

ARCHAEOLOGICAL SALVAGE PROGRAM; NORTHEASTERN THAILAND—FIRST SEASON

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The research on which this report is based was carried out during the 1963-64 field season by the University of Hawaii-Fine Arts Department Expedition with the support of the United States of America National Science Foundation. This research was the first season of a proposed three-year program. It is hoped this will be the pilot phase of a comprehensive salvage program eventually to cover all of the areas to be inundated or otherwise disturbed by the Lower Mekong Valley Project (Solheim and Hackenberg, 1961). Areas included in this report are the future sites of five reservoirs to be retained by dams, construction of which is now or will soon be underway in the northeastern provinces of Thailand. These dams are on the Nam Pong, Nam Phung, Lam Pao, Lam Pla Plerng, and Lam Oon (see map, Figure 1). The first two of these are connected with the larger Lower Mekong Valley Project; the last three are supervised by the Royal Irrigation Department of Thailand.

The planning and organization of this program was begun in August 1962 at a meeting held in Bangkok. Those present were: the Director General of the Fine Arts Department, Dhanit Yupho, Chin You-di of the Fine Arts Department, Miss Elizabeth Lyons, an American Specialist working with the Fine Arts Department, and Dr. Wilhelm G. Solheim II of the University of Hawaii. Without the assistance of Miss Lyons and the help of Mrs. Kenneth Todd Young and the American Ambassador to Thailand, Kenneth Todd Young, the program would not have matured. Mr. Donald Rochlen of the United States Information Service was also helpful in this early organizational stage.

We would like to extend our sincere appreciation to those who have assisted us in this initial survey. They include: Fine Arts Department Director General Dhanit Yupho, Fine Arts Department Officials Chin You-di, M.C. Yachai Chitrabongse, Manit Vallibhotama,

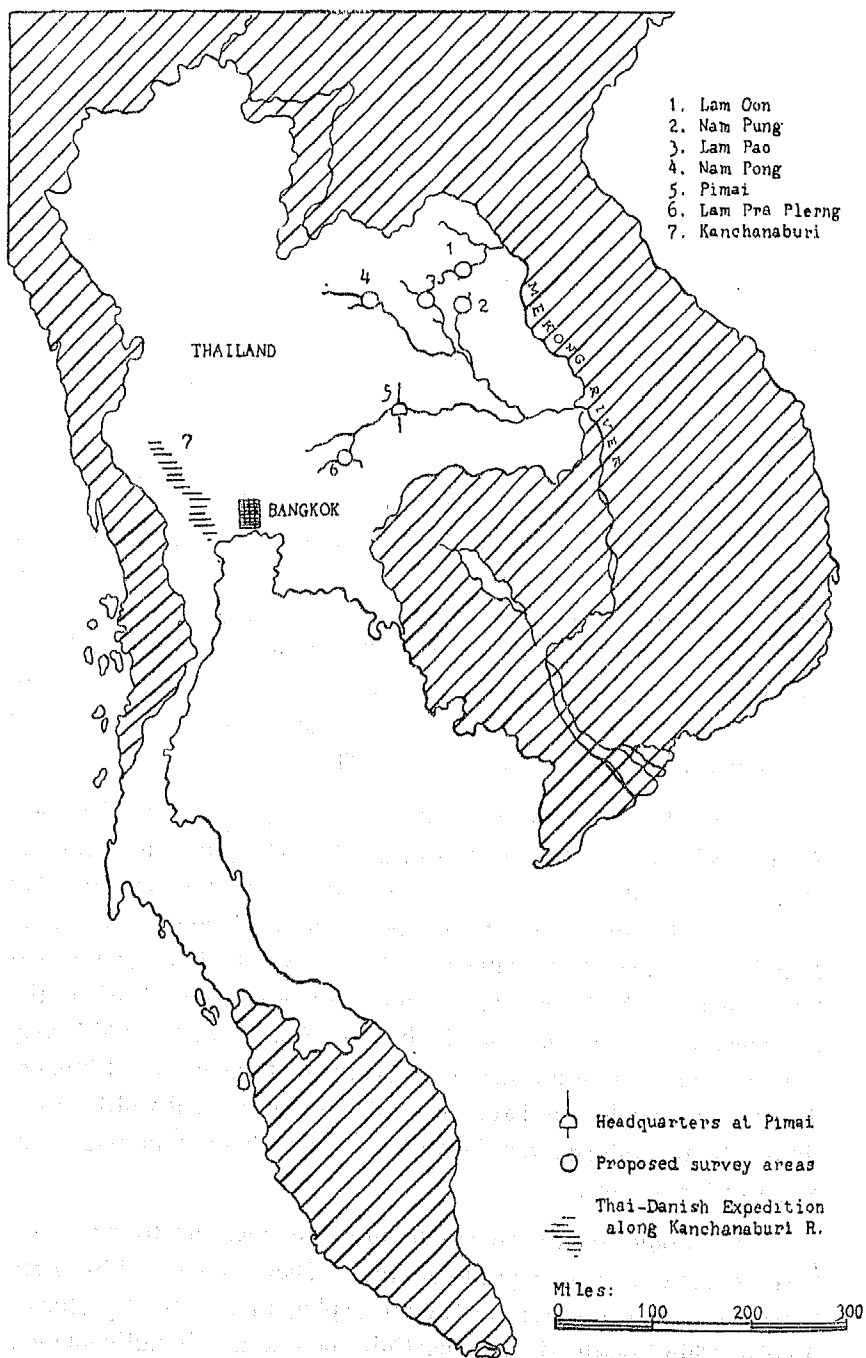


Fig. 1. Northeastern Thailand and the locations of the reservoirs on the Nam Pong, Nam Pung, Lam Pao, Lam Pla Plerng and Lam Oon.

Prayoon Phiboonsuwan, Niwat Kochabongse; Royal Irrigation Department Director General Xujati Kambhu, Royal Irrigation Department Officials M.L. Jeongjan Kambhu, Uthai Ploysankwarl, Pira Vattakanon; Udom Rukjanya, and the cartographers who helped us superimpose the reservoir boundaries onto our topographic maps; Engineering Consultants Incorporated personnel Robert P. Clark, Logan H. Stewart; Dr. Robert V. Burns, Walter H. Jorgensen, Richard L. Mehah, Clem H. Dodson; National Energy Authority Secretary General Dr. Boonrod Binson, Officials Dej Tewtong, Siva Chareornpongse, Prapath Prammani, Kitiwat Sutchartpongse, Dr. Frantz; Dr. Charles N. Spinks and the Cultural Affairs staff of the United States Information Service, Louis Gardner of USOM, and Mr. Timothy C. Brown. Our particular thanks to the Director General of the Department of the Interior for his having circulated a letter from Director General Dhanit Yupho to all Nai Amphurs in Northeastern Thailand advising them of our presence and our purpose in their areas. Our gratitude goes to others too numerous to mention but including especially all the Headmen and villagers who offered their hospitality and their invaluable knowledge.

Financial support for the expedition came primarily from the U.S. National Science Foundation. We are indebted to Esso Standard Eastern for all petroleum products used during the second half of the season's work. For this we would like to thank Mr. O.R. Underhill, General Manager, and Mr. Vilas Manivat, Public Relations Manager of Esso Standard Eastern.

Personnel on this season's survey included Dr. Wilhelm G. Solheim II, Director, representing the University of Hawaii; Nai Vidya Intakosai, Deputy Director, representing the Fine Arts Department; Nai Charern Pholtachar, Fine Arts Department Representative to the Northeast; and Mr. Chester F. Gorman and Allan W. Mosher. Dr. Solheim and Mr. Mosher joined the field party in early March, 1964, after the work at Lam Pla Plerng and Lam Pao had been completed. Active field work started in November, 1963.

Introduction

Field survey for the purpose of Salvage Archaeology is perhaps the most grueling and often unrewarding branch of archaeology to which the researcher can apply himself. It is necessitated by the future destruction or inundation of a potentially important archaeological area which when explored may or may not yield materials valuable for archaeological research. The purpose of this type of research is to obtain as much information as possible from an area while there is still access to that information. Programs of this type have recently been carried out in Egypt, China, the United States, and many other countries with much success.

We had planned to cover all the reservoir areas in a preliminary survey this first season to determine if there had been sufficient prehistoric occupation to warrant a second year of more intensive survey, and if so to locate worthwhile sites for excavation so that both a survey crew and an excavation crew could be operated in the field the second year. Time was the most detrimental factor to the realization of this objective. We covered the Lam Pla Plerng, Lam Pao and Nam Phung areas, but were unable to complete the survey of the largest area, the Nam Pong. This survey will be continued next season. Nor were we able to survey the Lam Oon area, for the exact location of the reservoir had not yet been announced by the Royal Irrigation Department when our field season came to a close.

The actual survey procedure varied from area to area. Where we were fortunate enough to have hamlets dispersed throughout an area we relied on information supplied by the villagers in response to a structured set of questions. This approach was based on the assumption that the villagers would possess much greater knowledge of their area than we could possibly hope to obtain in the time available. Entering a hamlet, we would contact the Headman and explain our position. If there was a wat we would ask the Headman to accompany us there and introduce us to the monk in charge. We usually set up our camp in the wat building meant for travelers and used this as our headquarters for several days while traveling to hamlets in the area.

Where the area was sparsely populated we hired guides, preferably local hunters who knew the area well. We explained to them the purpose of our survey, and described natural features and surface evidences which might indicate areas of earlier occupation. In many instances their knowledge of the area led directly to the locating of a worthwhile site (s).

This season's survey has yielded mainly site information and isolated finds of the proto-historic and historic periods. Three or four prehistoric sites were found and a few surface finds of a prehistoric nature.

Site Survey

The site descriptions below are meant to give the reader some impression of the relevant geography. The exact locations of sites are on record at the Fine Arts Department and those wishing more specific information should contact the Department through the National Museum.

The sites are presented in the order in which they were found. As the survey was conducted in four reservoir areas, each site is signified by the name of the reservoir area in which it is located plus a number attached at the time a surface collection was made. The sites are referred to hereafter by an abbreviation of the area and a number; LLP 1, for example, refers to Site Number 1, the first site from which a surface collection was taken in the Lam Pla Plerng Reservoir area. The other abbreviations are LP for the Lam Pao area and NP for the Nam Pong (Pong Neeb) area. Since no sites were located in the Nam Phung area, it has no such designation. As mentioned, the Lam Oon area has not yet been covered.

Lam Pla Plerng Survey

The future reservoir of the Lam Pla Plerng Dam, now under construction by the Royal Irrigation Department, will lie entirely within Changwat Nakornrajsima, Amphoe Pak Tong Chai. The dam itself will be approximately one km upstream from Ban Bu Hua

Chang; the reservoir will extend another 25 km upstream ending in the vicinity of a small village, Ban Wang Khon (not shown on most maps). For the first 12 km the reservoir will be narrow (at no place more than 1 km wide), for the river valley is immediately bordered on either bank by high bluffs. Some 13 km upstream these bluffs are terminated on either side by two slightly higher mountains each of which slopes off abruptly onto the large tropical grass plain which comprises the topography for the remainder of the reservoir area. Judging from the topographic maps the reservoir will spread out slightly as it fills into this plain. This being upstream, however, the elevation is such that again the reservoir must follow a narrow course close to the present meandering stream-bed.

In general it is the lower reservoir area, lying between the high bluffs, which seems of most archaeological interest. The present river valley has eroded through alternating layers of shale and red sandstone. This shale, being geologically less permanent than the layers of sandstone, has in many places weathered away leaving numerous sandstone overhangs. The bluff above the east bank seems literally dotted with these small shelters; the bluff above the west bank is less so. This lower area is difficult to survey because of the dense jungle which covers the valley from the top of one bluff to the top of the other. The vegetation here consists of large hardwoods with trailing vines, dense undergrowth, and an occasional bamboo forest (Plate Ia). Small animals are plentiful, also a large species of bird somewhat resembling a goose. Larger animals include deer, jungle bears, tigers, and crocodiles. The area is infested with snakes and one must be particularly watchful for King Cobras, Cobras and Vipers. The reservoir plans call for the clearing of this area, and with this accomplished our future more detailed survey should prove rewarding. In this preliminary survey the following two prehistoric sites, both in the lower area, were located.

Lam Pla Pierng 1 (LPP 1)

Approximately one-half km upstream from the main axis of the dam, on the bluff overlooking the east bank, we found a small rock shelter measuring roughly five meters wide by six meters deep by two meters high (Plate Ib). This was near the plus 260 meter contour

level and opening to the west it offered a nice view of the river valley. The rock forming the shelter overhang was of sandstone; the floor was composed of fine-textured light brown soil. A number of boulders were scattered about on the surface, and a small talus slope appeared to drop away to the valley floor (Plate IIa). We excavated two one-meter square test pits keeping a 10 cm vertical control down to 90 cm as no cultural stratigraphy was evident. Below the surface were large boulders which were for the most part left *in situ* (Plate IIb). Material recovered included numerous shells, land snails, small animal, fish, and bird bones, several pieces of worked stone, and sherds of predominately unglazed earthenware. This shelter will be inundated by the future reservoir. Artifacts: *Pottery*—Two sherds of stoneware were recovered, probably from related vessels. Both had a grey paste and a light green glaze. One of these came from 10-20 cm in ON-1W and was probably from a small jarlett. The other came from 38-56 cm in OE-ON and was from a small lid about 5.5 cm in rim diameter (Figure 2a.).

Earthenware pottery in small quantities was recovered down to 70 cm. These sherds were all of the same clay body, tan to grey in color, with shades of brown the usual color, and sand temper. All sherds were very small, averaging less than two gms per sherd. Their thickness varied from one to seven mm and most were from three to five mm. In pit ON-1W *plain* sherds went from two in the top level, through 31 in the second level (10-20 cm), 15 in the third, four in the fourth, one each in the fifth and sixth, and three in the seventh (60-70 cm). In the second level there were also three *impressed: carved paddle* (parallel ribs) and one possible *impressed: bound paddle* (fine basket); in the third there were two *impressed: bound paddle* (cord-marked), and two *applique and modeled* where lenticular impressions were pinched horizontally on a ridge of clay applied on the vessel side; and in the fourth layer there was one *impressed: bound paddle* (cord-marked) (for an explanation of the descriptive pottery terms see Solheim, 1964; pp. 7-10)*. In the 60-70 cm level was found a fragment of what had probably been a fired clay sphere about two cm in diameter.

* The only pictures available of the artifacts from Lam Pla Plerng are those taken at the time of excavation. The day before leaving Pimai (headquarters for the program, furnished by the Fine Arts Department) pictures were taken of these artifacts. In developing, the film was ruined in Bangkok and it was impossible to return to Pimai to retake the pictures for this report.

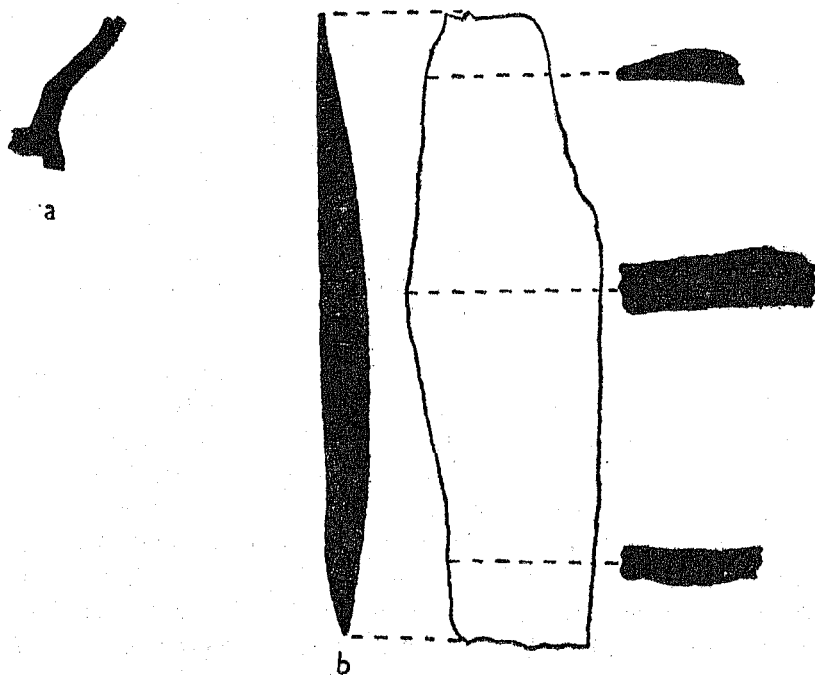


Fig. 2. Cross sections of sherd and stone tool (in cross sections, the body of all vessels is to the right of the section): a. stoneware lid, LPP 1; b. stone chisel, plain view and cross sections, LPP 1.

Stone—Examination of the numerous stone flakes and fragments from each level quickly convinces one that many of these were definite artifacts. Not only the purposeful flaking and occasional retouching, but the several distinct patterns of tools makes this obvious. While several tool types were noticeable from the small pit at this site and Site Number 2, it was felt it would be better to leave type descriptions for the report on the full excavation of these sites when a much larger number of tools would be available for the type definitions. It was further decided that rather than detailed descriptions of these tools here, this should also be left for the type descriptions and so the pictures would be the major source of information on these tools for this report. Unfortunately, the film was ruined developing so only a very incomplete presentation can be made of these tools at this writing.

All of the possible and definite stone tools excavated were of the local sandstone and most of them were flakes or made on flakes. The most prominent of these could be called a handaxe (Plate IIIa), of which there were several examples. Several different types of scrapers were evident, varying from thumbnail scrapers about two cm in diameter to large, end scrapers over 12 cm long. The most obvious repeated pattern was a concave, sharp edge, sometimes sharply concave, other times slightly concave, found on several differently shaped stones (Plate IIIb). One apparently composite tool (70-80 cm) had one of these concave edges on one side, a point at one end, and a sharp edge on the other side. One possible chisel was recovered from the 60-70 cm level (Figure 2b). Pointed flakes were found in all levels, some of them showing some chipping due to use. The flakes with the concave working section were found in levels 10-20 cm, 20-30 cm, 70-80 cm and 80-90 cm; scrapers were found in levels 0-10 cm, 10-20 cm, 30-40 cm, 40-50 cm, 60-70 cm, and 70-80 cm; and knives were found in levels 10-20 cm, 20-30 cm, 70-80 cm, and 80-90 cm. In level 80-90 cm was found a fragment of a stone disk about seven cm in diameter and six to seven cm thick. The richest levels in stone artifacts were the two at the bottom. There were not a sufficient number of stone artifacts to give any indication of a change in types during the use of the site.

Other—Small bones, land shells and charcoal were found through all layers, diminishing in quantity in the lower levels. The charcoal was not sufficient for dating purposes in this pit but enough was present to indicate that it should be possible on extensive excavation of this site next season to collect several samples at different levels for C-14 dating.

Lam Pla Plerng 2 (LPP 2)

Approximately one-quarter kilometer upstream from LPP 1, on the same bluff at about the same elevation (probably formed by the same stratum), we located another small rock shelter similar to LPP 1 but having a small natural passage running from the rear of its inner wall under the sandstone strata and into the bluff. The passage is so small a person can only enter it on hands and knees. This shelter is approximately five and a half meters wide by three meters deep by two and a half meters high. It opens onto a small flat terrace which extends beyond the overhang about two meters and then falls away to the valley floor in a steep slope. The vegetation here, as at LPP 1, had been partially cleared by the project workmen. We cleared away the remaining vines and small brush, and excavated a test pit of the same type as at LPP 1 into the flat terrace about one meter back from its edge. The soil, after the surface had been cleaned, was fine-textured, grey-brown, and compacted into a definite surface which we brush-cleaned and photographed. Artifacts recovered were similar to those from LPP 1. The pottery, however, was greater in quantity and more varied in type.

Artifacts: Pottery—No stoneware or porcelain was found in the test pit. Earthenware pottery was recovered from the surface to 60 cm. A total of 103 sherds of three different wares was found. The most common ware appears to be the same as that from LPP 1 with a sand temper. The thickness varies from two to seven mm and the weight averages less than two gms per sherd. No pottery was recorded from the 40-50 cm level. *Plain* sherds of this thin ware went from one in the first level, six in the second to 18 in the third (20-30 cm), 11 in the fourth, and 10 in the sixth (50-60 cm). Of the same clay body

there was one *impressed: simple tool* (diagonal impressions on a ridge, Plate IV a) in the 10-20 cm level and one in the 20-30 cm level; two *impressed: carved paddle* (parallel ribs, Plate IVb) in the 20-30 cm level, 10 in the 30-40 cm level and two in the 50-60 cm level; and one plain rim in the 20-30 cm level, but not enough remaining to give an idea of its form.

The sherds of the second ware are larger in all dimensions than those of the first ware. Their average weight is 3.7 gms per sherd and their thickness varies from 2-12 mm, averaging five to nine mm. The outer surface is tan to red-brown while the inner surface and clay body are black. While the thin ware has a well smoothed surface, the thick ware has a coarse surface with many holes, probably from a fiber temper. All of these sherds are plain. None were found in the first or second levels, six in the third, 23 in the fourth, and 10 in the sixth.

One sherd of the third ware was found in the 50-60 cm level. This was *applique and impressed: bound paddle* (cord-marked), with brown surface and clay body, clay temper, and five to six mm in thickness. Table 1 presents the relationships of the total quantity of sherds (by number) for each ware.

Ware	10cm	20cm	30cm	40cm	50cm	60cm	Total
Thin	1	7	22	21	—	12	63
Thick	0	0	6	23	—	10	39
Clay	0	0	0	0	—	1	1
Total	1	7	28	44	—	23	103

Table 1 Number of sherds for three pottery wares from LPP 2 per 10 cm level "Clay" is the ware with clay temper.

Numerous fragments of fired clay were found in the 50-60 cm and 60-70 cm levels. These may have resulted from the burning of

a wattle and daub type structure as their form indicates that they had been modeled partially around small sticks.

