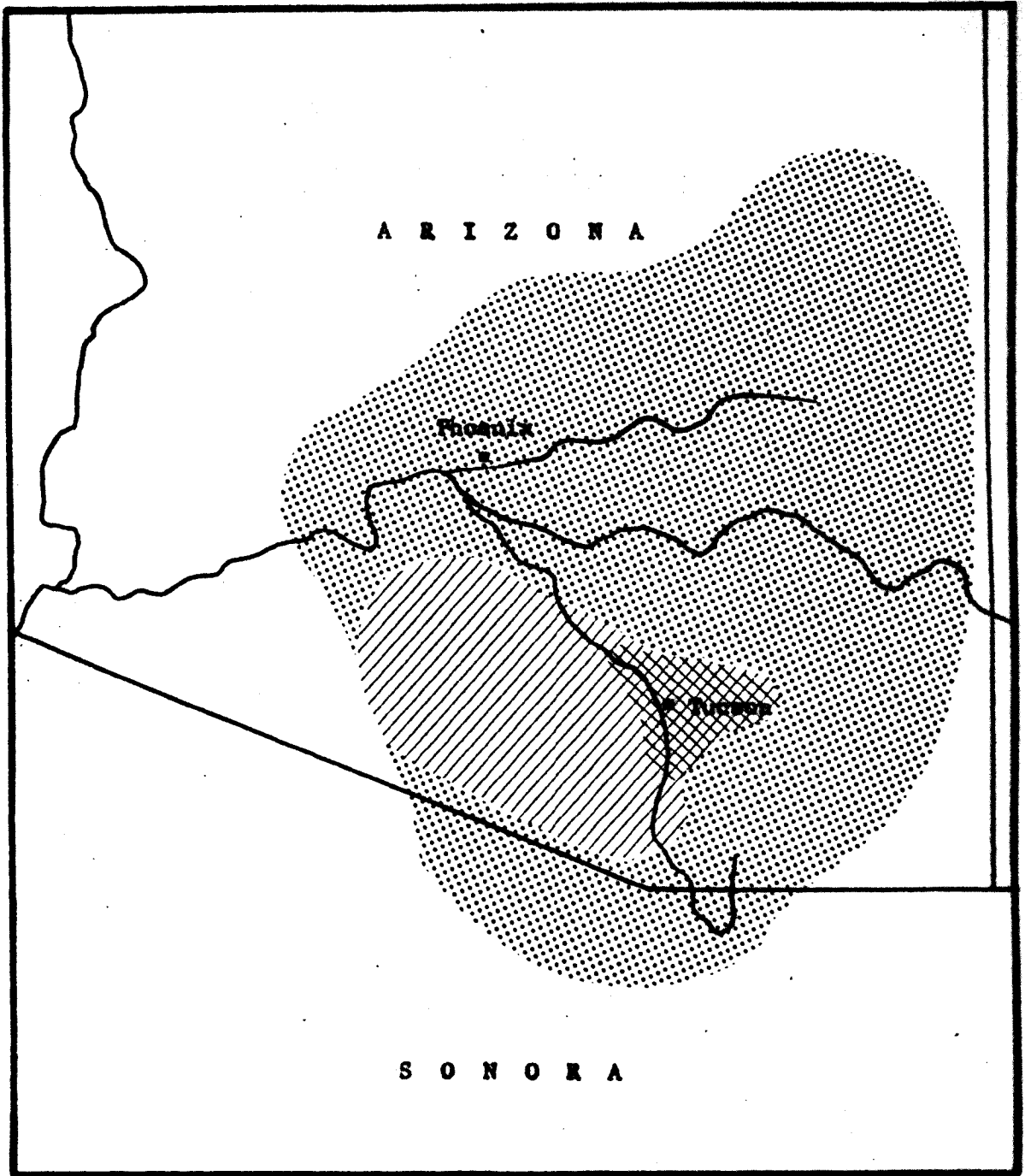
cultural traits

Village Plans: widely scattered, discrete houses, with a tendency late in the phase towards small compounds.

Architecture: true pithouses early in phase, with a transition to contiguous, adobe-walled surface rooms late in phase; no communal structures or rooms.

Subsistence: emphasis on cultivated foods and collected plant products, supplemented by limited hunting; flood-water or dry

Fig. 35. Spatial Limits of Tanque Verde Phase and Tanque Verde Red-on-brown.



Tanque Verde Phase, A.D. 1100-1300



varieties of Tanque Verde Red-on-brown indigenous, A.D. 1100-1450



Tanque Verde Red-on-brown frequently traded

farming, although location of some villages suggests possibility of irrigation.