Stone—The flakes and stone artifacts from this site are essentially the same as those from LPP 1 with the addition of a few varieties, possibly due to this site being somewhat richer. The forms found here but not encountered at LPP 1 are: hammer stones, notched stones (Plate Vd), ovoid balls, a possible drill, a knife with blunt back, small (3-12 mm) fine-grained pebbles in all levels except 30-40 cm and 60-70 cm (pit excavated to slightly below 80 cm), and one conglomerate made up primarily of fine-grained pebbles. A few of the tools from each level were photographed in the field and are here presented to give some idea of the range. They do not show all of the varieties noted on examination in the laboratory. The type best represented in the pictures is the tool with the concave working edge (Plate IVc-d, f, i, and VI). Further classification of this material is left for next season.

Other—Land shells, bones, teeth, and charcoal were found in about the same quantity as in LPP 1. The bone material from both sites is primarily from small rodents that probably died a natural death in the site.

General

In most of the lower reservoir area we were hampered in conducting a detailed survey by the dense vegetation. For the most part we relied on the inhabitants of the three local hamlets, and our guide, to inform us of caves or rock-shelters which we in turn examined for archaeological content. Although this survey method no doubt exposed most of the sheltering formations, next year's field party, with more time allotted to this area, will undoubtedly uncover other shelters considered by local informants either too small or too difficult of access to bring to our attention.

Once the upper grassland plain is reached, more traditional field archaeological techniques are applicable. We stayed several days in this area, crossing the plain on two different occasions to contact villages lying along the margin of the proposed reservoir area. As we passed unusual natural phenomena such as wells or large

rock outcrops, we looked closely for surface evidence of prehistoric occupation. We found a few sherds of Ming ware but were unable to locate any large concentrations. The villagers had seen no evidence of earlier occupation, nor were they able to supply positive information as to caves or rock-shelters. Indeed, there seem to be no formations in the area capable of containing such features and the chest-high tropical grass makes it extremely difficult to recognize open sites unless one is directly upon them.

Thus far, the area to be inundated has yielded no evidence pointing to a dense prehistoric occupation. That the area was inhabited seems evident from the finds at LPP 1 and 2 both of which would appear to be small way-stations or temporary shelters. If these are indicative of travel through the valley one would expect to find larger sites on the upland plain, or on the now densely-populated area below the dam. We did, in fact, have reports of large upright stones towards the southwest of the upper end of the reservoir area. This was, however, reported to be a considerable distance from the reservoir area, and we could not justify the expenditure of time and money necessary to check the report.

Conclusions

The earthenware pottery recovered from the test pits of LPP 1 and LPP 2 is similar to pottery recovered in the Kanchanaburi excavations done by the National Museum. The only really distinctive sherds—the two modeled sherds from 20-30 cm at LPP 1 and the two simple tool-impressed sherds from 10-20 cm and 20-30 cm at LPP 2—share their distinctive decoration with the Kanchanaburi pottery of Ban Kao. This pottery at Ban Kao is associated with bronze and iron and appears to have evolved in this area from the neolithic pottery found nearby.

LPP 1 had stoneware only near the surface and LPP 2 produced none. It is likely that these two sites were used off and on over a considerable span of time, the upper layers being related to the Kanchanaburi prehistoric "Iron Age" finds and the lower levels covering the Neolithic, possibly extending back into the Mesolithic. These will be the first sites excavated next field season.

Lam Pao Survey

The second area visited was the future reservoir area of the Lam Pao Dam, now under construction by the Royal Irrigation Department. The dam itself is located on the Lam Pao approximately 22 km north-northwest of Kalasin. The reservoir to be contained by the completed dam will extend upstream some 70 km bearing away to the northwest and filling the large rice-cultivated depression bounded by Ban Khon Kaen, Kham Di and Tha Kantho. Water will be backed up the many small streams flowing into the Lam Pao between the large depression and the dam, and a large inundated area will follow the Huai Sangka flooding the lowlands to the northeast in the vicinity of Sahatsakan.

There are some 70 hamlets in and about the reservoir area, and the inhabitants proved knowledgeable of their areas, calling our attention to many evidences of prehistoric and early historic occupation. The topography is quite uniform, level for the most part with occasional gently rolling hills and depressions. The vegetative cover is predominantly of two types: irrigated rice fields and tropical scrub-forest, usually comprised of broad-leaved hardwoods. Wild game is scarce; birds few and seldom seen. The soil varies too greatly for a general description. Frequent outcrops of laterite are visible though actual rock formations such as sandstone are rare.

Archaeologically this area proved quite interesting. Several shouldered adzes were examined, but not collected as they were privately owned and valued greatly by the villagers. Other artifacts personally owned but shown to us for examination included a socketed bronze celt, a socketed bronze spearhead, bronze bracelets and pottery vessels of practically every known historic period. Although once removed from their original context these items lose considerable archaeological value they nonetheless illustrate the presence of a wide range of artifactual material. These items were found locally; the few that had been introduced by the villagers from other locales were not credited to this area. The actual sites uncovered in this survey are listed below. Changwat and Amphoe are included after site designation.

Lam Pao 1 (LP 1) Kalasin, Sahatsakan

This is probably a cremation site rather than a larger habitation site as was originally thought. The surface evidence consisted of sherds of Ayuthia and Ming wares mixed with numerous bits of bone, charcoal, and shell. Portions of two small stoneware jars were recovered from a small pit excavated to 10 cm. Inside these jars were remains of cremations. One small fragment of bronze was found, but in general the site lacked depth and horizontal distribution. We examined the surrounding area closely, but found no other surface remains. The entire area was covered with tropical scrub-hardwoods.

Artifacts: *Pottery*—Sherds from two stoneware jars, one porcelain bowl, and one earthenware vessel were recovered from the surface and the small pit. One jar was grey with a grey clay body four to seven mm thick. It had a flat bottom about 5.5 cm in diameter, a high narrow neck with a rim diameter of about four cm (Figure 3a cross section of rim) and a rounded body. It was incised on its shoulder using a four pronged tool to make parallel wavy lines around the jar and below this a pair of parallel horizontal straight lines. The second small jar had a violet-grey surface and clay body. The outer surface has a metallic luster while the inner surface is rough and pitted. It has a flat bottom about six cm in diameter, a narrow neck, and a rounded body with maximum diameter of about 12 cm. A number of concentric circles were impressed on the shoulder while the jar was turned. The porcelain bowl has a light grey clay body and is about 12 cm in rim diameter. It has a green underglaze decoration of strokes and blobs of paint possibly in a kind of floral pattern. A ring on the upper surface of the foot is unglazed but is heavily spotted with glaze. The lip of the ring foot is unglazed but on the inside the foot ring has a neutral glaze like the rest of the bowl. The lip of the ring foot is triangular in cross section so that the bowl sits on the sharp edge.¹

The earthenware vessel may be a shallow saucer (Figure 3b rim cross section). It has a light tan, plain but crackled surface and a light tan clay body 1.5-10 mm thick. Most of it is about three mm thick. It has a clay temper about the same as the clay body. No positive indications of form are present but it has no angles or sharp

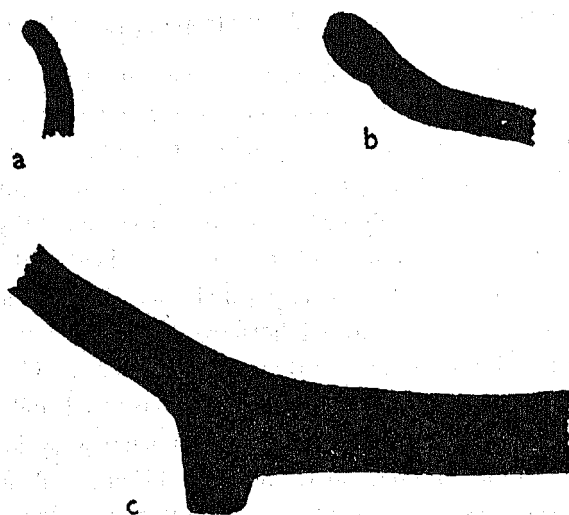


Fig. 3. Cross sections of rims and bases: a. rim of stoneware jar, LP 1; b. rim of earthenware vessel, LP 1; c. base of stoneware bowl, LP 2.

curves. There is one plain sherd with a black to grey surface and clay body, with red clay temper.

Other—There is one fragment of a copper or bronze cup, bowl, or wide bracelet. It has an indistinguishable decoration in a band parallel with its edge.

Fragments of burned human bone, primarily from the two small stoneware jars, indicate that this was a cremation site.

Lam Pao 2 (LP 2) Kalasin, Sahatsakan

Approximately nine km northwest of the dam site is Ban Nong Phai. About one km to the southeast of Nong Phai, on the east bank of the Huai Ling, we examined what appears to be a primary open site evidenced by sherds of Lopburi-Khmer, Sukothai, Ayuthia, and Ming wares. These were visible upon the surface, over an area approximately 100 meters long by 40 meters wide. The lip of an Ayuthia vessel was visible from the surface (Plate VIa) and when excavated (Plate VI d) this nearly complete jar (Plate VI c) yielded numerous cylindrical lead (?) weights, other fragments of metal, metal chain, and many cowrie shells with tops removed (Plate IX a). Adhering to the neck section of this jar was an earthenware sherd with an *impressed: carved paddle* decoration of square lattice (Plate VII b).

Local villagers had extracted several Ayuthia vessels from this site. In the right hand jar of Plate VII a they had found a number of iron tools (Plate VII b - d), and lead weights similar to those from the jar we excavated. They had also found several polished stone artifacts here, including one large (15.4 cm long, 9 cm wide) shouldered-adze (Plate VII e) and a black fine-grained stone (18.9 cm long) of unknown function (Plate VII f).

This site is cut by two small waterways: one the Huai Hua Ling, the other a small man-made drainage canal. Both are eroding into the area where the site seems to be. The vegetative cover is tropical scrub-forest with scanty under-growth. Rice fields border the Huai Hua Ling and previous to their cultivation the site may have extended into this area. The villagers mentioned finding occasional sherds in these fields.

A test pit 150 cm square with a 10 cm vertical control was excavated. Pottery was the primary artifactual material recovered. The pit, and other small pits dug in several locations, found very few sherds more than two or three cm below the surface and no cultural layer of any kind. The Ayuthia vessel first excavated was obviously *in situ* so there is a site here of some kind. We tried to locate a living site nearby from which the surface finds could have eroded but found none. Further testing will be carried on here next season if time allows.

Artifacts: *Pottery*—Numerous stoneware and porcelain sherds were found on the surface and of these 21 stoneware and four porcelain sherds were collected. The majority of the stoneware sherds are called Lopburi by the staff of the National Museum. These are from large vessels, possibly only two or three and including the one from test pit A, with a mottled brown to olive green glaze (Plate VIIIa-b) and a grey clay body and surface, in some sherds zoned to a purplish grey. Some sherds are incised with concentric rings at the base of neck or just below the neck (Plate VIIIc). Some sherds have ridges, with (Plate VIIIc) or without (Plate VIId) verticle simple tool impressions on the ridge. On one jar a series of Xs had been incised in bands around the jar using a four pronged incising tool (Plate VIIIc). The brown glaze settled in the incised lines and makes them look painted rather than incised. On this same jar (interior neck diameter about 20 cm) there had been an applique handle between the top of the shoulder and the neck. Another sherd with the prepared base from which an applique handle had broken (Plate VIId) shows that these heavy handles were also applied solely on the body. One plain sherd with grey clay body and surface has a blue-green glaze. One incised sherd found on the surface was a part of the jar that was in the top of the excavated jar (Plate VIId). A second incised sherd has 15 concentric circles around the base of the neck, and a third is incised with alternating bands of straight and wavy lines made with a four pronged tool (Plate VIIIe). This sherd is 10-12 mm thick. One incised sherd of a different ware has a grey to tan clay body and surface, and a heavy green crackle glaze (Plate VIIIf). This was the

base of a large bowl (Figure 3c) with a foot diameter of about 17 cm and, on the outer surface, wide vertical grooves extending upwards from the ring foot. The four porcelain sherds are all blue on white, one of them a section of the ring foot of a small bowl (Plate VIIg) with a foot diameter of about six cm.²

Three earthenware sherds were retained. Two of these were *impressed: carved paddle* (square latice), one, with a dark grey surface and clay body and a reddish sand temper (Plate VIIIh), is three mm thick and the other, with a light grey surface and clay body and sand temper, is four mm thick. These were probably of the same ware. One plain sherd was in the process of being made into a disk but had been broken before this was completed (Plate VIIIi).

A small pit was excavated to remove the first located jar (Plate VI d) and a few sherds were recovered from this pit. From the surface to 10 cm, sherds from two stoneware vessels were recovered, these being the pieces pictured in the mouth of the jar. Ten of these were from a stoneware jar with a flat base about 18 cm in diameter with its side 6-10 mm thick. Their surface and clay body are grey. It has two or more bands of incised concentric rings on its shoulder, the lower band with eight rings and the upper with five. One sherd from this jar was found on the surface nearby. One stoneware sherd is from the base of a flat bottomed jar, the side of which rises vertically rather than at an angle as most of them do. This has a light grey speckled surface and dark grey speckled clay body with numerous fine holes in the body. From 30-40 cm (the lowest level excavated in this pit) there was one stoneware sherd probably from the same jar as were the 10 sherds found in the top level and there were 10 sherds of a flat bottomed jar, probably the same jar as that represented by the single sherd in the top level. The latter has a base diameter of about 18 cm.

The 150 cm square test pit was set up surrounding an accumulation of large stoneware sherds which, it was hoped, was the top of another jar *in situ*. As it turned out, the accumulation of sherds was on the surface and in the top few centimeters, though one sherd from the jar was found as deep as the 30-40 cm level. A concentration of similar sherds was noted on the surface nearby where the surface

slopes into the ditch. This was collected and, as expected, most of these sherds match those from the test pit. Several sherds that had been found on the surface elsewhere in the nearby area were also found to fit this jar. In spite of the several sources for sherds of this jar only a small portion of it was recovered, both the base and rim sherds are missing. The inner surface and the clay body are grey while the outer glazed surface is a mottled brown. Wall thickness is 8-10 mm, 14 mm at the ridges. Around the shoulder of the jar, just above the maximum diameter (about 46 cm), run three parallel ridges. Between the lower pair of ridges are sets of three chevrons with their points up (Plate VIII j). Between the second pair of ridges are a series of overlapping open triangles. Probably just below the maximum diameter of the jar were three more parallel ridges, the area between the ridges being plain. Somewhat above the incised area on the shoulder is an area where an applique handle had broken off. From the test pit were found two sherds from this jar in the 10-20 cm level, three from the 20-30 cm level, and one from the 30-40 cm level. With the sherds from this jar found in the surface concentration near the test pit was a sherd from the shoulder and neck of a jar with six horizontal circling grooves at the base of the neck and out onto the shoulder. There were also three sherds from an incised jar with the same clay body as the others but with a lighter brown glaze on the outside and a grey to grey-brown slip on the inside making this surface smoother than the inner surface of the other jar sherds found which were not slipped.

Seventeen earthenware sherds of the same clay body as the two impressed sherds were found in the pits: three *impressed: carved paddle* (square latice) one from 30-40 cm in the pit with the jar and one (four to five mm thick) in the jar itself, and one in the top level of the test pit; and one *plain* sherd seven mm thick from 10-20 cm, and five *plain* sherds from 30-40 cm in the test pit.

Other—A few fragments of metal, an iron ring, and small pieces of charcoal were found in the two pits. From 30-40 cm in the test pit came two small pieces of resin. The jar itself was filled with cowrie shells and metal. The cowrie shells had their tops cut off

(Plate IXa). They weighed a total of 1,500 gms, but much of this was soil as most of the shells were filled with earth. There were two metal bars (upper left Plate IXa), one (bent) oval in cross section 5×3.5 mm and 82 mm long; the other, rectangular in cross section three to four mm by five mm and 81 mm long. This second bar was slightly curved with small concave sections four to eight mm long on the concave side.

There were 3,285 gms of metal which came from the jar. Most of this was a badly deteriorated chain with links from 15–20 mm in external diameter. This was apparently made from a heavy wire two to four mm in diameter which was bent into a circle and the ends joined with heat. The joints in numerous cases are noticeable as a small lump, but in many cases the joint is not clearly noticeable. The largest remaining piece of chain is 94.5 cm long (Plate IXa, outer strand). There are several hundred metal cylinders, possibly net weights, as the chain also could have been, from 19–40 mm long and 8–12 mm in diameter (Plate IXa). In general, the longer ones are the smaller in diameter. The holes, usually not centered, are from three to nine mm in diameter (Plate IXa). Most of the cylinders have a greenish color, but a few are rusty and several are almost white. Two are perforated through the side, one with a single perforation three mm from one end (far left cylinder second row from bottom), and the other with two perforations on one side, one on the opposite side four mm from the end, and one in between the two holes at the end (second from right, bottom row). There were also several pieces of the same metal, of random shape, probably from melted or hammered cylinders (Plate IXa center left).

Discussion—The scattered nature of the jars, found at several levels in the pits and some sherds from the nearby surface, indicates some sort of disturbance to this site even though at least the one jar appears to have been *in situ*. One possible explanation for this is that the jars, broken or practically whole, were found in neighboring fields previous to the time of the present inhabitants and out of reverence or fear were replaced more or less as found in this area nearby; this had not been done recently. Further exploration may present the answer.

Three km to the southwest of Ban Nong Phai, near Ban Sao Lao, we uncovered a large almost complete jar of the Lopburi style (Plate IXb).

Lam Pao 3 (LP 3) Kalasin, Sahatsakan

On a large mounded area some 300 meters northeast of Ban Sao Lao we examined what appeared to be a large habitation site. A small waterway cuts through one side of this mounded area exposing a longitudinal profile in some places two meters deep. In places, from the surface down to the two meter depth, sherds and bits of broken brick protrude from this exposed bank. Sherds appear to be in greatest concentration on the surface of the mound over an area measuring approximately 60 by 90 meters. Some of the sherds collected from this site have been tentatively ascribed by museum officials to the Davaravati Period. The two C-14 dates from the two test pits excavated do not bear this out.

The surface vegetation consists of a light scrub growth with occasional large hardwoods. A small garden plot is slightly off the main area of sherd concentration, but even there numerous sherds are visible in the tilled soil. The soil over most of this mound is a dark grey, changing on the eastern section to a lighter sandy loam.

Test pits: *Pit-A*—A test pit 150 cm square was excavated centrally in the western end of the site. Other than a very slight mound on the surface of the larger mound, there was nothing apparently different about this specific spot than any other location in this area. The pit was excavated in 10 cm levels over the total area to 30 cm depth. Between 30 and 40 cm several large bricks and numerous brick fragments were encountered, on the north side of the pit, forming a straight line. Feeling that this might be the top of a wall, a 25 cm baulk was left bordering it and the rest of the square taken down to 40 cm. At 40 cm a 40 cm wide step was left along the west wall, south of the assumed brick wall and the pit carried down at 10 cm levels to 120 cm, where the soil became sterile (Plate Xa). Looking at the south wall, five different levels or layers can be seen (Plate Xb): at about 40 cm a line of light colored spots can be seen. These are

brick fragments and this level corresponds to the top of the assumed wall. Above this level there are relatively few cultural remains other than brick fragments. Below the brick fragments there is about a 20 cm layer of light colored earth in which there is about five times the amount of potsherds that was present above the fragments. Below this there is a darker uneven layer of 10-15 cm (between 60-80 cm from the surface) that has the richest cultural content of the pit. Below that the cultural content falls off quickly but continues fairly evenly from 80-110 cm. Below 120 cm the ground is sterile in this area.

A charcoal sample was sent to the Carbon 14 laboratory at Gakushuin University in Tokyo from the level of heaviest cultural concentration and this was dated as modern (Gak-470, Modern \pm 240 B.P.). This would mean that the time of greatest use of at least this portion of the site was probably not earlier than Early Bangkok period.

Examination of the supposed wall showed that it was not a wall but just a layer of heavy concentration of bricks and brick fragments (Plate XIa). The presence of whole bricks and the straight edge marking the heavy concentration would probably indicate that some structure very close by had fallen. The very small cultural content above this relative to what was below would probably indicate that the site was abandoned at about the time of the collapse of this structure. Historic records are sparse for this area of Thailand and though this is late in the historic period no historic reference is known to this site and the local people do not know it by tradition.

The examination of the supposed wall proceeded by cutting in with a vertical face and as a result there was no vertical control in its removal. The step mentioned above was removed in the same way. Therefore, below 30 cm the sherds removed under vertical control came from less than half of the total area of the 150 cm square pit.

Pit B—This pit was situated more centrally to the mound as a whole than was Pit A but it was slightly towards the eastern end of the mound. Its specific location was determined by the trees in the

general area that was selected to test. The same size test pit was excavated to 110 cm in 10 cm levels. The surface of the ground was relatively level in this area with a slight depression near the center of the north side. When the pit was down to 70 cm it was noticeable in the north wall as well as in the floor, that the surface had been uneven at the time the 70 cm level was the surface with more of a depression there at that time (Plate XIb). When the floor had been taken down another 10 cm this was even more noticeable (Plate XIc).

Four distinct layers and three distinct lines are clearly discernable with examination of the pit walls (Plate XIIa-d). The top layer, light brown, 25-30 cm thick, contained relatively few sherds. The second layer, dark brown, from 25-60 cm on the south side and about 30-70 cm on the north side includes the heaviest concentration of sherds in the pit. The third layer, light brown, from 60-90 cm on the south side and from 70-110 cm on the north side is still culture-bearing but with a rapidly diminishing number of sherds in each 10 cm layer. At the bottom is a dark brown, very hard layer in the south, west, and southeast sides, but going just below 100 cm in the northeast corner, which is sterile. Very approximately marking the bottom of the rich dark brown layer is a dark line which is sterile. Between 15 and 20 cm below this is a second sterile dark line. These two lines are probably the result of floods with the resultant mud deposits. The third line is the boundary between the third layer, light brown, and the fourth sterile layer, dark brown. This bottom sterile layer could be the mud from a much heavier flood than the two higher ones and it would be well to go down another 30-50 cm to be sure that there is nothing of interest at deeper levels.