Manufactures: pottery (Tanque Verde Red-on-brown and its smudged, slipped, polished, and transitional varieties; Gila (?) Plain; small amounts of red-slipped and corrugated pottery); abundant chipped, pecked and ground stonework; limited amounts of worked bone, horn, and shell.

Trade: principally with Gila Basin Hohokam and the Papaguería; occasionally with the people of south, southeast, and eastern Arizona; perhaps with cultures of northern Mexico.

Burial Practices: except for small children who were at times inhumed, dead always cremated and ashes placed near or within village area in shallow pits with or without containing urns; ceremonial offerings for dead uncommon, but sometimes placed in separate caches (?); occasional ceremonial destruction of dwelling of deceased (?).

cultural derivations and affinities

Derived from Gila Basin Colonial Hohokam culture, with increased differentiation during Rillito, Rincon, (which precede Tanque Verde Phase) and Tanque Verde Phases as a result of contact with Mogollon and to a lesser extent Sonoran phases, until the Tanque Verde Phase is terminated by appearance of Salado tradition (?) (Tucson Phase) in Tucson Valley.

The problem of Tanque Verde cultural affinities seems to have been unduly complicated by needless controversy. Any novice in the

archaeology of the Southwest could agree with the traditional view that the majority of the material taken from the Tanque Verde ridges and from other Tanque Verde Phase sites in the Tucson Valley most closely resembles the things excavated in the Gila Basin. The types and constructional details of houses, funerary customs, as well as almost all material manufactures lead one to the same conclusion. At the same time, there are strong correspondences between the Tucson Valley, and the Papaguería and Mogollon areas that are not shared with the Gila Basin: the greater dependence on the hunting and gathering of wild foods as opposed to the irrigated cultivation of crops, the dispersed ranchería kind of existence, and the strong similarities in pottery manufacture.

The people who first came to the Tucson Valley in considerable numbers must have been emigrant Hohokam from the Gila Basin, who for many years maintained close ties with their home communities. The early pottery in the Santa Cruz Basin series (Colton 1955: 6), particularly that from the Sweetwater through the Rillito Phases, bears a striking resemblance in form, surface, and decoration to the Gila Basin Colonial and Sedentary types of which Sweetwater-Rillito pottery are equivalents. The early villages closely resemble those along the Gila and Salt Rivers in location and arrangement. The Tucson Phases clearly mirror changes taking place in the Gila area, with a slight time lag.

For some reason, however, Hohokam influence seems to begin to wane by Rincon times and the people of the Tucson Valley, while

maintaining the old ties, tend to pursue new lines of development. It is reasonable to see in these new directions a blunting of the Hohokam cultural tradition by contact particularly with the Papaguería to the west, and with a local, indigenous culture widespread throughout south central and southeastern Arizona. Undoubtedly, it was a two-way exchange of ideas, objects, and people, which resulted in a thin veneer of Hohokam culture being extended out over the basic Sonoran traditions of the Papaguería, and the basic Mogollon traditions to the south and east.

Undoubtedly, the Santa Cruz was one of the major arteries of exchange between the Gila Basin and the Papaguería, which accounts for the appearance of Tucson rather than pure Hohokam pottery styles out in the Papaguería. It is nonetheless logical to include the Papaguería in the Hohokam sphere, particularly in the latest stages, for the Indians who lived there seemed to have been most eager to adapt themselves to the refined ways of the Hohokam. But that they did remain distinctly separate peoples, with widely differing customs (Schroeder 1960, 1964) is apparent in the evident friendship with which the Tanque Verde people received the Salado, as opposed to the defensive measures, the fortified hill sites, taken by the people of the Papaguería against the Saladoans. Wormington suggests, on the other hand that

Environment may well have played a strong part in the reaction of the two groups of Hohokam to new people. With their meager resources the people of the Papaguería could hardly accept additions to the population, while the more

prosperous group to the north, blessed with the water which means so much in the Southwest, could afford to be friendly (Wormington 1961: 144).

Events south and east of Tucson parallel what happened to the west: Hohokam culture, if not the Hohokam themselves in considerable numbers, making brief but strong incursions into territory controlled by people long indigenous there--the appearance of Hohokam traits in Texas Canyon, the San Pedro River and upper Santa Cruz followed in later years by large amounts of trade-ware from the Tucson area. The Hohokam must have been a powerful people, with tremendous vitality, to extend their hegemony over the years out of the Gila Basin into areas where Hohokam culture had been either marginal or completely nonexistent. One is tempted at times to support DiPeso in seeking the source of this strength from without the Southwest, in the more advanced civilizations to the south, with whom the Hohokam at the very least had good trade connections.