The one feature found in this pit was a portion of an earthenware jar found in the southeast corner just on top and extending into the second "flood" line at 64 cm (Plate XIIIa). Sherds from this jar were found nearby in the 60-70 cm and the 70-80 cm layer. It was obvious that only a portion of the jar was here. One explanation for its presence is that during the flood it was washed into the slight depression in which it was found. In support of this, besides the small depression here in the thin mud layer, immediately within the

protected area of the curved jar was more of the mud, considerably thicker than elsewhere (see Plate XIIIa). The jar fragment could have been in this slight depression before the flood came and then been partly covered and protected by the mud deposit. Associated with this jar fragment was a small amount of charcoal which was dated by the laboratory at Gakushuin University as modern (GaK-471, Modern \pm 240 B.P.). This would tend to confirm the first date for Pit A and the site as a whole, with its major occupation sometime during the Early Bangkok period. The associated charcoal was primarily in the dark mud and was probably washed in during the same flood.

Artifacts: *Pottery* — The earthenware pottery is not described in detail. This will be done in next year's report when we have a larger body of material with which to work. The earthenware rims are presented in some detail but not classified. A total of 57 stoneware and three porcelain sherds were recovered from the vertically controlled portions of the two pits. As stoneware and porcelain is somewhat known, this small quantity is presented descriptively in table form, though not classified. Table II presents the stoneware and porcelain from the surface of the site and Pit A and Table III from Pit B. "No." refers to the number of sherds, "Wt." to their weight in grams, and "Size" refers to the thickness of the sherds in mm. Where a rim is illustrated in cross section the thickness is not entered.

Table II

Level	No.	Wt.	Surface and form	Clay body	Size
Surface	1	30	<i>glazed</i> : light blue-green crackled on outside, inner surface very thin; lid, formed like top of apple (Figure 4a, Plate XIIIb); impressed circle 3.1 cm in diameter with 12 radiating impressed lines to lip of rim; rim diameter about 7cm ³	light grey	
	1	10	<i>glazed</i> : light green, fine crackle on inner surface and varied bluish-white on outer surface; rim diameter about 18 cm (Figure 4b) ³	light grey	
0-20	3	25	<i>plain</i>	grey (1) greyish violet outer surface, violet inner surface and body with few large inclusions up to 7 mm long (2)	7-8
	1	10	<i>incised</i> : 2 parallel lines 3 mm apart	same as 2 plain sherds above	8
	1	15	<i>impressed</i> : groove and ridge on shoulder below which is an undetermined impressed decoration	gray outer surface, violet inner surface and body	—
20-30	3	10	<i>plain</i>	violet (1) grey (2)	8 6-9

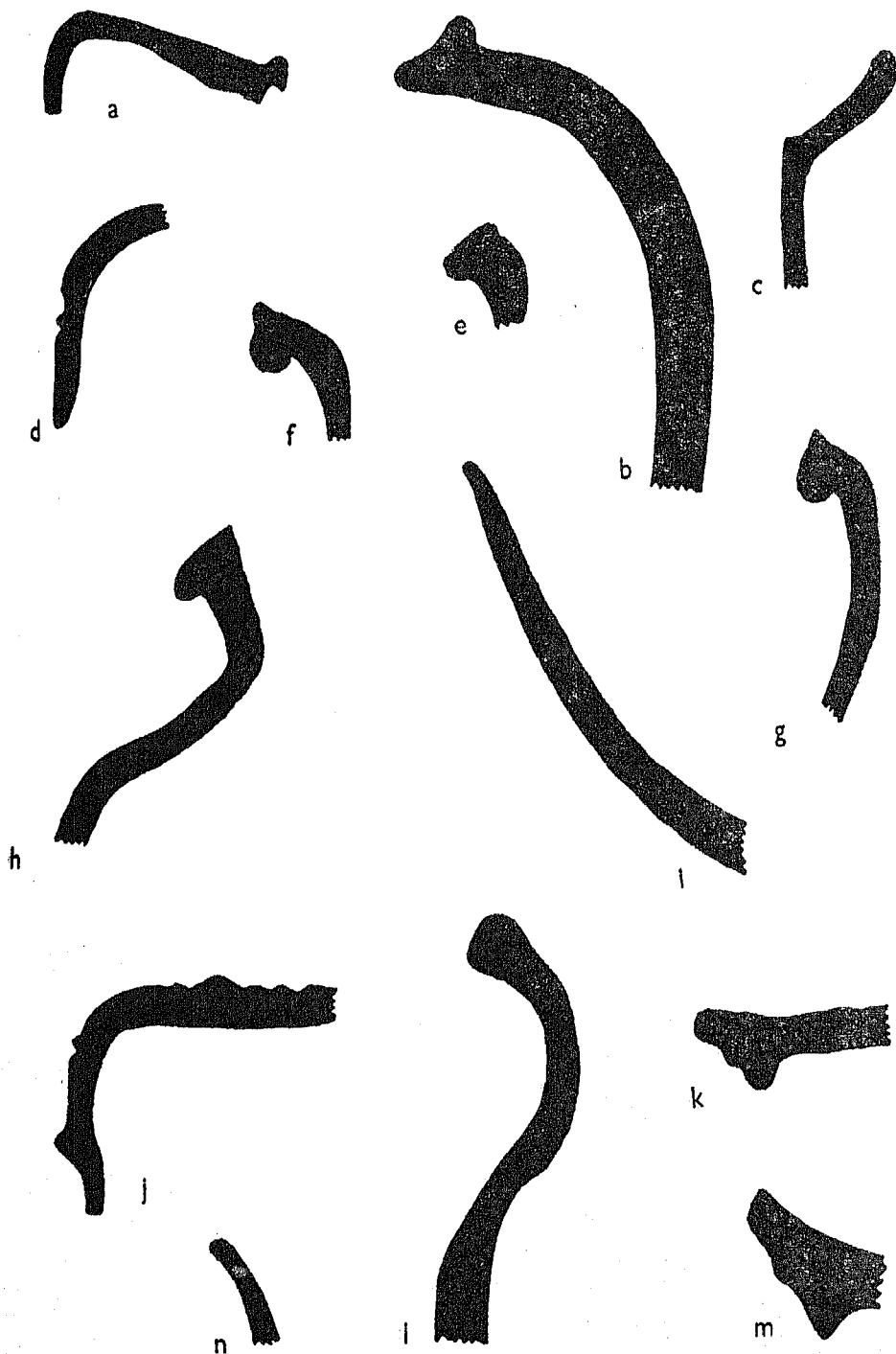


Fig. 4. Cross sections of stoneware rims, shoulders, and bases from LP 3 : a. surface; b. surface; c.-d. 40-50 cm, Pit A; e.-f. 60-70 cm, Pit A; g.-i. 70-80 cm, Pit A; j. 80-100 cm, Pit A; k.-l. no level, Pit A; m. 20-30 cm, Pit B; n. 40-50 cm, Pit B.

Level	No.	Wt.	Surface and form	Clay body	Size
40-50	5	105	<i>plain</i>	violet to grey (2 from same)	7-10
				ditto; (1)	9-11
				„ ; with few brown pebbles (1)	5-6
				grey with numerous slate grey pebbles up to 2 mm long	
	8	50	<i>glazed</i> : mottled olive green outside;	light grey with few pebbles up to 2 mm long (1);	5
			transparent green, up to 1 mm thick outside, thinner inside;	light grey (1)	4-5
			streaky mottled olive green, below unglazed rim (Figure 4c), most glaze flaked off, rim diameter 11.2 cm, maximum diameter 14.0 cm (Plate XIII d-e)	violet grey to brown (6)	3-4
	2	30	<i>glazed</i> : same as 6 above; impressed 2 concentric circles around lid (Figure 4d), rim diameter about 14 cm, probably lid to vessel just above (Plate XIII e)	violet grey to brown (2)	3-5
	1	20	<i>glazed</i> : mottled olive; impressed with 4 concentric grooves with ridges between, on center ridge incised row of Xs	violet grey to brown	6-9

Level	No.	Wt.	Surface and form	Clay body	Size
50-60	1	20	<i>plain</i> , remnants of glaze	light grey	4-5
	1	10	<i>glazed</i> : apparently a mottled green; with a portion of a circular element in relief	dark grey, with numerous brown and black pebbles	
	1	20	<i>glazed</i> : mottled green; impressed parallel wavy lines between pair of grooves and ridges (plate XIIIc)	light grey, with numerous brown to black pebbles	3-5
60-70	4	70	<i>plain</i>	grey to brown (4)	5-8
	2	10	<i>plain</i> rims (Figure 4e) (Figure 4f)	orange-brown zoned to light grey; grey	5-8
	1	10	<i>impressed</i> : 2 concentric grooves at base of neck	light brown surface, light grey body, few pebbles up to 6 mm in diameter	
70-80	4	15	<i>plain</i>	grey	3-6
	3	80	<i>plain</i> rims: 2 about 17 cm in rim diameter (Figure 4g); 1 about 30 cm in rim diameter (Figure 4h)	grey cream to grey surface, light tan body with red and light grey clay temper	
	1	50	<i>glazed</i> : very slightly greenish-white, on inside all way to base, on outside not to base, rim diameter about 16 cm (Figure 4i)	light grey	
	2	—	porcelain: light blue glaze inside and out, no glaze on flat bottom, bowl with vertical ribs on side, rim diameter about 7 cm, base diameter about 5 cm	white	

Level	No.	Wt.	Surface and form	Clay body	Size
80-100	1	10	<i>plain</i>	grey-brown	5-6
	3	10	<i>glazed</i> : thin light green, crackled, on outside of lid; a series of impressed concentric grooves and ridges (Figure 4j), rim diameter about 10 cm, height 3.4 cm	light grey	
no level	1	10	<i>plain</i> rim, probably from a lid (Figure 4k)	tan surface, orange to light grey body, small pebbles and fine clay temper	
	1	50	<i>plain</i> rim, diameter about 30 cm (Figure 4l)	grey to brown	

Table II Porcelain and Stoneware from the surface and Pit A, LP 3.

Table III

Level	No.	Wt.	Surface and form	Clay body	Size
0-10	0	—	—	—	—
10-20	1	20	<i>plain</i> ; made on fast wheel, thickness cut down using a sharp-edged tool with nicks in edge shown by horizontal striations on outside with sharp pairs of lines less than 1 mm apart and vertical ripples varying consistently from 1.0-2.5 cm apart	light grey	8-10
20-30	1	—	<i>plain</i> rim (Figure 4m)	light brown surface, sandy grey body	
30-40	1	5	outer surface missing	dark grey, with darker grey nodules of about same texture as body	
	1	10	porcelain: light greenish-white glaze outside, few strips of very thin transparent glaze inside	white, fine texture but in break gives coarse appearance	
40-50	1	15	<i>plain</i>	light tan with few dark brown pebbles up to 6 mm in diameter	8-9

Level	No.	Wt.	Surface and form	Clay body	Size
40-50 cont.	1	5	<i>plain</i> rim (Figure 4n)	grey	
50-60	4	50	<i>plain</i>	tan, zoning in wall from very light grey to tan, 4 distinct layers in wall, clay and pebble temper, pebbles up to 6 mm in diameter (1);	7-8
			a single horizontal groove-ridge probably at line of change in form;	orange-tan outer surface about 1 mm deep zoned to very light grey (1);	5-7
			probably had a glaze on outside	brown and yellow surface in flaked horizontal bands, dull violet body	5
	1	5	<i>glazed</i> : varying thickness, transparent where thin and green where thicker, thin glaze on portions of inner surface	very light grey	7-8
60-70	0	—	—	—	—
70-80	0	—	—	—	—
80-90	1	—	<i>plain</i>	light tan with small dark brown grains and a few pebbles up to 6 mm maximum length	4-5

Table III Porcelain and Stoneware from Pit B, LP 3.

The white glazed stoneware found from 70-80 cm in Pit A has been tentatively identified by Dr. Charles N. Spinks as a Sawankhalok white glaze bowl.

At least three different tempers were used in the earthenware pottery recovered and in some cases two were used together. It is questionable whether it will be possible to use temper by itself as the major criteria for distinguishing different wares. The three different tempering materials noted are sand, clay, and some kind of fiber which burns out leaving fine holes in the paste. Some sherds have a sandy texture but some of the smooth sherds have sand temper. Color appears to vary considerably. Subjectively it seems that the sand tempered sherds tend to be an orange-brown to brown in surface color while the fiber tempered sherds tend to be considerably darker. This does not hold in all cases, however. It is possible in a few sherds that shell was used for temper. In the two tables that follow no attempt is made to distinguish tempers. The variety of rim cross sections is presented and some detail on the decoration. Fragments of brick were found at all levels where pottery was found. Table IV presents the earthenware pottery of Pit A and Table V of Pit B.

Table IV

Level	No.	Wt.	Surface and form	Size
0-20	1	5	<i>plain</i>	7
20-30	8	50	<i>plain</i>	4-7
	1	5	<i>plain</i> rim (Figure 5a)	
	3	20	<i>impressed</i> : parallel broad line 3-4 mm apart	5-9
40-50	43	375	<i>plain</i>	3-8
	10	300	<i>plain</i> rim: 4 sherds from same pot similar to Figure 6, diameter about 28 cm ($\frac{1}{4}$ of circumference present); 4 sherds making total rim, 12.5 cm in diameter (Figure 5b) about $\frac{1}{8}$ of pot present weighing 190 gms; 1 sherd (Figure 5c, Plate XIVa-b); 1 sherd, form not certain	

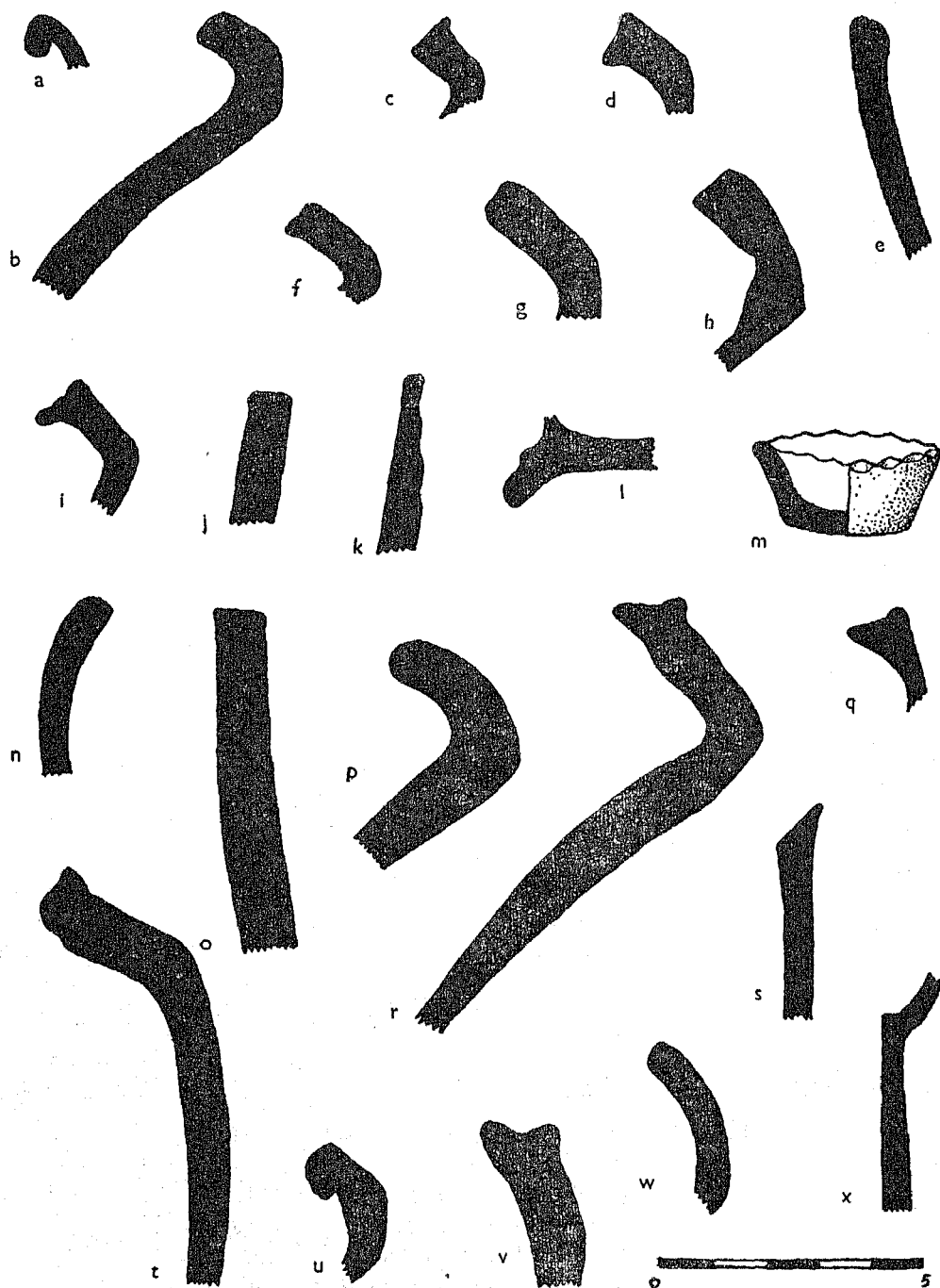


Fig. 5. Cross sections of earthenware rims and shoulders from Pit A in LP 3 : a. 20-30 cm; b.-c. 40-50 cm; d.-e. 50-60 cm; f.-m. 60-70 cm; n.-s. 70-80 cm; t.-x. no level.

Level	No.	Wt.	Surface and form	Size
40-50 (cont.)	12	325	<i>impressed</i> : parallel broad lines; 9 sherds, 2 sets of 2 lines, 7 cm between sets and about 4 mm between lines, rim diameter 14.3 cm, maximum diameter 28 cm, before final smoothing with smooth paddle, a carved paddle was used with two rows of large crescents at an angle {}{}{}{} (Plate XIVa-b); 3 sherds from three different vessels with same decoration	
	6	275	<i>impressed</i> : parallel broad lines and grooves and compound tool, 4 concentric circles just above maximum diameter of vessel, 7 grooves with ridges between just below neck with 7 pronged tool impressing diagonal points up to right, usually 4 to 5 prongs were all that marked (Plate XIVc), maximum diameter about 38 cm	4-8
50-60	72	370	<i>plain</i> ; 1 probably from a high somewhat narrow necked vessel, outer surface with vertical polishing marks	3-9
	4	35	<i>plain rim</i> : 1 from pot of Figure 5c; 1 (Figure 5d); 1 (Figure 5e); 1 not sufficient to tell form	
	12	110	<i>impressed</i> : parallel broad lines; 5 sherds from vessel in Plate XIVa-b; 7 each from different vessels	4-7
	3	40	<i>incised</i> : parallel lines, same design as impressed lines; 2 with 3 lines; 1 with 2 lines, made on a wheel	4-9 4-5

Level	No.	Wt.	Surface and form	Size
60-70	156	880	<i>plain</i>	2-11
	10	115	<i>plain</i> rim: 1 like Figure 6j; 1 like Figure 5d though at slightly different angle; 4 sherds (Figure 5f-i); 1 with irregular edge that appears to have been cut with sharp edged tool without further finishing (Figure 5j); 1 (Figure 5k); 2 similar to Figure 6n, rim diameter about 28 cm	
	1	5	<i>impressed</i> : parallel broad lines, part of jar in Plate XIVa-b	
	1	10	<i>plain</i> rim: probably from a ring foot about 12 cm in diameter, made on a wheel (Figure 5l)	
	3	20	plain and carved tiny bowls: 1 with oval cutouts in the rim (Figure 5m); 1 similar (Plate XIVd); 1 plain (like Plate XIVf), all about same size as Figure 5m	
70-80	233	1135	<i>plain</i> ; thickest sherd has piece of rusty iron (?) in wall	2-14
	14	295	<i>plain</i> rim: 5 sherds Figure 5n-r, with rim diameter about 18 cm but rim curvature very uneven looking almost oval; 1 with lip cut with sharp edged tool (Figure 5s), rim diameter about 16 cm; 3 from similar bowl to l with lip cut at same angle but much less regular, rim diameter about 14 cm; 2 probably from same vessel as Figure 5k but varying profile of body; 1 possibly from same pot as i; 1 similar to 1; 1 without sufficient amount to tell form	

Level	No.	Wt.	Surface and form	Size
70-80 (cont.)	3	15	<i>impressed: bound or carved paddle</i> ; 2 apparently bound paddle similar to cord bound but no twist, (like those in Plate XIVg-h)	2-4
			1 with parallel ribs	3-4
	1	15	<i>incised: parallel lines</i> , with 3 lines, from same vessel as in layer 60-70	
	1	10	plain tiny bowl like Plate XIVf, 3 cm total height	5-7
80-100	74	470	<i>plain</i>	2-11
	4	15	<i>plain rim</i> : too fragmentary to make out the form	
100-110	27	135	<i>plain</i>	2-14
	7	30	<i>impressed bound paddle</i> ; 6 sherds from 4 different vessels, looks like cord-marked (Plate XIVg-i) but no indication of twist, elements vary from about 1/3 to 1 mm in diameter, 1 sherd has slight rounded angle with the impressions smoothed over on one side of the angle (h); 1 sherd lines very faint, possibly incised	4-8
110-120	4	10	<i>plain</i>	3-8
no level	3	—	<i>plain and carved tiny bowls</i> : same as in 60-70 and 70-80 cm levels, 2 with carved lip (Plate XIVe), 1 of these is 4.8 cm in maximum diameter, 3.1 cm high, 3.1 cm in base diameter; 1 plain (Plate XIVf) rim diameter about 4.4 cm, 2.7 cm high, 2.5 cm base diameter	5-8

Level	No.	Wt.	Surface and form	Size
no level (cont.)	4	175	<i>plain</i> rim: 1 rim diameter about 30 cm (Figure 5 <i>t</i>); 1 rim diameter about 14 cm (Figure 5 <i>u</i>); 1 rim (Figure 5 <i>v</i>); 1 rim diameter about 34 cm (Figure 5 <i>w</i>) with wavy impressed line at base of neck, probably from edge of a carved paddle.	
	1	15	<i>incised</i> : parallel lines, 2 just below shoulder (Figure 5 <i>x</i>), probably made on a wheel, with remnants of a pale yellow glaze on outer surface, maximum diameter about 11 cm	

Table IV Earthenware pottery from Pit A, LP 3.

Table V

Level	No.	Wt.	Surface and form	Size
0-10	7	10	<i>plain</i>	4-9
	1	—	relief; badly weathered	6
	1	5	<i>impressed: simple tool</i> , an arc, impressed in two directions (Plate XIVj)	7-8
10-20	29	65	<i>plain</i>	4-13
	1	5	<i>glazed and impressed</i> : simple or compound tool; thin, olive green glaze on outside, impressed pattern probably from compound tool multiple pronged with triangular heads (Plate XIVk)	5-6
20-30	30	85	<i>plain</i>	3-10
	3	15	<i>plain</i> ; probably wheel made, a small bowl with flat bottom about 11 cm in diameter (Figure 6a).	
	3	15	<i>plain rim</i> : 2 from same vessel (Figure 6b); 3rd much the same profile.	
	2	5	<i>incised</i> : straight lines; 1 with faint single line; 1 with 2 parallel lines as concentric circles just above angle of shoulder (Figure 6c).	
30-40	70	190	<i>plain</i>	4-9
	2	15	<i>plain</i> : layered; 1 with apparently 2 different clays, surface layers about 2.5 mm thick, center layer about 4 mm thick, different colors and texture; 1 similar (?)	9
				7-8



Fig. 6. Cross sections of earthenware rims, bases, and shoulders from Pit B in LP 3 and LP 9: a.-c. 20-30 cm; d.-e. 30-40 cm; f.-i. 40-50 cm; j.-n. 50-60 cm; o. 50-80 cm; p.-q. 70-80 cm; r. 90-100 cm; s.-u. from LP 9.

Level	No.	Wt.	Surface and form	Size
30-40 (cont.)	2	15	<i>plain</i> rim: Figure 6d-e	4-6
	3	5	<i>impressed</i> : broad line; 1 line or 2 parallel lines	
40-50	153	490	<i>plain</i> : some with carbon coating outside, some inside	3-11
	6	45	<i>plain</i> rim: each from different vessel, 4 profiles (Figure 6f-i)	4-8 8
	6	—	<i>impressed</i> : parallel broad lines, 2 or 3 concentric grooves; 1 with 2 just below curve of the neck	
50-60	170	545	<i>plain</i>	2.5-11
	9	95	<i>plain</i> rim: cross section of 2 can not be made out; 1 similar to Figure 6g; 3 rim (Figure 6j-l); 1 (Figure 6m) rim diameter about 28 cm; 2 (Figure 6n) rim diameter about 17 cm	5-7
	4	15	<i>impressed</i> : parallel broad lines, 2 or more; each from a different vessel	
60-70	173	355	<i>plain</i>	2.5-10
	1	5	relief: with rib around vessel on shoulder, can not tell whether it has been applied or modeled; similar to sherds from Johore Lama in Malaya and Santubong in Sarawak	—
	1	—	<i>incised</i> : parallel lines; 2 lines	
50-80	13	305	feature: portion of a plain jar found <i>in situ</i> at 64 cm with several fitting sherds nearby from 50-80 cm; about 1/8 of pot (Figure 6o); associated with charcoal	

Level	No.	Wt.	Surface and form	Size
70-80	83	145	<i>plain</i>	2.5-11
	2	10	<i>plain rim: 2 rims (Figure 6p-q)</i>	
80-90	44	60	<i>plain</i>	4-9
90-100	26	35	<i>plain</i>	3-8
	1	10	<i>plain rim (Figure 6r)</i>	
100-110	1	5	<i>plain</i>	7-8

Table V Earthenware pottery from Pit B, LP 3.

Summary of the quantities of sherds from Pit A and Pit B is presented in Tables VI and VII. Further summary from these tables shows that for Pit A, figuring by the number of sherds, 93% of the earthenware sherds are plain and 7% are decorated, while figuring by weight, 80% are plain and 20% are decorated. For Pit B, these percentages are quite different with 99% plain and 1% decorated, by number, and 98% plain and 2% decorated, figuring by weight.

Other—Very little material other than pottery was recovered. Three pieces of fired clay, with impressions suggesting they were used in wattle and daub construction, came from level 100-110 cm in Pit B. From the surface of the site came a triangular worked piece of fine sandstone. Its sides are slightly concave, two of them 32 mm long and the third 35 mm. It is 11-13 mm thick and has a small hole, 1.5 mm in diameter and 2 mm deep, in the center of one of the shorter sides. Two fragments of sharpening stone were found in the 70-80 cm level of Pit A. In the 80-100 cm level of Pit A was found a piece of slag (?) and a few bone fragments, while a fragment of a mammalian tooth was found in the 100-110 cm layer of Pit A. Numerous pieces of charcoal were found in most levels of both pits.

TABLE VI

Level	Plain			Pl. Rims			Imp. L.			Incised			Bowl			Imp. P.			Total'			Stoneware		
	No.	Wt.	Gm/S	No.	Wt.	Gm/S	No.	Wt.	Gm/S	No.	Wt.	Gm/S	No.	Wt.	Gm/S	No.	Wt.	Gm/S	No.	Wt.	Gm/S	No.	Wt.	Gm/S
0-20	1	5	5.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	5	5.0	5	50	10.0
20-30	8	50	6.2	1	<5	—	3	20	6.7	—	—	—	—	—	—	—	—	—	12	70	5.8	3	10	3.3
40-50	43	375	8.7	10	300	30.0	18	600	33.3	—	—	—	—	—	—	—	—	—	71	1275	18.0	16	205	12.8
50-60	72	370	5.1	4	35	8.7	12	110	9.2	3	40	13.3	—	—	—	—	—	—	91	555	6.1	3	50	16.7
60-70	156	880	5.6	11	125	11.4	1	5	5.0	—	—	—	3	20	6.7	—	—	—	171	1030	6.0	7	90	12.9
70-80	233	1135	4.9	14	295	21.1	—	—	—	1	15	15.0	1	10	10.0	3	15	5.0	252	1470	5.8	8	145	18.1
80-100	74	470	6.4	4	15	3.7	—	—	—	—	—	—	—	—	—	—	—	—	78	485	6.2	4	20	5.0
100-110	27	135	5.0	—	—	—	—	—	—	—	—	—	—	—	—	7	30	4.3	34	165	4.9	—	—	—
110-120	4	10	2.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	10	2.5	—	—	—
Total	618	3430	5.6	44	770	17.5	34	735	21.6	4	55	13.7	4	30	7.5	10	45	4.5	714	5065	7.1	46	570	12.4

Table VI Quantities of potsherds found in Pit A; "Pl. Rims"—Plain Rims, "Imp. L."—Impressed Lines, "Imp. P."—Impressed Carved or Bound Paddle, "No"—Number of sherds, "Wt."—Weight of sherds, and "Gm/S"—Grams per sherd

TABLE VII

Level	Plain			Pl. Rims			Imp. L.			Incised			Imp. Tool			Misc.			Total			Stoneware		
	No.	Wt.	Gm/S	No.	Wt.	Gm/S	No.	Wt.	Gm/S	No.	Wt.	Gm/S	No.	Wt.	Gm/S	No.	Wt.	Gm/S	No.	Wt.	Gm/S	No.	Wt.	Gm/S
0-10	7	10	1.4	—	—	—	—	—	—	—	—	—	1	5	5.0	1	—	—	8	15	1.8	—	—	—
10-20	29	65	2.2	—	—	—	—	—	—	—	—	—	1	5	5.0	—	—	—	30	70	2.3	1	20	20.0
20-30	30	85	2.8	3	15	5.0	—	—	—	2	5	2.5	—	—	—	3	15	5.0	38	120	3.2	1	—	—
30-40	70	190	2.7	2	15	7.5	3	5	1.7	—	—	—	—	—	—	2	15	7.5	77	225	2.9	1	5	5.0
40-50	153	490	3.2	6	45	7.5	6	—	—	—	—	—	—	—	—	—	—	—	159	535	3.4	2	15	7.5
50-60	170	545	3.2	9	95	10.6	4	15	3.7	—	—	—	—	—	—	—	—	—	183	655	3.6	5	55	11.0
60-70	173	355	2.1	—	—	—	—	—	—	1	—	—	—	—	—	1	5	5.0	174	360	2.1	—	—	—
70-80	83	145	1.7	2	10	5.0	—	—	—	—	—	—	—	—	—	—	—	—	85	155	1.8	—	—	—
80-90	44	60	1.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	44	60	1.4	—	—	—
90-100	26	35	1.3	1	10	10.0	—	—	—	—	—	—	—	—	—	—	—	—	27	45	1.7	—	—	—
100-110	1	<5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	<5	—	—	—	—
Total	786	1980	2.5	23	190	8.3	7	20	2.8	2	5	2.5	2	10	5.0	6	35	5.8	826	2240	2.7	9	95	10.6

Table VII Quantities of potsherds found in Pit B; "Imp. Tool"—Impressed: simple or compound tools (not including those sherds from the feature at about 64 cm)

Conclusions: The quantitative summary of Pit A shows that the 40-50 cm level is unusual. For all varieties of earthenware present in that layer, the size of the sherds is much greater than in any other layer. This is the layer immediately below the level of the brick fragments. An inference that could be made from this is that there was an unusually high amount of whole pots that were broken in a short period of time with little use of the area immediately following, so that the large sherds were not broken into smaller pieces by daily traffic over them. Combining this inference with that advanced for the layer of brick fragments and the apparent brick wall one could infer that the town had been partially destroyed, though apparently not burned, and then abandoned. The brick structure hypothesized probably fell during or shortly after this destruction and the town was not rebuilt. Stoneware sherds were considerably more common in the 40-50 cm layer than in any other. This excessive breakage of stoneware vessels would fit with the above inference.

The decorated sherds in Pit A are not of sufficient quantity to be able to make well-based inferences but they do suggest a few inferences which will be interesting to test with future excavation. The vessels with impressed lines were found only above 70 cm, incised sherds were found only between 80 and 50 cm, and the tiny bowls only between 80 and 60 cm. The paddle impressed sherds were found only below 70 cm. These may be changes due to time. The incised sherds and those impressed with parallel lines are considerably larger than all other body sherds. Assuming that these sherds are not of a stronger ware (subjectively this assumption seems valid) some other reason must be present for their breaking into larger pieces. The one vessel of the impressed pottery (Plate XIVa-b) looks like a fairly large storage jar. Storage jars, with a low center of gravity so that they are reasonably stable and will not tip over, are in less constant use than cooking pots and may be somewhat less subject to breakage. Also, they may be a bit thicker than cooking pots, and so when they do break might well break into larger pieces. Therefore, I would suggest as a possibility that the parallel line impressed and incised sherds came from storage vessels while many of

the plain sherds came from thinner cooking pottery, and further, that the paddle impressed pottery is probably more closely related to the plain pottery in function than to the other decorated pottery. I do not suggest that there were no plain storage vessels.

Comparison of Pit A and Pit B shows similarities and differences. From the Plates, rim cross sections and descriptions of the pottery in Tables IV and V, it is seen that the pottery in the two pits is little different. There are considerable differences apparent, however, between Tables VI and VII. The sherd size in Pit A is in every case much larger than in Pit B. By count, more pottery came from Pit B than Pit A, but by weight, well over twice as much pottery came from Pit A than from Pit B. Recalling that below 30 cm where the great majority of the sherds were found, the portion of Pit A, excavated with vertical control and thus covered by Table VI, is less than half that of Pit B, it is obvious that Pit A is much richer in quantity than in Pit B. This is also true for quality. By weight, 20% of the pottery of Pit A is decorated while only 2% of the pottery from Pit B is decorated. There is four times more stoneware in Pit A than in Pit B.

On the basis of richness and size of sherds, two opposed inferences can be made: 1) The western end of the site, where Pit A is situated, was where refuse was deposited while the eastern end of the site was where the people lived. In this case, much of the broken pottery would be found in the refuse area, thus accumulating more sherds there. The sherds that were not collected from the living area had much more traffic over them than did the sherds in the refuse area and thus were broken into smaller pieces. 2) The second inference does not hypothesize a refuse area but places the main living area closer to Pit A than to Pit B and puts Pit B on the edge of the living area. Refuse was not removed to any particular area but just left where it fell or, at best, just moved out of the house into the street, or below it. Movement over the total area of the mound was common and some of the refuse deposited in the primary living area was slowly moved by the general traffic and the weather into the outlying areas, becoming more broken up as it moved.

Two independent bits of data tend to support the second inference over the first. Not only was there the inferred brick structure close to Pit A but there were many more and larger fragments of brick in Pit A than in Pit B (this is subjective judgement, supported by the large number of brick fragments that can be seen in Plate *Xa-c* and not to be seen in Plate *XIIa-d*). From this one would infer a brick building (s) was/were closer to Pit A than to Pit B. This does not necessarily place the living area closer to A than to B but does place a specific feature of the settlement closer to A than to B. The other bit of information is in the percentage of rims found in the two pits. In Pit A rim sherds make up 6% of the sherds by number and 15% by weight, while in Pit B it is 3% by number and 8% by weight. Flat and small pieces, on a gently sloping surface, would move more easily than curved (in three planes) and larger pieces. The rims, which usually include a portion of the neck and have relatively sharp angles, would not move along the surface as easily as flat sherds because in half of their laying positions a projecting portion would tend to hold them in place. Not only their angularity but their larger size compared to the body sherds would tend to keep them in place relative to the body sherds. There is an other factor in this question of sherd movement, however. Some portions of a broken vessel may be selected for use after that vessel is broken, and such a portion would then be kept in or near the house. When a large vessel is broken, but only slightly, if the rim is whole, the body is often purposefully broken away and the rim and neck used as a pot stand for a round bottomed pot. Large curved body sherds are often kept as small water containers or cups or to hold chicken feed (rice winnowings) under the house. This would also support the second inference as this would retain in the living area both whole rims (eventually to be broken) and larger body sherds, further accounting for larger sherds and a larger percentage of rim sherds in the living area than at the edges of the town. Whether the second inference is more likely or not, Pit A is of more interest than Pit B; excavation to follow in the future will be concentrated at the western end of the mound.

The dating of the site has been discussed in the section on the test pits. There is a question on this late dating, however, brought up by the presence of the Sawankhalok sherd in the 70-80 cm layer of Pit A. This could have been an heirloom piece and not disagree with the date. Another possibility is that the lowest 30-40 cm represent a much longer time span than do the layers above and thus that the beginnings of the site go back to the 13th or 14th century or earlier (See note 3). Further excavation is called for.

Lam Pao 4 (LP 4) Kalasin, Sahatsakan

We found what appears to be a curbing or low wall composed of roughly rectangular laterite blocks while surveying the area between Ban Sao Lao and Ban Nong Bua. These are exposed by a road cut and would otherwise be undetectable from the surface, covered as they are by 40-50 cm of sandy soil. This is not a natural formation for the blocks are resting on sandy soil, and the five blocks still in place all have the same cross section, 50 by 30 cm, and roughly uniform length (80, 60, 100, 100, and 90 cm). These blocks are laid in a southwest to northeast line and can be traced away from the road, on the opposite side, by a line of laterite rubble at approximately the same level as the tops of the blocks which are still in place. Several blocks are lying alongside the roadbed, evidently moved there when the road was being built.

The area on either side of the roadway is now under rice cultivation and there are no nearby hamlets. There is no indication as to the purpose of this wall and no associated surface finds. Its outline could no doubt be traced with a probe and this should give some indication of its function.

Lam Pao 5 (LP 5) Udorn Thani, Kumphawapi

This site is a complex of surface features including sandstone uprights of two basic types, a mounded area, and associated surface finds. The upright stones enclose a rectangular area approximately 25 by 8 meters with the mounded area located in the southwest corner. The entire area is covered with dense undergrowth. The

inhabitants of nearby Ban Tha Hai have cleared a small trail to the mound on which they have erected a small spirit-house. The site was shown to us by a villager who called our attention to two large holes purported to have been made many years ago by vandals who looted the mounded area. Aside from these two holes the site seems undisturbed.

The first type of upright is square in cross section, averaging about 40 cm to a side (Plate XVa-b). The tops are fashioned in a pyramidal form; the stones range from 70 to 100 cm in height. The second type is a roughly worked slab with a rounded top. These in some respects resemble uprights attributed to the Davaravati period found in some of the Northeast wat enclosures. Of the former type, six specimens were located and of the latter, two. An interesting addition to several of the uprights was a small piece of what appears to be coral conglomerate placed at some relatively sheltered spot around the base (Plate XVc).

Artifacts: Collected from the surface of the mound were one fragment of sharpening stone, six fragments of roof tile, and one potsherd. The roof tile was orange to tan with a brownish clay temper and a few small brown pebbles. The sherd is *impressed: carved paddle* (parallel ribs) from the bottom of a large pot, and is 8-15 mm thick.

Pra Meao: Not far from Ban Tha Hai is located a small wat known as Pra Meo, or Wat Si That. Here we were shown three uprights which, while not constituting a site, we feel deserve description. Two of the uprights are almost alike and similar to the first type from LP 5. These have a well executed lotus flower motif forming a border completely around the base (Plate XVd). These uprights are of red sandstone and measure 47 cm to a side and 140 cm from the surface of the ground to the top of the pyramid.

The third stone upright was in all probability not originally intended for use as an upright. It is circular in cross section with an inscription in Khmer which has been translated by Coedès (Coedès, 1964)⁴. This inscription is meant to be read when the stone is lying in a horizontal position. One end of the stone, together with a part of the inscription has been broken off and is missing.

After questioning the local villagers we found that these stones had all been brought to the wat from a nearby rice field. We visited the rice field and spoke to its owner who showed us yet another stone still imbedded in the ground (Plate XVIa). We found no associated surface material.

Lam Pao 6 (LP 6) Udorn Thani, Kalasin

Ban Nong Mak Kha lies about three km to the southeast of Ban Tha Hai. Less than one km from Nong Mak Kha we were shown a small habitation site. Surface evidence included many Ayuthia and Ming sherds and several almost complete Ayuthia vessels. Part of this area is under rice cultivation, but a mound extends up into an area covered with a dense undergrowth. Beneath the vegetation we found several more sherds. We did not have time to excavate a test pit, and therefore could not estimate the depth of the cultural deposit.

Artifacts: A few porcelain, stoneware and bone fragments were collected. A major portion of one porcelain blue on white bowl was recovered (Plate XVIc) with a ring foot diameter of 4.8 cm and height of six cm. One stoneware rim, apparently from a small cup, had a cream surface color and grey clay body with small black pebbles. It had a thin olive brown glaze on the outer surface. Two fragments of burned bone found may have been human.

Lam Pao 7 (LP 7) Kalasin, Sahatsakan

A short distance from Bang Nong Mak Kha is a small raised mound surrounded by large upright stones of the Davaravati (?) Period in an oval about 9 by 18 meters (Plate XVIIa). This is located near a small wat. The monks living here informed us that the stones had been found there in place, but that some of them which had fallen over had been set upright. These uprights are of the second type described for LP 5, but are in much better condition than those of LP 5 and their tops show a much more pronounced gabled effect. Some of these have a raised narrow ridge running

from the peak of the gable to ground level. This ridge is on both front and back of some of the uprights. One of them has a border around the base just above ground level (see Plate XVIIb).

Ban Tha Muang: One and a half km to the east near Ban Tha Muang we examined a large, apparently shaped stone still partially embedded in the ground (Plate XVIIb). While not constituting a site proper, this stone should be mentioned. It measures roughly 76 by 71 cm and gives the appearance of a square. It is about 12 cm thick. The material is probably a grey sandstone conglomerate; there is nothing similar to this nearby. The surrounding area is covered with tall brush, and though we conducted a thorough search we were unable to find any associated surface material.

Lam Pao 8 (LP 8) Kalasin, Sahatsakan

This site is composed of six stone uprights scattered about on the surface of a small mound (Plate XVIIb-c) in the community of Non Sila, Sahatsakan. Only a few of the stones are upright, but the mound itself seems little disturbed. The stones are similar to those from LP 7. There are no structures built on the mound and it appears to be an excellent place to conduct excavations to determine what contextual material, if any, is associated with this type of upright. The soil of the mound is dark grey and finely textured, and there is no covering vegetation other than short grass.

Lam Pao 9 (LP 9) Kalasin, Sahatsakan

We examined what appeared to be a large Ayuthia burial site on a farm near Ban Khok Hang, not far from Sahatsakan. Many vessels of the Ayuthia Period containing the remains of burned bones have been found by the owner, and the field is littered with sherds of Ayuthia and Ming ware. Most of the site is under rice cultivation, but it no doubt continues into a neighboring area covered by scrub brushwood.

Artifacts: Four earthenware sherds and seven stoneware sherds were collected. Three of the earthenware sherds were *plain*, 8-11 mm thick and one was *impressed: carved paddle* and 8-10 mm thick. The

impressed sherd may have been meant to be plain as part of it was plain and the impressed portion so worn or smoothed-over that the pattern was not clear. Two of the stoneware sherds were plain, one with grey surface and clay body, six to seven mm thick, and the other with a brown surface and clay body, 8-10 mm thick. The latter sherd had a partial finger-print on its surface. Two glazed stoneware body sherds were saved, one with a grey surface and clay body and a brown glaze on the outside, body seven to eight mm thick, and the other with a grey surface, violet-brown clay body, and brown glaze outside, body seven to eight mm thick. Three stoneware rims were recovered: one with a brown interior and grey exterior and clay body, rim diameter about 18 cm (Figure 6s); one with grey surface and violet-grey clay body while on the outer surface there was a shiny slip of a darker grey than the surface, rim diameter about 22 cm (Figure 6t); and one with grey surface and clay body and a mottled brown glaze over the inside of the neck and rim and half way down over the outer surface of the rim, rim diameter about 24.5 cm (Figure 6u).

Lam Pao 10 (LP 10) Udorn Thani, Kumphawapi

The village, Ban Tha Hai, was given a site designation for it is located upon a mound which also saw earlier historic occupation. The villagers are in possession of numerous vessels of the Ayuthia Period. These are in excellent condition and were removed from the mound during the building of homes, roads, etc. The village now covers the entire mound, but the villagers are quite interested and offered to show us spots which seemed to have large concentrations of the older ware. The vessels we saw during the survey were of many different types, glazed and unglazed (Plate XVIIIa).