The first group of settlers in the Tucson Valley thus might be characterized as the vanguard of Gila Hohokam penetration into foreign territory to the south which for unknown reasons foundered. And we can see in the Tucson Valley a late amalgamation of principally Hohokam and Mogollon, and to a lesser extent Sonoran ways. This is particularly evident in the Tanque Verde Phase. At the same time that the major settlements were springing up in the Tucson Valley--i.e. Colonial times,--Mexican influences seem to have entered the Hohokam area in force. The Santa Cruz Valley must have been directly on the

route of exchange between the Hohokam and Chalchihuites cultures, the latter now considered to be the source of Mexicanization:

It looks as if the Hohokam fell under strong influence from the developing Chalchihuites culture (and perhaps also other North Mexican cultures on the Tula-Mazapan horizon) shortly after A.D.500 or 600, possibly as much through actual traders as through diffusion from one intervening group to the next. As the Tula-Mazapan cultures became stronger and more widespread in North Mexico, the geographic gap between them and the expanding Hohokam culture was reduced and through accumulative pressure, the former essentially dominated the latter by the end of the millennium (Jennings 1956: 94).

One wonders if the Tucson settlements might not have been a planned effort to bridge this geographic gap between the cultural centers.

There has been a tremendous amount of confusion in the literature about the cultural affinities of the Tanque Verde Phase itself. This is evident in the classification over the years of Tanque Verde Red-on-brown in the Gila Buffware tradition, then as a local brownware variant of the buffwares, then as an indigenous Mogollon--or Ootam--Brownware, and finally as a Sonoran Brownware (Ezell 1954: 16). It would seem to make more sense to begin to give more singular, unique status to the phase and its principal associated pottery type.

And I cannot see a need for postulating any violent social upheaval or influx of non-Hohokam people to explain the phase. Extensive excavation in the Rincon Valley probably would demonstrate a smooth regular--though pronounced--transition from the Sedentary to Classic Phases. I am thus inclined to take issue with Kelly's remarks to the effect that: "This doubtless means that the classic

complex was not evolved on the spot either at Tucson, nor at any of the Gila Basin sites so far excavated (Kelly 1961).

There very likely was a shift in political prominence from the Gila Basin to the Tucson Valley--the refuge and revetment of the Hohokam Empire in Tucson after its decay in Classic times in the Gila Basin, a decay which might have set in as a result of agricultural problems, shrinking water supply, strength of Salado usurpers, etc. It would seem logical to envision the assumption of dominance by the Tanque Verde people, with perhaps a slight tendency to restrict direct political action to some sort of loose league of villages in the central Santa Cruz Valley. The Tanque Verde people probably assumed, as well, the respect accorded the Gila Hohokam by the other peoples of the southern Southwest into whose villages the Gila Hohokam had moved in Colonial times, down the San Pedro, far down the Gila and Santa Cruz valleys. This theory certainly helps explain the peculiar distribution of the widely imitated and traded Tanque Verde Red-on-brown and the mysterious, widespread expansion of the Tanque Verde Phase villages in the Tucson Valley.

To return to the Tanque Verde ridges--although decidedly a part of this early Hohokam incursions southward, the Rincon Valley seems to have fallen into the backwash of the move forward. The people who came here in such numbers in the early part of and perhaps throughout the Sedentary period seem to have settled into a peaceful, pastoral kind of life which was to last for several centuries. True,

preserving the old ways, but with the rigidity of the old patterns fading, experimenting a little on their own, improvising and adapting to the topography of the Tanque Verde ridges, and keeping to themselves back in the hills. While large amounts of Gila wares continue to show up at the Hodges Site, few pieces get to the Rincon Valley by the time of the Tanque Verde Phase. Little trading was effected, probably the bulk of it coming from the northeast from the Salado homeland (for example, Roosevelt Black-on-white pottery), and from the Mogollon (the smudged and corrugated wares). Self-sufficient to an unusual degree, but not out of touch with their Hohokam ancestry, they evidently made a new life as best they could--and not a little unlike the old.

What caused the Tanque Verde people to leave the Rincon Valley is extremely difficult to answer. If any Gila or Tucson Polychrome had ever been brought into the valley, I might be inclined to suggest that perhaps it never was totally abandoned. But it hardly seems likely that Tucson Phase pottery types from University Indian Ruin so close by would not have in that case infiltrated the valley in some amount. Whoever the Salado were and whatever the nature of their appearance in the Tucson Valley, startling changes did take place where Tanque Verde villages continued to be lived in after A.D.1300: the move to fortifiable knolls down in the valley flats, defensible massive multi-roomed structures, the appearance of inhumation and Salado pottery styles showing resemblances to pottery far up north.