Scattered Artifacts

Numerous finds were reported by villagers in several of the hamlets visited. In most cases the locations where these finds originated was examined and no further artifacts were discovered.

At Ban Lao Luang a store keeper had an Ayuthia vessel with a dark grey surface and clay body and dark brown glaze (Plate XVIIIc). It had contained numerous bits of iron and fragments of two bronze (?) bracelets. The jar had been found on the bank of the Huai Khe about two and a half km from its confluence with the Lam Pao.

At Ban Sawang the Headman had a socketed bronze axe-head (Plate XVIIIb) that he had bought from one of the villagers. It is 9.7 cm long, 5.6 cm wide and approximately 1.3 cm thick. The location where it had been found was not known.

Three Ayuthia jars were examined. At Ban Kut Hae the Headman had found two Ayuthia jars (Plate XVIIId) on his farm. At Nong Waeng we were shown a jar and a small bowl that served as a lid (Plate XVIIIe) that had been found by the main road not far away. Inside of this they had found an apparent cremation.

Two shouldered adzes were found approximately one km south of the town of Sahatsakan. They had been found by a local Amphoe official who guided us to the spot where he had found them. They had been found together during the digging of a small drainage canal. No further artifacts were found but there were several mounds in the area. Due to a deadline return to Udorn these could not be tested. The adzes are of a dark grey-green fine-grained stone. One is 4.4 cm long, by 3.3 cm wide and .8 cm thick (Plate XVIIIf). The other is 6.6 cm long by 6.0 cm wide and 1.2 cm thick (Plate XVIIIg).

Nam Phung Survey

The third area visited was the future reservoir area of the Nam Phung Dam, now under construction for the National Energy Authority. The dam is being built some 32 km south of Sakol Nakorn along the Sakol Nakorn-Kalasin Road. The dam axis is located some four km off this main road, and when completed will retain a small reservoir filling the river valley for nine km upstream. It will back up numerous small tributaries flowing into the Nam Phung, and two of these, the Huai Kam Luang and the Huai Hang Suer, branching off near the end of the reservoir area will form sizable extensions of the main reservoir.

This project is located high in the hills and there are no villages located in the area to be flooded. The vegetation is scrub-forest with occasional small grassy clearings and rare, large Yang and Daeng trees. We were told that game was plentiful to the east of the reservoir area, but in the area itself we saw little evidence of wild life.

This area being small we decided to conduct an intensive survey on foot. Working from a topographic map we covered the main stream bed, the bluffs on either side, and the small ravines of the tributaries previously mentioned. We were fortunate in having the same guide who had guided the dam project surveyors.

The area contained many large, dry, well-protected shelters far superior to those of Lam Pla Plerng, yet these contained nothing but sterile deposits of riverine pebbles and sand. Since these shelters were several meters above the present high-water level, any earlier human occupation would certainly have resulted in the deposition of cultural debris over this water-washed fill. The only conclusion we could draw was that the area had either been only lightly populated, if at all, in prehistoric times, or the settlement pattern was such that these shelters were not in demand. Adding to evidence against earlier occupation is the quantity of negative information obtained from the four hamlets lying to the northwest of the reservoir proper. An interesting question is here raised by the apparent complete absence of prehistoric (or historic) occupation, even in the choicest of shelters. This area will be dropped from next season's work.

Nam Pong Survey (Pong Neeb Dam)

Approximately 47 km north-northwest of Khon Kaen the Nam Pong flows through the high sandstone ridge which in that area politically divides Changwat Udorn Thani from Changwat Khon Kaen. Where the river flows through this ridge the Pong Neeb Dam is now under construction. It is being built along the line of this ridge, allowing the formation to be utilized as a natural dike running both north and south from the dam (Plate XIXa). The reservoir retained

by the dam will (very generally) form three fingers. A northern finger some five km wide will extend north about 15 km into the area of Non Sang. A longer southern extension, some 11 km wide just behind the dam and narrowing to an average of about 4 km, will extend 37 km south into the area of Amphoe Muang Khon Kaen, King Amphoe Nong Rua. The central finger will follow the present bed of the Nam Pong some 35 km to the west extending out from either side of the present river bed about three km. This finger will inundate areas of Amphoes Non Sang and Nong Bua Lamphu of Changwat Udorn Thani, and Amphoe Phu Wiang of Changwat Khon Kaen.

This is the largest reservoir included in our salvage program, but during available time this season it was not possible to cover either the southern extension or major portions of the central section.

Most of the area of the future reservoir is well settled and here, as at Lam Pao, we relied to a great extent on the villagers' knowledge of their area. For the most part they were quite willing to show us artifactual material in their possession, but sometimes we were not allowed to see more valued objects for fear they would be confiscated, as occasionally has happened in the past. After staying a number of days in certain villages photographing, cataloguing, and returning local finds, we were finally allowed to see a few of the more important items. The confiscation of archaeological items from local villagers is clearly not in the best interest of scientific archaeological exploration. Objects deprived of their context are only of scientific value in that they indicate possible earlier occupation, or may aid in distributional studies. For either of these purposes, good photographs and careful measurements provide all the information necessary. Confiscation results only in distrust and the withholding of valuable data, silencing a valued source of site information.

The first five sites are from the northern extension of the reservoir. This is a relatively flat area lying between the ridge that runs north of the dam and a high saucer-shaped sandstone mesa called Phu Kao. What area is not under cultivation or in hamlets is covered with a low brush and light open forest. Sites six to nine are in an

area about 35 km west of the dam in Amphoe Phu Wiang. The reservoir in this area will occupy much of the lowland between the similar sandstone formations of Phu Kao and Phu Wiang. There were several sandstone shelters located in this area, but in only one of them (NP 9) did we find definite evidence of prehistoric (?) occupation. Unusual weather started heavy rains at the time these last four sites were found and it was impossible to dig any test pits or to remain longer in this remote area.

Nam Pong 1 (NP 1) Udorn Thani, Non Sang

About one km west of Non Sang we were shown the remains of a stupa base, composed of laterite blocks and brick, which originally had a facing of mortar. It was overgrown with trees, brush, and vines and the northern side was badly eroded (Plate XIXb). The slightly raised earthen platform on which it was built was rectangular measuring 950 cm in the north-south direction and 555 cm east to west. The platform may have been edged with brick but now all that can be seen are the corner bricks and a few more forming a portion of the south side. The stupa was apparently set symmetrically on the platform though the south side is all that can be measured accurately. The base of the south side is 350 cm in from the edge of the platform and the southeastern corner is 140 cm from the eastern edge of the platform. Assuming that it is symmetrical, this would make the stupa 250 cm north-south and 275 cm east-west, with its long axis perpendicular to the long axis of the platform.

The west face of the stupa appeared to be flat from its base to a projecting row of laterite blocks 220 cm above the base (Plate XIXc and XXa). Only a small amount of its original plaster surface remains. The south face is in the best condition and after removal of about one meter of soil from a portion of this side the original plaster surface was found in fair condition (Plate XXb). Only laterite block can be seen in the standing portion of the stupa but there are a number of bricks in the fallen rubble. Measurements of the one complete brick found are 24 cm by 13 cm by 7 cm. This brick must have been used in the construction of the upper portion of the stupa.

Artifacts: A collection of sherds was made from the surface in the general area of the stupa and a second collection made of materials directly associated with the stupa. From the general area 31 *plain*

sherds were collected of two different pastes. Twenty nine sherds had a grey to brown uneven surface and clay body with a coarse gritty texture and some of the sherds with brown pebbles in the body. Thickness varied from 3-14 mm and two sherds had an impression of a fine cloth with a simple over-under weave. Two sherds of the second paste had a dark to light grey surface and clay body, a reddish clay temper, and were 3 mm thick. There were 46 *impressed: carved paddle* (parallel ribs) of the same color and clay body as the 29 plain sherds and with the same thickness (3-14 mm). There is some variation in the thickness of the ribs (Plate XXg) and one of these may have been *impressed: bound paddle* (basket marked) (Plate XXj). Three plain rims were probably from the same carved paddle-impressed pot, with a rim diameter of about 22 cm (Figure 7a). There were six plain stoneware sherds. Five of these were probably from the same jar with a rough, light grey surface and grey clay body, 8 mm thick. This jar probably had a glaze which was completely flaked off. One sherd had a different textured grey surface and clay body and was 5-6 mm thick. One blue on white porcelain sherd was collected.

The collection from the base of the stupa, except for one blue on white porcelain sherd, was made up of fragments of brick and plaster. The most common brick is a red-brown, surface and has a paddy temper, in some areas not even carbonized. These bricks are soft and friable. Two much less common bricks are smaller and better made. They are a light grey color and like cement, with no indication of firing. The light grey plaster fragment is a finer texture than the two grey bricks, but otherwise similar.

Nam Pong 2 (NP 2) Udorn Thani, Non Sang

In a rice field about 75 meters east of the stupa base (NP 1) we found numerous sherds and bits of bone. We decided to excavate a 150 cm square test pit to determine the depth of the cultural deposit. We put this pit down in an area where the surface concentration of sherds seemed to be the richest. A 10 cm vertical control was kept, and we noticed a change in the pottery as we progressed through the 20-30 cm level. Sherds were recovered to a depth of 40 cm where sterile soil was encountered. The 10-20 cm level sack was lost.

Artifacts: The artifacts recovered from the test pit, primarily pottery, are presented in table form (Table VIII).

Table VIII

Level	No.	Wt.	Gm/S	Artifact	Size
0-10	51	275	5.4	<i>plain</i> sherds, color and clay body same as the majority of sherds of NP 1; 1 sherd 1-2 mm thick	3-13
	3	15	5.0	<i>plain</i> rim; 2 same clay body and shape as Figure 7a; 1 light grey to black surface, black clay body with sand temper, possibly a straight rim	
	36	140	3.9	<i>impressed: carved paddle</i> (parallel ribs), same paste as plain sherds	3-10
	2	30	15.0	<i>impressed: carved peddle</i> (triangular pattern), same paste (Plate XXXk)	
	1	5	—	stoneware, <i>plain</i> , grey surface and clay body, dark brown glaze	10
	—	—	—	shell; 6 bone frags.; limestone; brown pebble, brick frags.; fired clay	
20-30	23	75	3.3	<i>plain</i> sherds, similar paste to those above but not as coarse nor are sherds as thick; 1 sherd was worked with a carved paddle (square lattice) before final smoothing	3-7
	3	20	6.7	<i>plain</i> rim; 2 same as Figure 7a; 1 with same clay body with <i>impressed: carved paddle</i> (parallel ribs) body (Figure 7b)	



Fig. 7. Cross sections of rims and bases from Nam Pong sites: a. NP 1; b. 20-30 cm NP 2; c.-f. NP 5; g.-m. NP 6; n.-s. NP 7; t.-w. NP 8.

Level	No.	Wt.	Gm/S	Artifact	Size
20-30 (cont.)	10	85	8.5	<i>impressed: carved paddle</i> (parallel ribs), same clay body as above, average thinner than above (Plate XXI)	3-10
	1	5	—	red <i>slipped</i> sherd with a ridge, surface and clay body cream with very fine texture	
	1	5	5.0	porcelain sherd, light grey clay body, polychrome overglaze ⁵	
	2	—	—	pipe bowls, molded, grey surface and clay body, with row of punctations around near top of bowl (Plate XXm)	
	1	5	—	metal, (part iron), cylindrical, 7 mm diameter, 24 mm long	
	—	—	—	brick fragment; bone; 1 white stone	
30-40	5	5	1.0	<i>plain</i> sherds, same clay body	4-5
	1	5	5.0	<i>plain</i> rim, same as Figure 7b	
	1	5	5.0	<i>impressed: carved paddle</i> , (parallel ribs) same clay body	
	1	—	—	porcelain sherd, with red overglaze decoration, possibly from same vessel as in 20-30cm level ⁵	
	—	—	—	fired clay; 3 bones, 2 of them ribs from a large fish	

Table VIII Artifacts recovered from test pit of NP 2

The quantity of sherds from the test pit is so small that it is questionable whether they are representative of the site as a whole, but as there is nothing unusual about them we review them briefly. For a total of 135 sherds from all levels the average weight is 4.9 gm per sherds. The average weights per level are 5.0 gm/sherd for the 0-10 cm and 20-30 cm layers and 2.1 gm/sherd for the lowest layer. For all levels the *plain* sherds averaged 4.5 gm, the *plain* rims 5.7 gm, the *impressed: carved paddle* 5.3 gm. The differences in weight between classes are all in the same direction as those from LP 3, so the same inferences as to function could hold here. The only change noticeable with increasing depth is the decrease in size, both in weight of the sherds, as far as the *plain* sherds are concerned, and the thickness of the pieces. The considerable drop in size of the sherds in the lowest level may or may not be meaningful as only seven sherds came from this level. Though in Thailand this carved paddle surface decoration is usually taken to indicate considerable age, there is no indication in this case of any great age.

Nam Pong 3 (NP 3) Udorn Thani, Non Sang

This site consists of the badly preserved remains of a stupa base similar to the one at NP 1 (Plate XXIa). It is located approximately two km to the west of Ban Kho. The torso of a seated Buddha image is placed on the lower portion of the platform (Plate XXIb), and the place is evidently used from time to time as a local shrine. There were no surface remains to indicate an area of habitation. Heavy scrub undergrowth surrounds the site.

Nam Pong 4 (NP 4) Udorn Thani, Non Sang

To the northwest of Non Sang is the large sandstone formation of Phu Kao. Located on the inner slope of the eastern rim is a large sandstone shelter. The outer facing above the shelter has numerous geometric designs (Plate XXIIa) that have been worked into the surface of the rock. Some of these designs, especially one in the shape of a celt with concave sides, are repeated many times (Plate XXIIb). On the floor of the shelter we found numerous unglazed earthenware sherds, but there did not appear to be an accumulated

cultural deposit. Above the outer facing of the shelter is a second small shelter completely in the rock. On the sloping floor there is a circular depression which may have been a bed rock mortar, and further geometric markings (Plate XXIIc).

Artifacts: Only a few of the numerous sherds noticed were saved. Of two *plain* sherds one had a brown clay body two to three mm thick and its outer surface was covered with carbon; the second had a brown surface and clay body seven to eight mm thick with fine parallel horizontal striations crossed by vertical shallow short lines apparently resulting from the method of manufacture. We saved four *impressed: bound paddle* (cord-marked) sherds with a brown to grey surface and clay body four to six mm thick. The paddle had been struck twice at an angle making diamond shaped lozenges (Plate XXIIc-d). The cord was about 1 mm in diameter and with such a tight twist that it could hardly be made out. There is one *impressed: carved paddle* (parallel ribs) with brown surface and clay body with some sand temper. The parallel ribs may have formed a band of decoration around the vessel below the neck (Plate XXIIe). We saved one fine grained, light tan stone that was oval in cross section, 24 mm long by 8 by 10 mm in cross section.

Nam Pong 5 (NP 5) Udorn Thani, Non Sang

Approximately two km southeast of Ban Non Ta Na, in the middle of a large rice field, we found what appears to be a large open site evidenced by numerous sherds of both glazed and unglazed wares. Whether we are dealing with one site or a group of sites can not be determined without further underground exploration. The entire surface of this site (s) is now under rice cultivation. Numerous finds were in the hands of the villagers of Ban Non Ta Na and many more than they now possessed were reported to have been lost or broken and discarded soon after their discovery. This porcelain, stoneware, and earthenware pottery, and these metal artifacts are presented in Plates XXIf and XXIII-XXIVg.

Artifacts: Only a few earthenware sherds were collected as all that were noticed were plain. Included among these were sherds with clay temper, sand temper, and fiber temper. Five *plain* stoneware sherds were saved, four of them with a light to medium grey surface and clay body two to six mm thick and one with an orange-brown surface, orange-brown to light grey clay body in portions, clay temper, and the body seven to nine mm thick. Five *glazed* stoneware sherds were saved: one with violet surface and clay body 11-12 mm thick and the badly weathered glaze a grey-green with many small holes; one with dark tan surface and clay body six to nine mm thick and a clay temper and a weathered dark blue glaze; one with a grey surface and clay body five to six mm thick and on the outer surface a very thin speckled grey glaze; one with light tan inner surface, a dark grey outer surface, and the clay body varying from light tan to dark grey with diffuse bluish particles, body seven mm thick, and weathered dark olive brown glaze; one light grey surface and dark grey clay body seven mm thick with a sandy texture, no remnants of glaze except the sandy base from which it had flaked. Five *incised* stoneware sherds were recovered: two with a light grey surface and clay body four to five mm thick and speckled with dark particles, straight line incising covered with a brown glaze, one sherd glazed on both sides the other only on the outside; one light grey surface and clay body four to six mm thick, incised with concentric circles at the base of the neck; one light speckled tan to grey inner surface, dark grey outer surface, clay body varying between the two, pebbles in the body up to seven mm long, body seven to eight mm thick, incising a series of high (6 cm) narrow (3-4 cm) arches, four in a set (one inside of the other), three of them very close together at the base but further apart at the top, while the fourth is just a short arc at the inner top; one streaked brown inner surface, dark grey outer surface, dark grey clay body 11-12 mm thick with pebbles up to six mm long, incised hanging arcs between ridges (Plate XXIVh), with dark brown glaze inside and out. Two *plain* stoneware rims: one with light speckled grey surface and clay body varying to a dark grey and tan with remnants of an olive brown glaze, rim diameter about 17 cm (Figure 7c); one speckled grey outer surface and grey inner

surface and clay body with incised wavy lines on the body parallel with the rim done with a four pronged tool (Plate XXIV*i*, Figure 7*d*). We found one stoneware flat base and one rim of a large lid: the base, possibly from the same jar as the rim in Figure 7*c*, has a light speckled grey inner surface while the outer surface is a speckled tan and the clay body varies from tan to dark grey with a dark olive brown glaze on the outside (Figure 7*e*); the lid sherd has a tan upper surface and a light grey inner surface and clay body, except where it is dark grey at its thickest portion (Figure 7*f*).

Surface finds

The five sites described to this point are all from the northern extension of the reservoir area. Several surface finds were made or reported from this area that can not be included with specific sites.

A questionable stone adze/axe was found one morning on the surface when we were on the way to examine a cave reported in the east ridge north of the Nam Pong River and about three km east of Ban Nong Tanah. The cave turned out to be sterile but on the way back to the hamlet the tool (?) was found. It is a sandstone conglomerate, 24 cm long, 3.8 cm thick, and 8.3 cm in maximum width, with an oval cross section (Plate XXIV*j*).

Three polished stone adzes were seen. Two of these from Ban Kho, were lenticular in cross section tapering toward the butt (Plate XXIV*k*), and the third was rectangular in cross section with possible low shouldering.

Nam Pong 6 (NP 6) Khon Kaen, Phu Wiang

This site is probably restricted to a large mound lying about one and a half km west of Tambon Na Kham. The surface of this mound is rich in sherds of Sukothai, Ming, and Ayuthia vessels, and many sherds of unglazed earthenware. In other areas, the kind of earthenware found here is considered by the staff of the National Museum as indicating prehistoric occupation so it is possible that this site, and the others following, may have had prehistoric begin-

nings. Clay pipes, slag, a small quantity of bronze, which perhaps fell to the ground in a molten state, and a large marine mollusk (Plate XXVa) have been gathered from the surface by the land-owner. During surface collecting a broken tektite was found in surface association with the cultural material (Plate XXVb).

The surface of part of this mound was cultivated for the first time last year, and many portions of the mound are still covered by high grass and occasional small trees. The soil was damp, but appeared to be dark grey in color. An area under cultivation showed cultural material to a depth of 50 cm. How much deeper it may go will require test excavation to determine.

Artifacts: There were two kinds of paste found in most of the sherds saved. One of these had a sandy feel and a small amount of clay temper; its surface and clay body was from tan to brown and thickness from 3-12 mm. The second does not have the sandy feel, has more clay temper, is tan to black in surface and clay body, and is 4-15 mm thick. Other pastes are present. Fifty six *plain* sherds were collected, including one base with a ring foot. Eighty *impressed: bound paddle* were collected, 79 of these cord-marked (Plate XXVc-j) and one possibly basket-marked (Plate XXVh). One of the cord-marked sherds had a slight angle and the cordmarking has been smoothed over on one side of the angle (Plate XXVc); one sherd came from a flat bottomed vessel with an angle between the bottom and side. The cord used varied from about 1/3 to 1 mm in diameter. Ten *impressed: carved paddle* sherds were saved, six of these with parallel ribs and four with a square lattice pattern. Eighteen *plain* rims were collected: two of these are similar to Figure 7a, one similar to Figure 6t; two like Figure 7g; one of these with a rim diameter of about 22 cm; and the others like Figure 7h-m. Six *plain* stoneware sherds were saved: five with a grey surface and clay body 6-10 mm thick, two of these are flat bottoms, one 14 cm in diameter is flat inside and the other 7.4 cm in diameter comes to a point inside; one with tan surface and clay body five to six mm thick. One incised stoneware sherd was found (Plate XXVI) with grey surface and clay body five to six mm thick and a band 2.5 cm wide of nine straight

lines. Five *glazed* stoneware sherds were saved, four with brown glaze, three of these with grey clay body one with brown clay body, all seven to nine mm thick, and one with a light grey clay body 7-10 mm thick and light green crackle glaze. Seven blue on white porcelain sherds from small cups were saved.⁶ There were portions of four clay pipes (Plate XXVm-p) the bowl of the largest 3.7 cm in outer diameter and the bowl of the smallest 2.0 cm in outer diameter, all made in molds. Besides these pot sherds there were fragments of fired clay, the marine bivalve (Plate XXVa), the broken tektite (Plate XXVb), and the pieces of metal.

Nam Pong 7 (NP 7) Khon Kaen, Phu Wiang

This site is located about a half km to the south of Ban Na Di on a small mound now partly under garden cultivation. Surface evidence, consisting primarily of unglazed earthenware sherds is spread over most of the mound and onto the surrounding rice cultivated plain. Examination of the side of the mound shows sherds to a depth of 70 cm. How much farther below this they extend requires test excavation to determine.

Artifacts: The sherds found here had the same pastes as found at NP 6 except that there was a higher percentage of sherds with the sandy texture. Twenty seven *plain* sherds were collected, including one with a flat base and one that had impressions of whole paddy grains. The 41 cord-marked sherds collected were all of the sandy paste. The twist of the cord is somewhat more obvious on these sherds (Plate XXVq-u) than on those from NP 6. Fifteen *plain* rims were collected, four of them (Figure 7n) from one vessel with the impression of a textile weave on the lip. There were five other simple rim forms (Figure 7o-s). One was cord-marked right up to the edge of the square lip but the sherd was so small a cross section would be meaningless. Six *plain* stoneware sherds were found, three with grey surface and clay body, three with brown surface and clay body, all six to eight mm thick. One stoneware sherd was *incised* with parallel wavy lines done with a four prong incising tool. It had a grey surface and clay body. Four foreign stones were found,

one a crystalline sandstone and three a red-brown fine grain stone, one of them with a polished surface.

Nam Pong 8 (NP 8) Khon Kaen, Phu Wiang

This site is located atop a large knoll of decomposed laterite some two and a half kms north of Ban Nong Waeng. It extends over an area perhaps 30 by 90 meters, and is the densest accumulation of sherds uncovered during this season's survey. All sherds seemed to be unglazed earthenware except for one porcelain sherd. Clay pipes, bone, slag, and a possible spindle whorl were also recovered. Several small waterways are eroding the mound, and in the small eroded zones there appears to be an almost solid accumulation of sherds to a depth of 60 cm or more. The cover consists of scrub-forest with occasional thorny underbrush.

Artifacts : The sherds collected are predominantly of the same two pastes as at sites NP 6 and NP 7, except here the plain and carved paddle impressed sherds are primarily of the paste with the greater quantity of clay temper and the cord-marked sherds are primarily of the sandy paste. Of the 25 plain sherds collected 24 had the clay temper. Eighteen *impressed: carved paddle* were collected of which 15 are parallel ribbed—a few of these may be basket marked (Plate XXV*v-w*)—one has a square lattice pattern, and two have a triangular pattern exactly the same as from NP 2 (Plate XX*k*). One sherd may possibly have a fine basket pattern impressed from a bound paddle. Eighteen sherds are cord-marked (Plate XXV*x-bb*) and 16 of these have the sandy clay body, three to nine mm thick. Two of those with the sandy clay body also have many pebbles and they are 16-24 mm thick (Plate XXV*cc*), one with an incised line around the cord-marked area outside of which is some other kind of impressed decoration (Plate XXV*dd*). One cord-marked sherd with the sandy clay-body three to four mm thick has three wide, parallel grooves (Plate XXV*ee*). There are eight *plain* rims: three sherds with the same form have the clay temper and one of these has parallel ribs or basket marking on the body (Plate XXV*ff*, Figure 7*t*), five with the sandy clay body, two the same form with cord-marking

on the body (Plate XXV_{gg}, Figure 7_u); one rim (Figure 7_v); and two, of such sandy texture and so well-fired that they almost seem like sandstone, are heavy rims, one from a jar and the other from its lid, that fit closely together, the rim diameter of the lid being about 34-38 cm (Plate XXV_{hh}). The spindle whorl mentioned above is of the sandy clay body (Figure 7_w). One blue on white porcelain sherd was found; one fragment from the stem of a clay pipe; one piece of metal slag; one tanged iron blade, sharp on one edge (Plate XXV_{ii}); nine stones foreign to the area, one of them a dark violet crystalline stone that may have been worked; mammal bone, turtle bone, water buffalo teeth, teeth and lower jaw of fish or amphibian, and snail shell were also found.

This site may well be a major prehistoric site and will be tested early in the next field season.

Nam Pong 9 (NP 9) Khon Kaen, Phu Wiang

On the inner slope of the western rim of Phu Wiang we found a large sandstone shelter, apparently formed by the erosion of a supporting stratum leaving the upper stratum overhanging. In the rear wall of this shelter is a small opening leading to a chamber some 2 meters wide by 1 meter high. On the wall above this opening are red outlines of nine human hands varying in size from those of a large adult to those of a child of seven or eight years (Plate XXV_{ia}). Some of the outlines are sharper than others; two are faded and ill-defined. All of the outlines are of the left hand, either an odd chance or a significant choice.

There was no time to test the floor of this cave but it would seem to be a likely site.

Reported Megalithic Site

In September 1963 the Fine Arts Department supported a brief survey trip to the Nam Pong reservoir area to give us some idea of the problems our program would encounter in the field. While visiting hamlets in the general area of the dam site we heard several stories about what sounded like a classical dolmen site well up the

river and on the western side of Phu Kao. The party went to visit this site and found a spectacular natural stone formation, much like a dolmen site but of gigantic size (Plate XXVIb and XXVIIa). No archaeological site was noted, but an interesting Buddhist alter was found under one of the larger rocks (Plate XXVIIb). With the central Buddhist figure were numerous other figures of wood and stone, no doubt locally made, of a style unknown to the members of the Fine Arts Department present (Plate XXVIIIa-c). This area will not be damaged by the reservoir waters but it would be well to make an extensive survey here for sites before the tourists move in.

Summary

A total of 21 archaeological sites were found in three reservoir areas and it was found that there are no sites in the fourth area (Nam Phung). The fifth area has not yet been surveyed. Of these sites, two from Lam Pla Plerng and two to four from Nam Pong appear to be prehistoric. All sites found in the Lam Pao reservoir area are historic on the surface but some of these may have been started in prehistoric times.

The most common artifact recovered was pottery, with earthenware much more common than stoneware, though stoneware was present in many of the sites. Porcelain was present in many sites but always in small quantity.

No sites that can be called cities were located but several sites can be considered fair sized towns. None of the areas investigated appear to have been heavily occupied at any time.

Conclusions

Major conclusions are being left for next season's report after a number of the discovered sites have been extensively excavated. The few conclusions presented here are more in the way of pointers for future work.

The areas investigated have no natural features which would help to locate prehistoric sites. From the few prehistoric sites located and the scattered surface finds by the locals of both polished stone

and bronze celts it would appear that there was widely scattered prehistoric population of long duration. These sites are so far underground that the usual plowing does not turn them up. It is hoped that when a greater length of time can be spent in one small area for the excavation of a site, it will be possible to find a few of the probable hidden prehistoric sites.

The presence of polished stone adzes in a site does not mean that it is prehistoric. The "Ayuthia" people seem to have collected adzes, as do the people today.

The two sites in the Lam Pla Plerng reservoir area would seem to be related to the Neolithic and Early Iron Age sites in Kanchanaburi. Excavation of these sites will help to clarify the distribution in Thailand and in Southeast Asia of what appears to be a distinctive prehistoric culture.

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Notes

1. Several of the porcelain and stoneware sherds were shown to Professor Emeritus H. Otley Beyer of the University of the Philippines. His identifications are presented in the notes. The bowl from LP 1 was dated by Beyer as 16th century.
2. Chinese, 16th or early 17th century.
3. Siamese or possibly Chinese 16th century. This would suggest that despite the essentially modern C-14 date the site was in use 400 years ago, and, as these sherds were found on the surface, probably goes back some time before this.
4. The translation by Coedes is as follows :

"Traduction

1. cet ascète honoré par les brahmanes a érigé cette pierre tenant l'office de borne, avec les bhikṣu.

2. En çaka dan '1 année Çuci*, le divième jour de la lune croissante de Caitra, cette borne a été fixée par l'Assemblée.

*Çuci est peut-être un synonyme de çukla, nom de la 3^e année du cycle sexagénaire. Dans ce cas, on aurait le choix entre les années 611, 671, 731."

5. Siamese or Chinese, probably 15th-16th century.
6. Chinese, 16th or early 17th century.

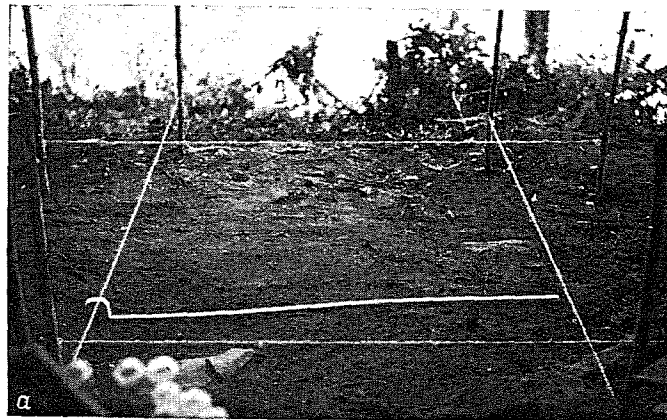
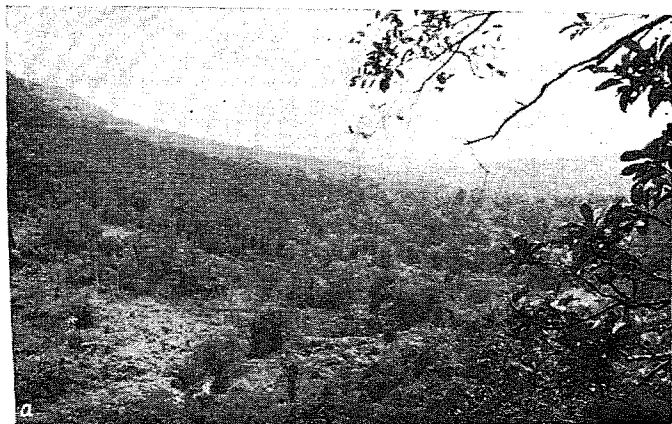


Plate I. The Lam Pla Plerng reservoir area : a. general view; b. cleared area near dam including LPP 1 under the sandstone outcropping in the shade, center.

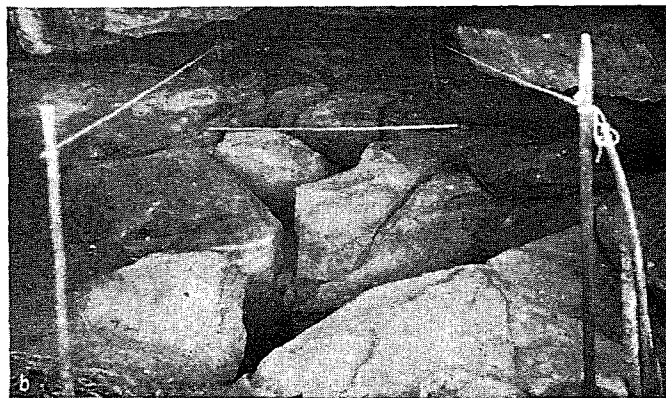


Plate II. Test pit at LPP 1 : a. before excavation, looking west; b. after excavation, looking east.

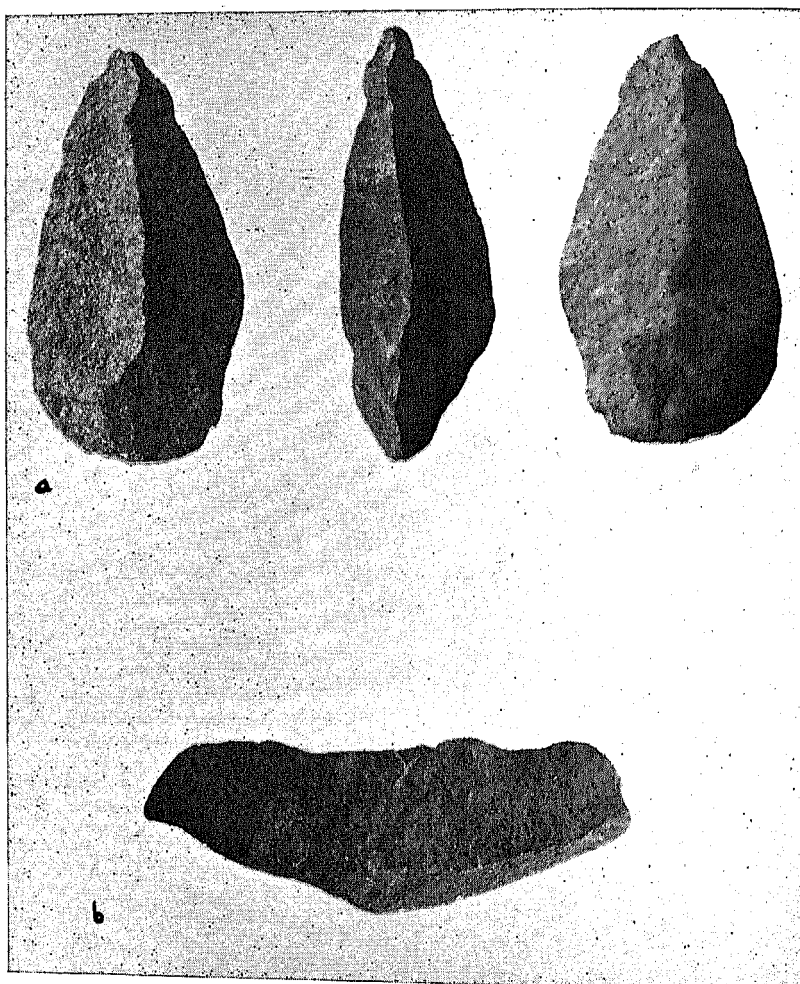


Plate III. Stone tools from LPP 1 : a. "handaxe" 10.2 cm long; b. sharp working edge including a shallow concave edge at the upper right side.

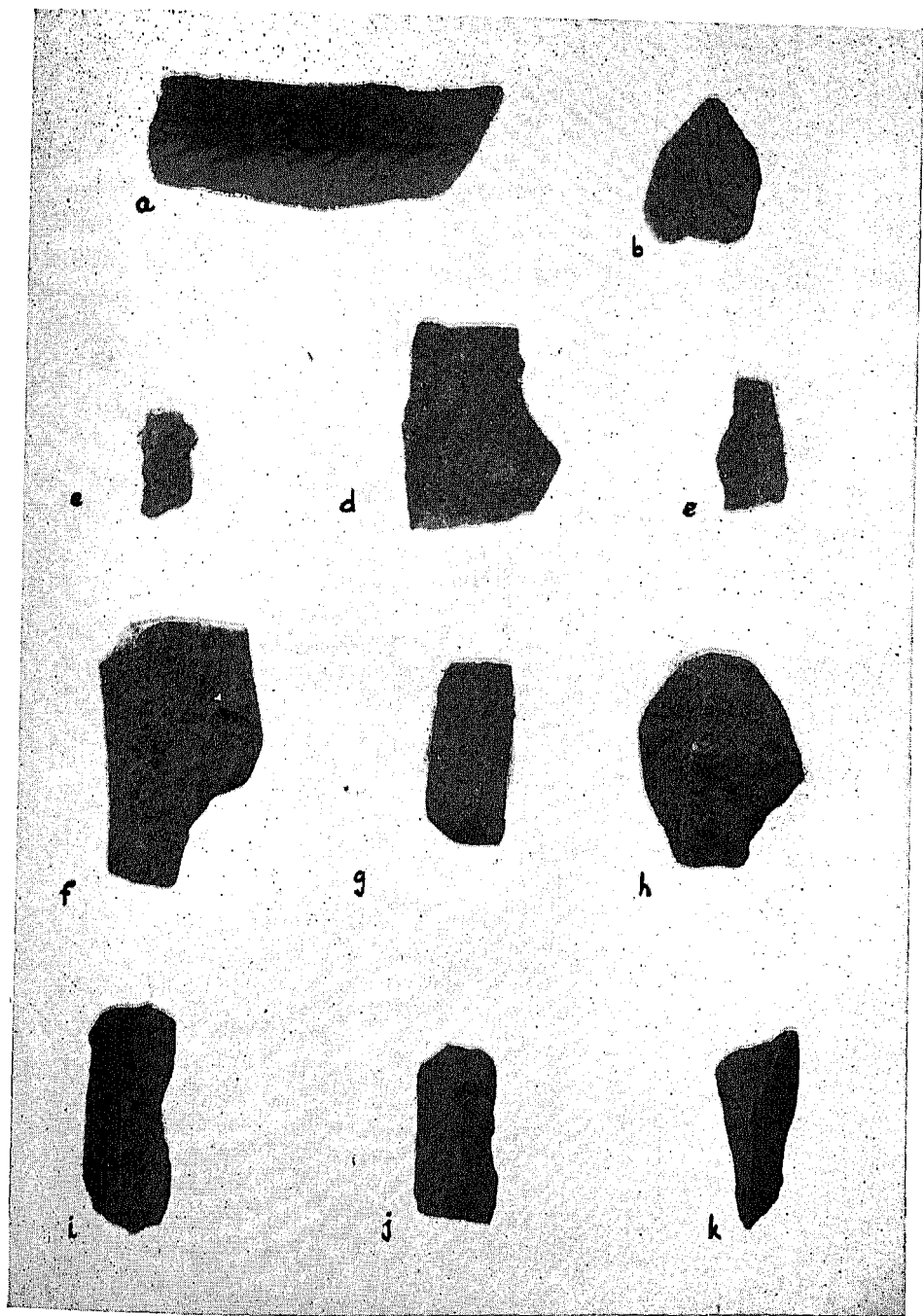


Plate IV. Potsherds and stone tools from LPP 2: a. ridge with diagonal impressions; b. *impressed: carved paddle* (parallel ribs); c.-e. tools from 0-10 cm; f.-h. 10-20 cm; i.-k. 20-30 cm.

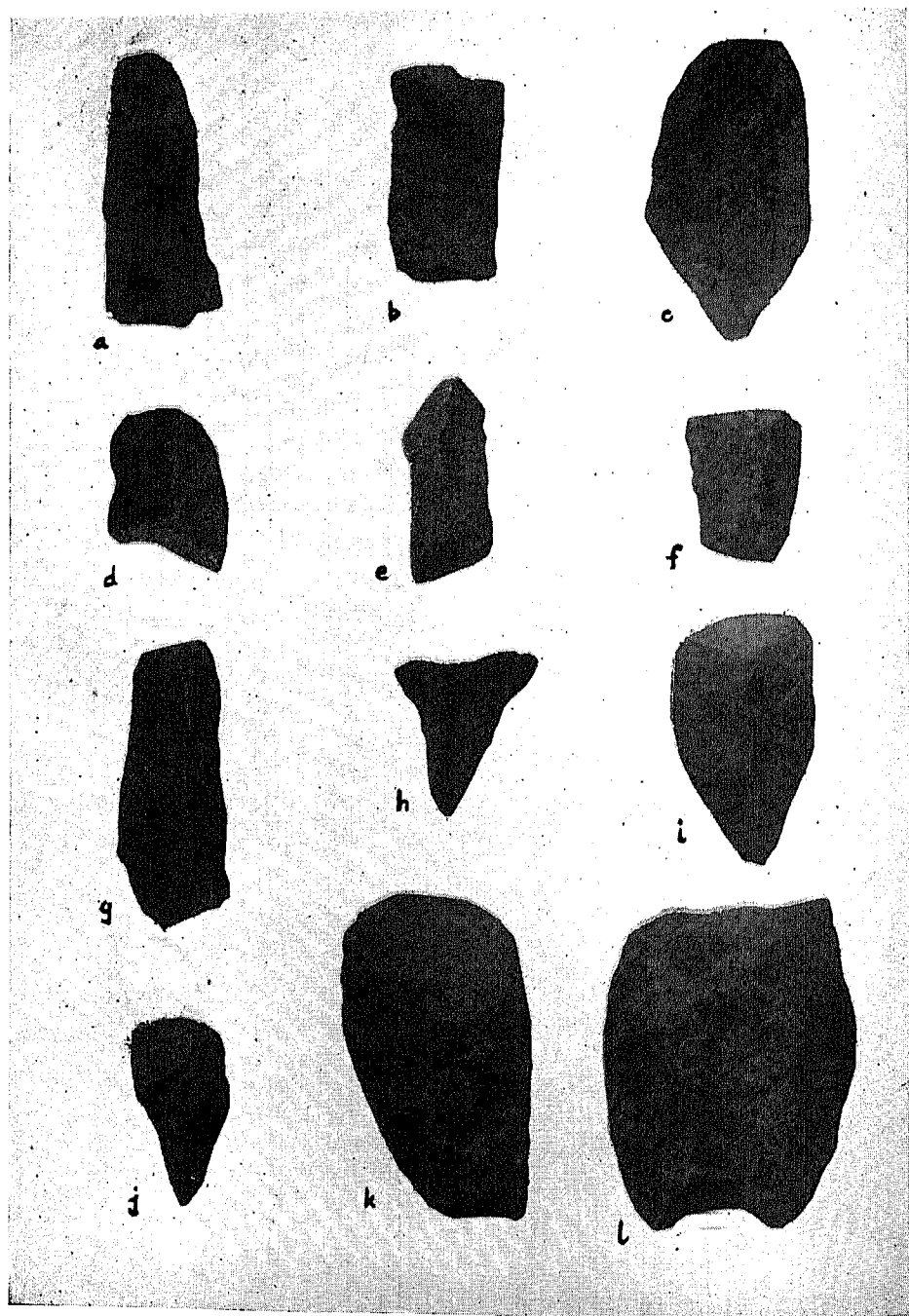
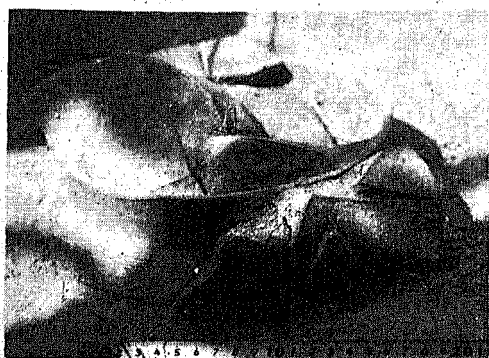


Plate V. Stone tools from LPP 2: a.-c. from soft pit 20-40 cm; d.-f. 30-40 cm; g.-i. 40-50 cm; j.-k. 50-60 cm; l. 60-70 cm.