Whatever caused the movement of Salado into the Valley, might also have forced the Tanque Verde people to abandon their outlying hill villages and move together onto plains. The Ringo Site in southeastern Arizona was abandoned at about this time, its inhabitants probably moving voluntarily down to the flats in the Sulphur Spring Valley to the Kuykendall Site, a large village consisting of multi-roomed pueblos similar to University Indian Ruin (Johnson & Thompson 1963: 477). It is also interesting to note that this move took place at the time of the appearance of Salado traits in force in that area, exactly parallel to what happened in the Tucson Valley.

The 13th century was marked by pronounced restlessness of all the peoples of the Southwest. Just the reports of enemies or emigrating Anasazi to the north and east, brought by the Salado, might have been sufficient to stimulate the Tanque Verde people to prepare for the worst. The Tanque Verde ridges would have been an extremely unsatisfactory place to stand for battle and undoubtedly the Tanque Verde residents knew it. Perhaps it was news of the fierce Apache, who were wreaking havoc throughout southern Arizona when the Spanish arrived not much over two hundred years later, that made the Tanque Verde people decide to leave, although there is no direct archaeological evidence of their presence in southern Arizona at about A.D. 1300.

Climatic factors that seem to have figured in the abandonment of the Anasazi cities could conceivably have been widespread enough

to have effected southern Arizona as well. As mentioned in Chapter 2 of this paper, an erosional cycle seems to have been in progress during the Tanque Verde Phase. This may be an indication of lesser winter rainfall and/or more precipitous summer rainfall. Either situation would have posed problems for the Tanque Verde people. Lack of winter rainfall would have rendered life on the Tanque Verde ridges very difficult, requiring frequent trips into the mountains for unknown distances to acquire water. Moreover, the heavy summer rains might have made farming difficult, tearing up the flat lands between ridges, washing out both crops and the soil in which they were planted. Either situation continuing for many years would almost certainly have necessitated changes in the Tanque Verde lifeway.

Jett (1964) has favored the invader hypothesis to explain the abandonment of the Great Pueblo area. In rebuttal to Jett, Davis has suggested that Paiute infringement on Anasazi territory in Utah might have been responsible for a chain reaction of population shifts which, combined with climatic deterioration, strained the resources of the arid Southwest to provide for them (Davis 1965). It is quite possible that these pressures reached into southern Arizona as well, providing population accretions to the scattered villages in the Tucson Valley. But it would seem more logical to expect immigrants and indigenes to have been forced to utilize all of the available area for the production of food and for living

space. Why then would a fertile, well-watered valley like the Rincon have been abandoned?

Just as it is difficult to know for sure when, how quickly, and why the Tanque Verde people left, it is next to impossible to say where they went. Certainly the two river villages, University Indian Ruin and Martinez Hill, were not sufficiently large to accommodate the population evident during the Tanque Verde Phase everywhere along the Rincon, Pantano, Rillito, and central Santa Cruz drainages. I will not suggest a great scourge, or tremendous invasions by uncivilized tribes, or years of severe drought. Surely we would have found the remains of those killed by disease or invaders, and of the old, the sick, and the lame too feeble to leave, in some of the Tanque Verde houses. This evidence has nowhere come to light.

It is possible that they too, like the later Sobaipuri, moved westward abandoning the outlying villages to the east under the pressure of invaders coming from that direction. But if the Tanque Verde people did leave the Tucson Valley in considerable numbers, some of them must later have returned, for there were many Indians here in the 16th century. Perhaps they never did leave and continued to live in Tucson Phase villages whose numbers we do not appreciate, or some of which have been destroyed by later urban developments in the area. It requires no stretch of the imagination to bridge the gap between the late-prehistoric and the historic villages. Historic accounts of the Upper Pima mesh well

with the archaeologists' reconstruction of the prehistoric lifeway of the people who lived here throughout the Sedentary and Classic times. Trait distributions and cultural similarities have been examined in sufficient detail elsewhere (DiPeso 1953; Spicer 1962).

I do not know that any Papago or Sobaipuri pottery has ever been found in the Rincon Valley. Regardless of the fact that many Sobaipuris later lived in the Santa Cruz rancherías, evidently few Indians came back to the Rincon Valley. The valley and the Tanque Verde foothills seem to have been uninhabited for many centuries until the first men on horseback and the stages came hurrying by bringing new settlers who rediscovered how admirably suited the valley was for farms and ranches. The old timers still talk of the richness of prehistoric materials they found scattered in rock shelters or washed out of the ridges when they first lived there. Despite the depredations of the pothunters over the years, the Rincon Valley still has a voluminous story to tell. Even now, in this part of the twentieth century most of the Tanque Verde ridges away from the highways brood in silence for long periods of time.

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