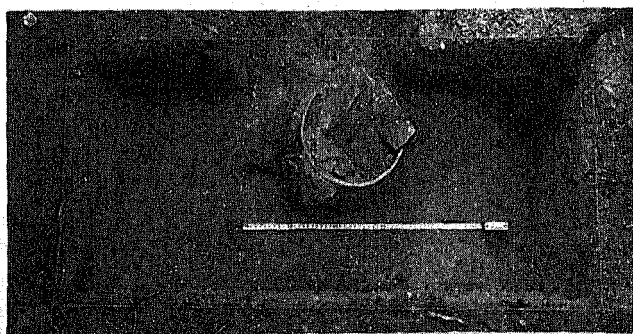
a



b



c



d

Plate VI. "Ayuthia" jar from LP 2, *in situ*.

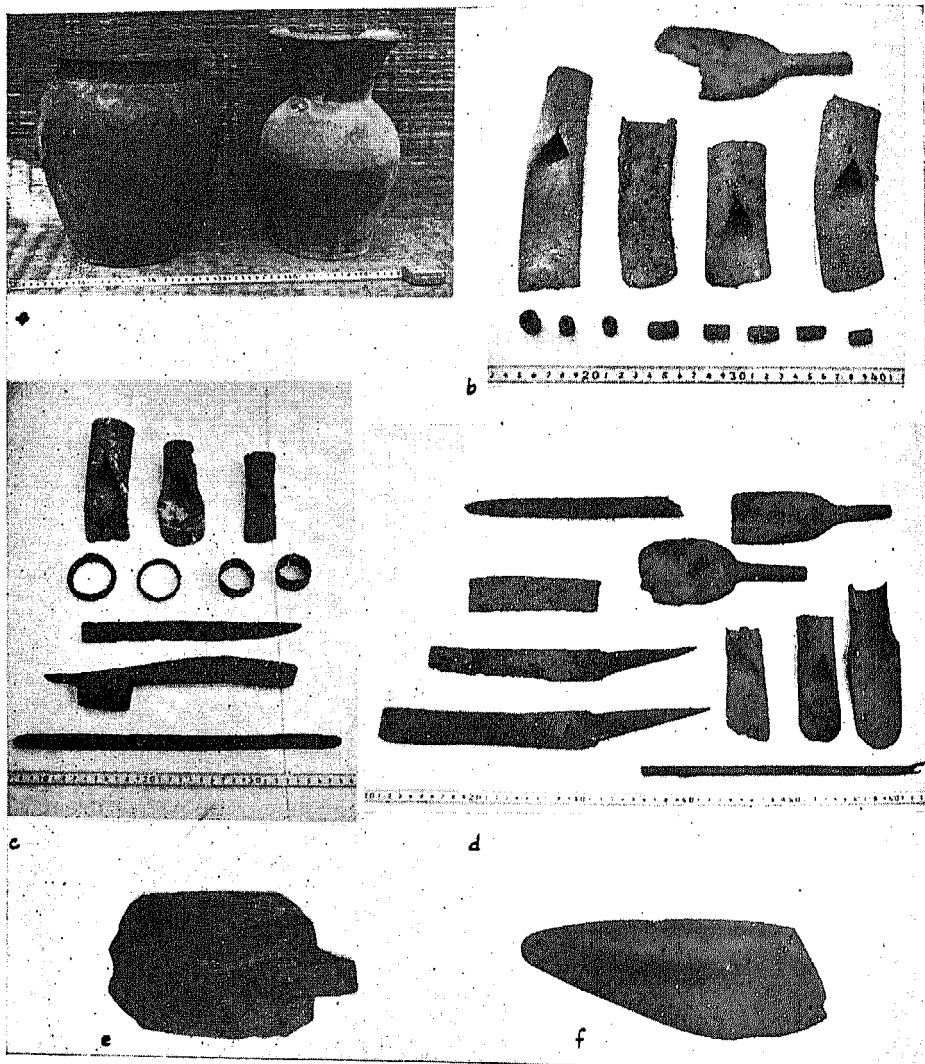


Plate VII. "Ayuthia" jars and contents (a.-d.); e.-f. polished stone tools found in jars from LP 2 by local villagers.

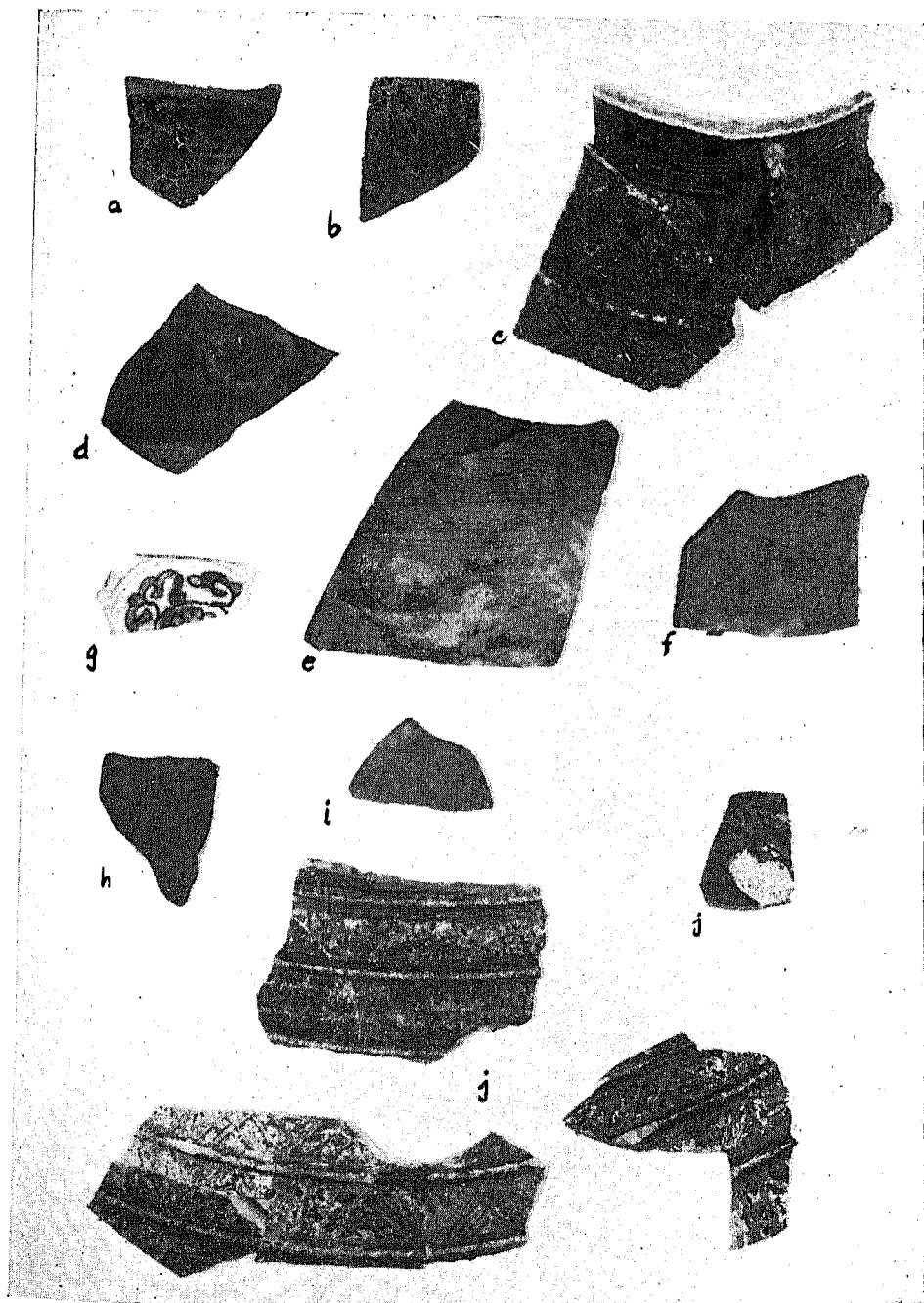


Plate VIII. Stoneware, porcelain, and earthenware from LP 2 (h.-i. are earthenware sherds).



Plate IX. a. Examples from contents of jar pictured in Plate VI; b. "Lopburi" jar found near Ban Sao Lao.

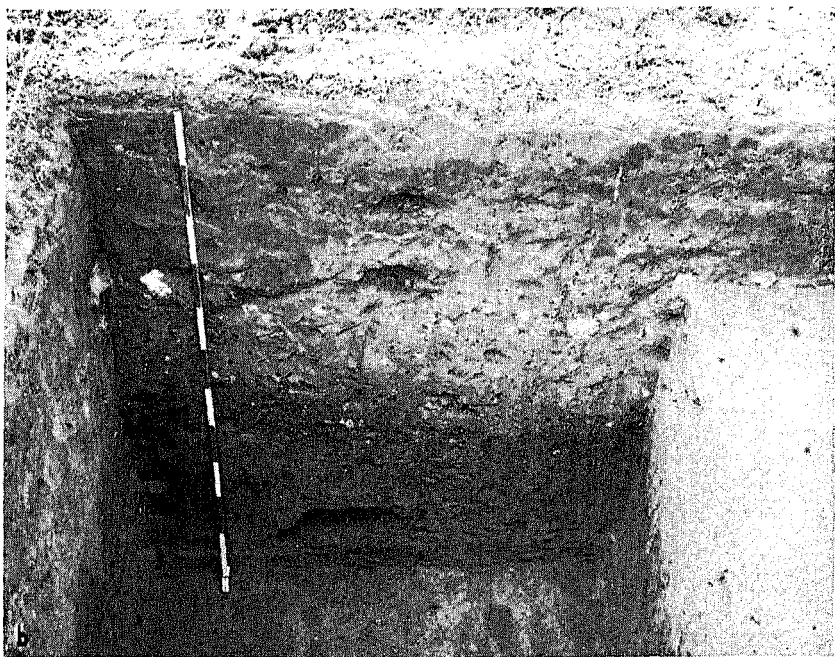
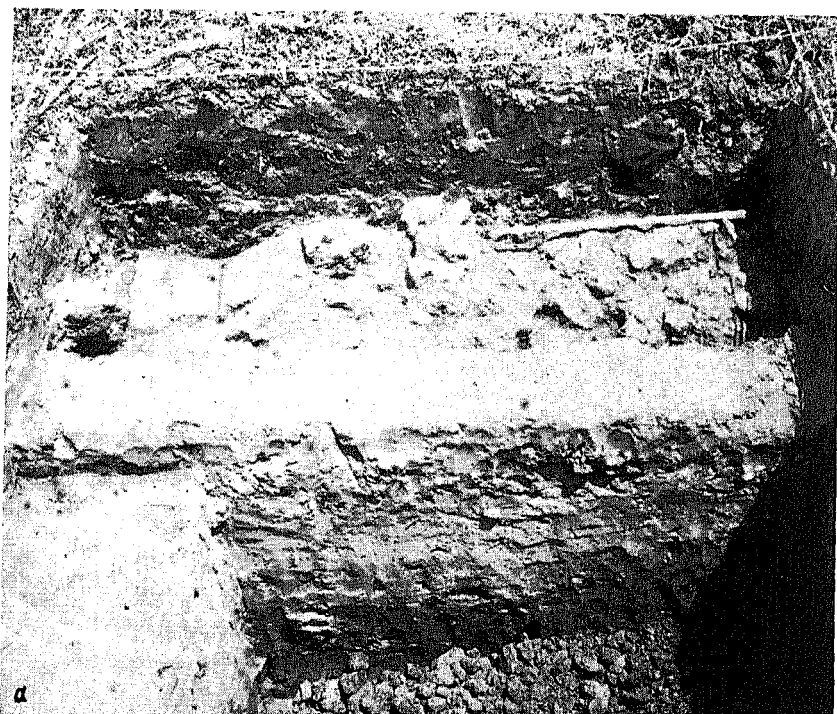


Plate X. Pit A, LP 3: a. top of supposed brick wall and supporting baulk; b. south wall.

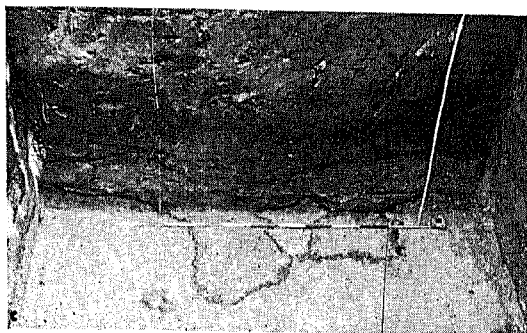
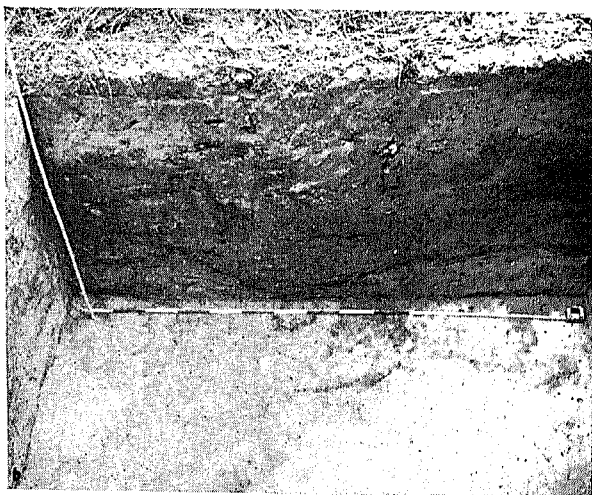
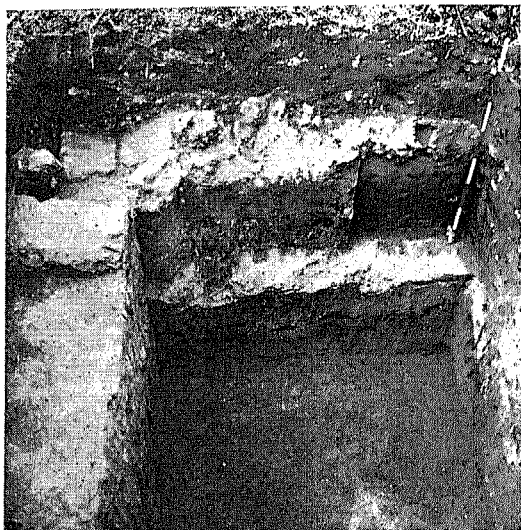


Plate XI. Test pits at LP 3: a. north side of Pit A showing that layer of bricks and fragments is not a wall; b.-c. different levels of excavation in Pit B showing unevenness of old surfaces.

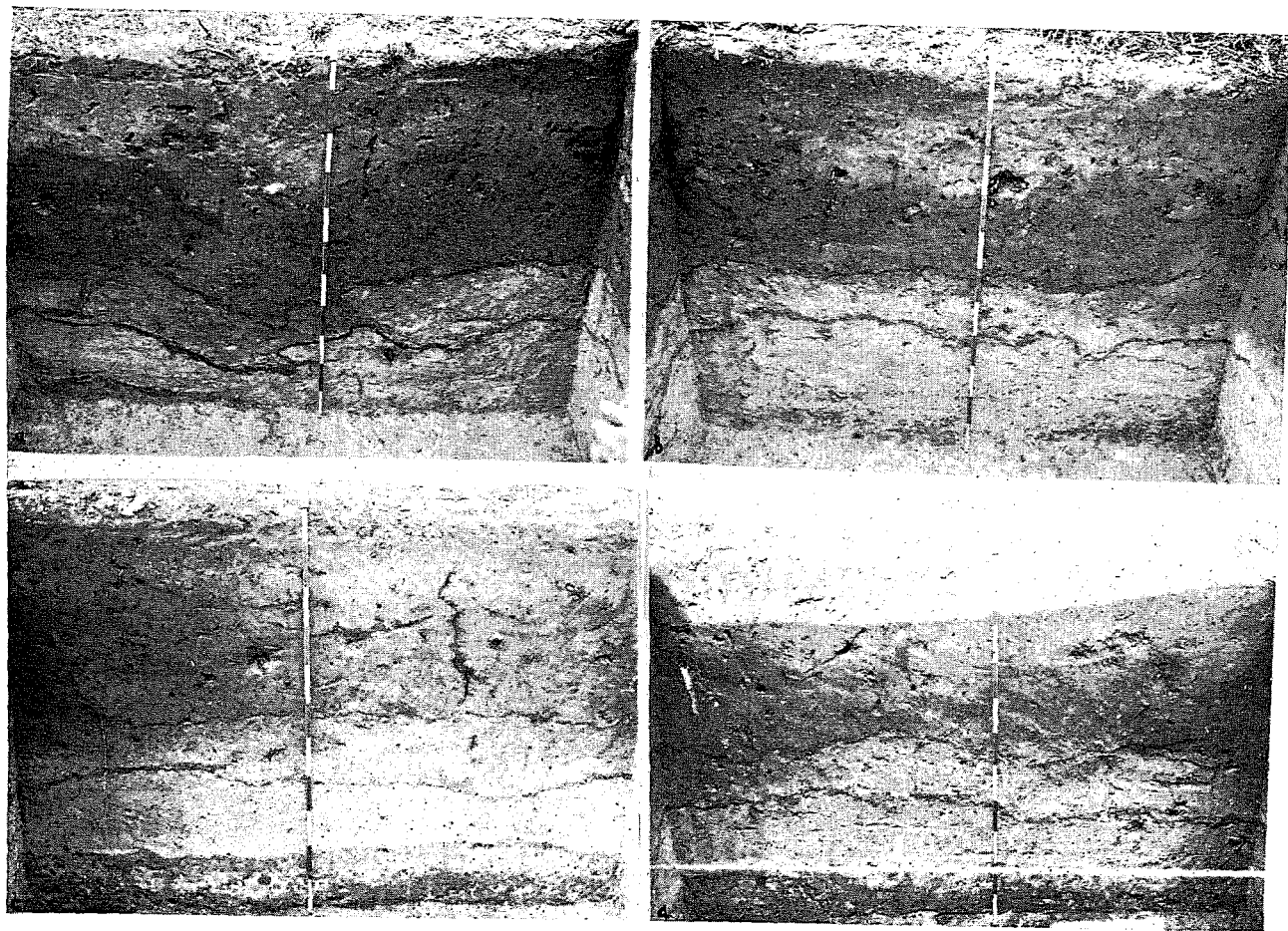


Plate XII. The four walls of Pit B, LP 3 : a. north wall; b. east wall; c. south wall; d. west wall.

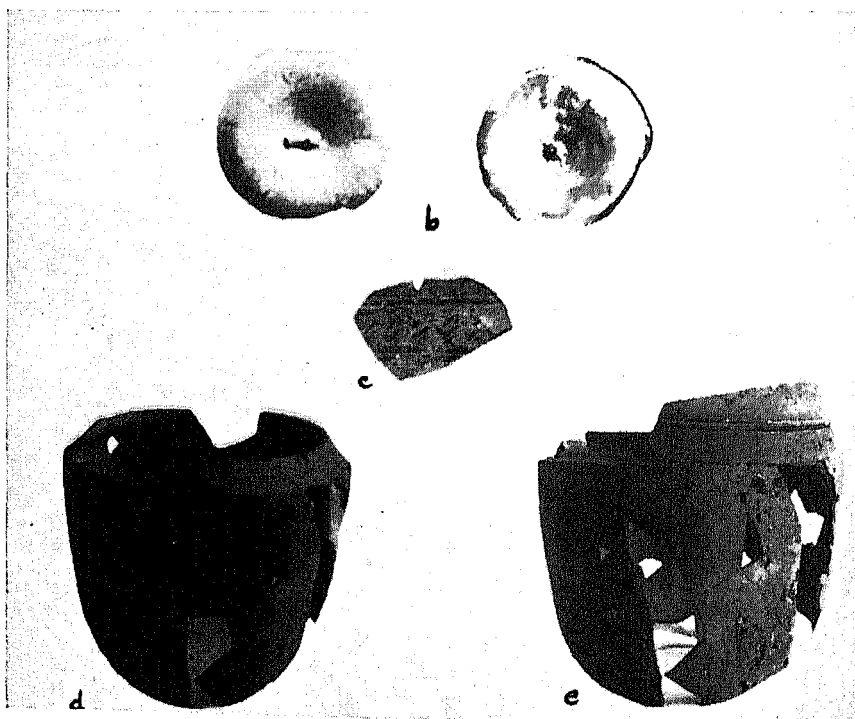
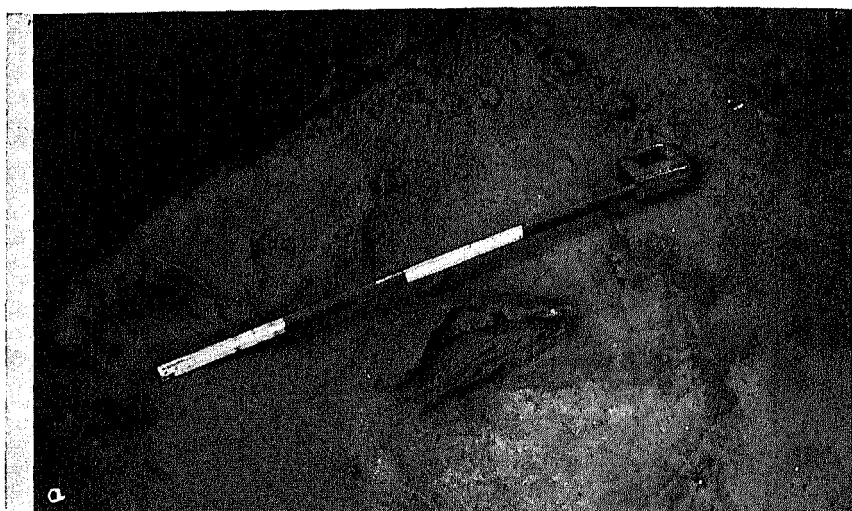


Plate XIII. Pottery from LP 3 : a. portion of earthenware pot found *in situ*, Pit B; b. stoneware lid from the surface; c. stoneware sherd 50-60 cm, Pit A; d.-e. stoneware jar and lid (e) 40-50 cm, Pit A.

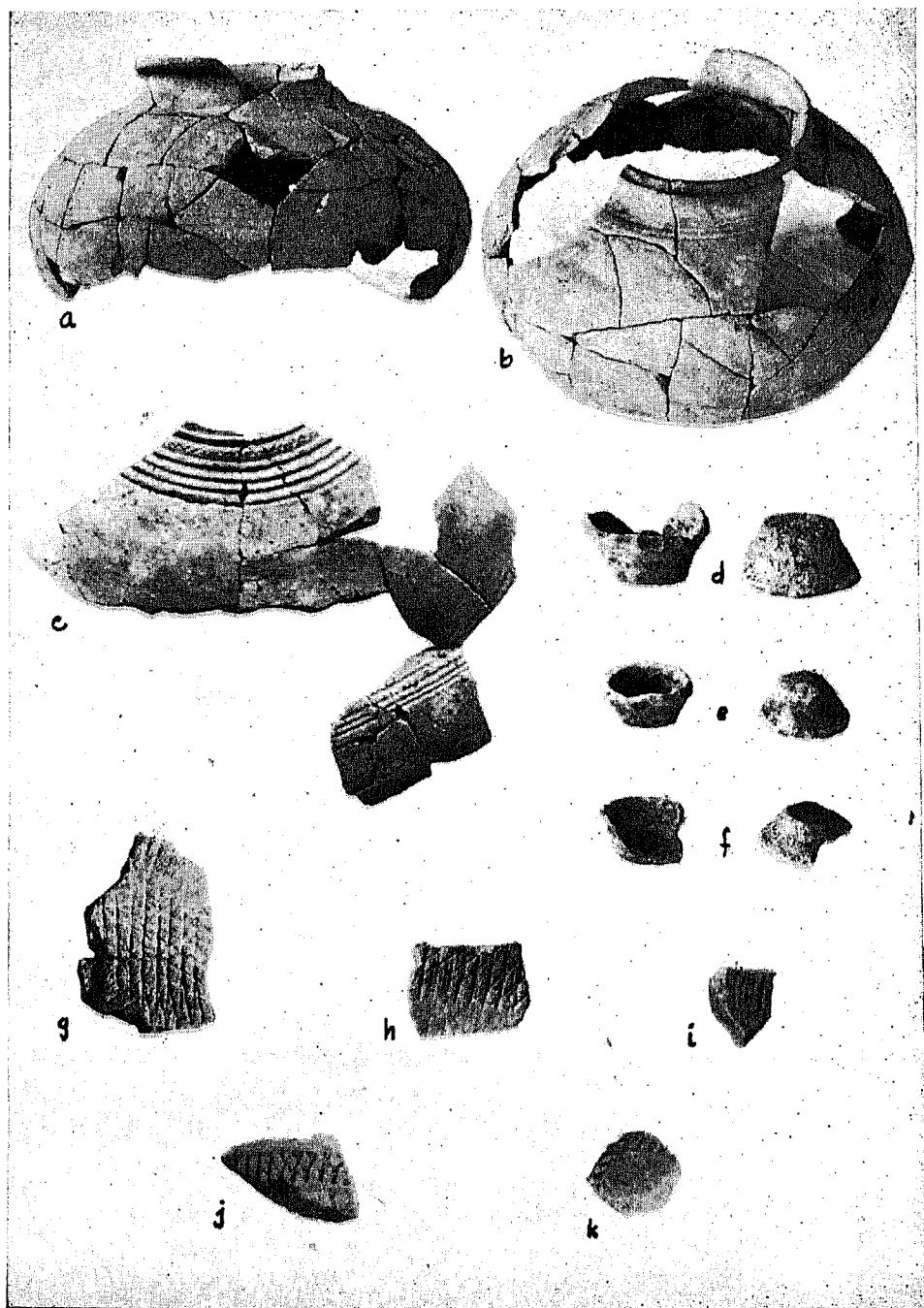
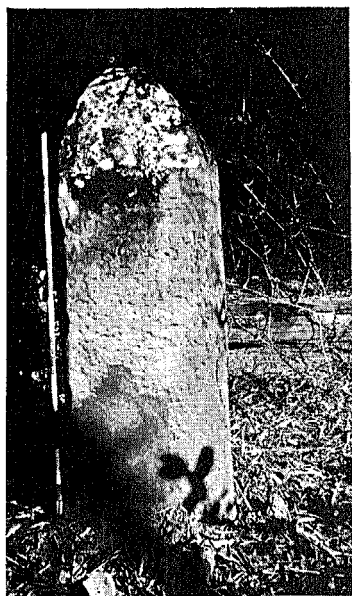
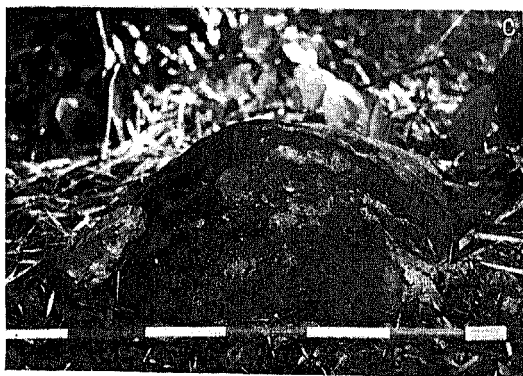


Plate XIV. Earthenware pottery from test pits of LP 3 : a.-b. potsherds from 40-70 cm, Pit A; c. sherds from impressed vessel, 40-50 cm, Pit A; d.-f. tiny bowls 60-80 cm, Pit A; g.-i. *impressed: bound paddle* sherds 100-110 cm, Pit A; j. *impressed: simple tool* sherd 0-10 cm, Pit B; k. *glazed and impressed* sherd 10-20 cm, Pit B.



a

b

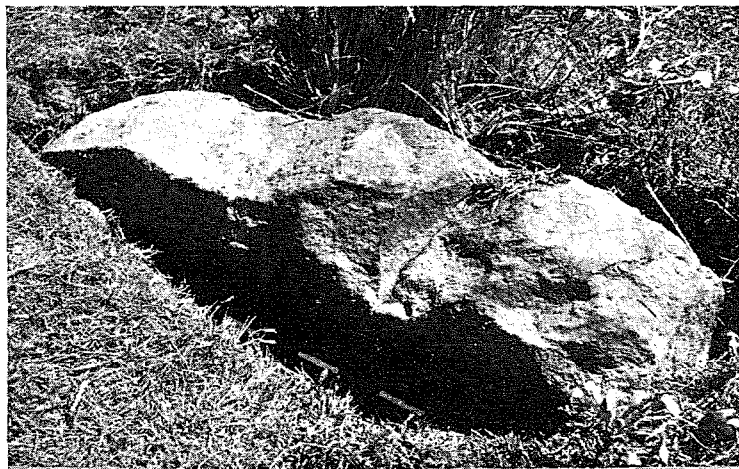


c



d

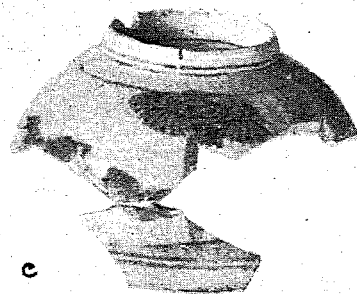
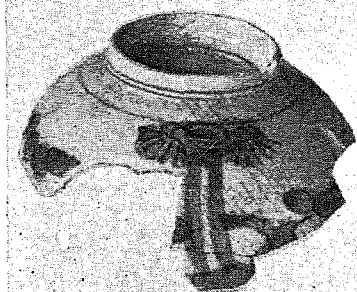
Plate XV. Stone uprights from sites in the Lam Pao Reservoir area: a.-c from LP 5, note small stone nestled against stone in c.; d. upright with lotus flower motif around base.



a



b



c

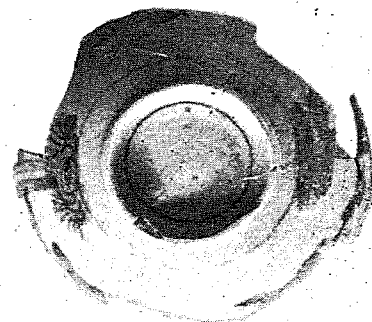


Plate XVI. Worked large stones and porcelain from sites in the Lam Pao Reservoir area : a. stone in rice field near Wat Pra Meo; b. stone in brush near Ban Tha Muang; c. blue on white bowl, LP 6.



Plate XVII. Stone uprights from sites in the Lam Pao Reservoir area :
a. LP 7; b.-c. LP 8.

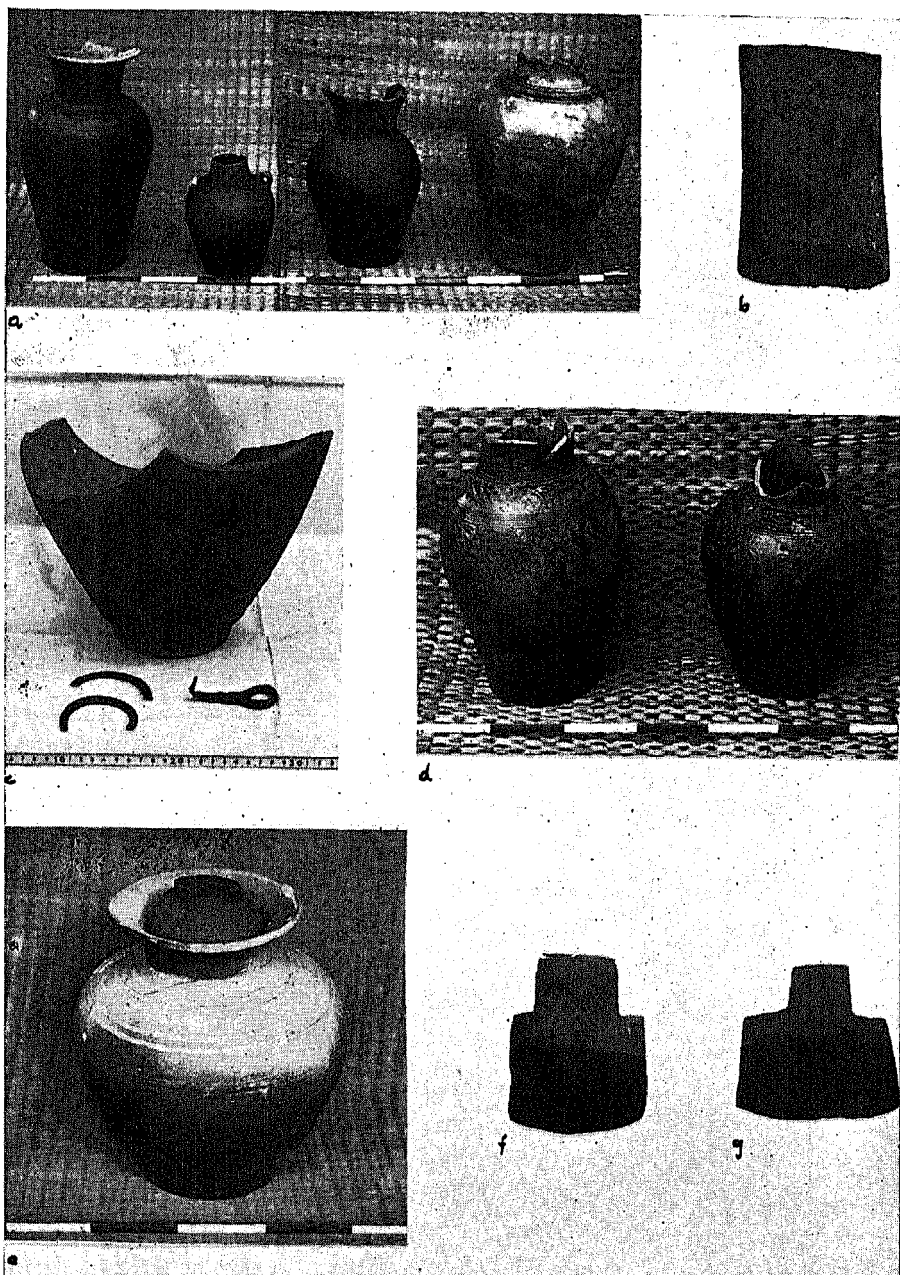


Plate XVIII. Stoneware, metal, and stone artifacts from the Lam Pao Reservoir area :
 a. LP 10; b. bronze celt; c. base of "Ayuthia" jar and a portion of its contents;
 d. "Ayuthia" jars; e. cremation (?) jar; f.-g. shouldered adzes.



Plate XIX. Nam Pong Reservoir: a. view of reservoir area from top of ridge about one km. north of dam site; b.-c. north and south sides of cleared stupa, NP 1.

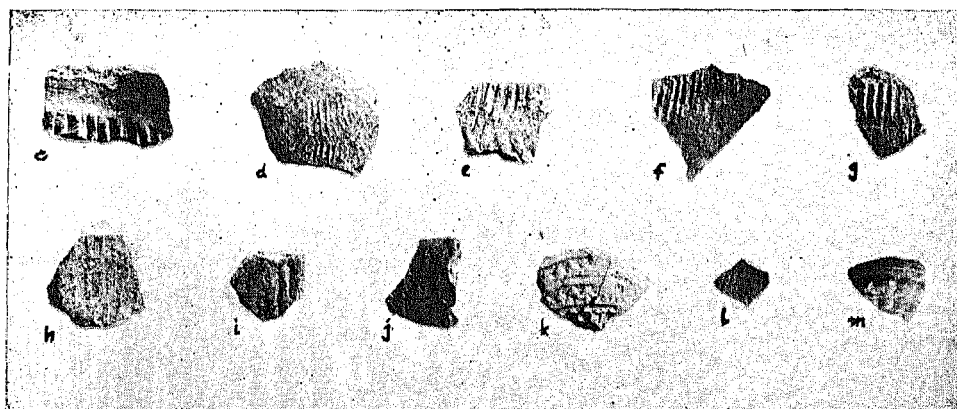


Plate XX. Stupa of NP 1 and ceramics from nearby : a. west face; b. south face; c.-j. earthenware sherds from surface of NP 1; k.-l. impressed sherds, NP 2; m. fragment of clay pipe bowl, NP 2.



a



b



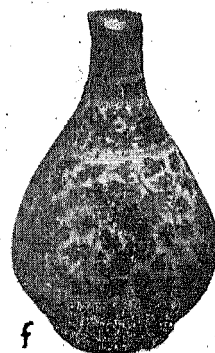
c



d



e



f

Plate XXI. Nam Pong Reservoir sites and pottery: a. stupa base, LP 3; b. close up of stupa base showing torso of small seated Buddha in center of light area on rock; c.-e. impressed sherds, NP 4; f. porcelain vase, 21 cm tall, NP 5.

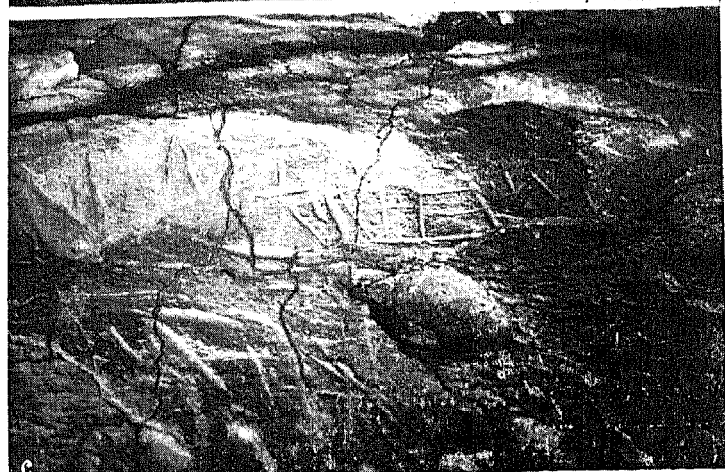
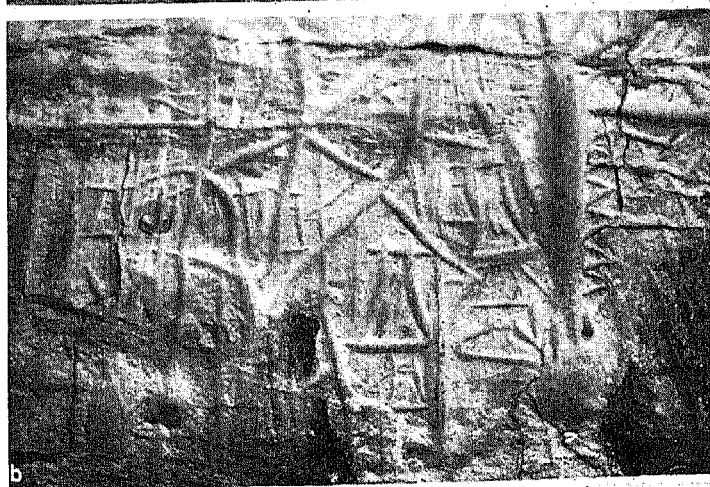
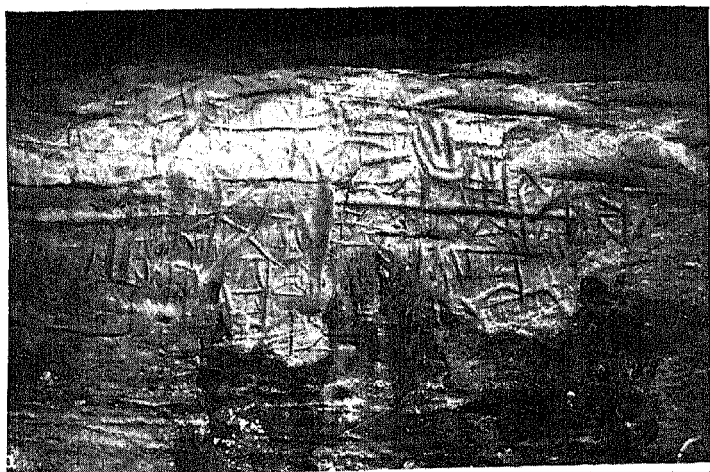


Plate XXII. Stone marking at NP 4 : a. on the rock facing above shelter; b. detail, showing several celt-like designs; c. on slanting floor of upper rock shelter.

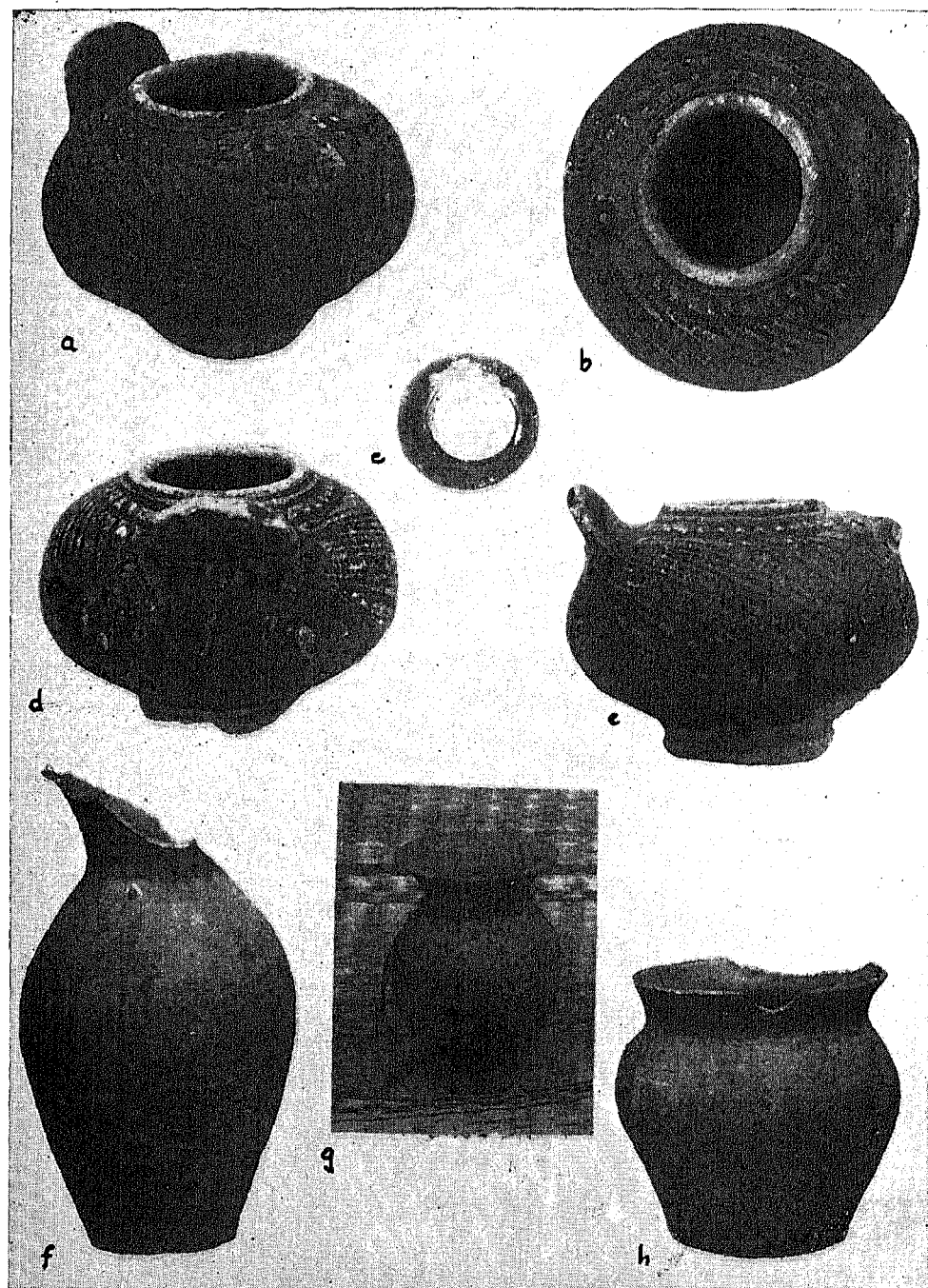


Plate XXIII. Stoneware vessels from NP 5: a.-e. different views of small Sukothai effigy jar; f.-h. unglazed jars, maximum diameter of f. 22 cm, rim diameter of g. 10 cm, and of h. 21 cm.



Plate XXIV. Pottery, metal, and stone artifacts from northern extension of Nam Pong Reservoir area : a.-i. NP 5; a. stoneware jar, maximum diameter about 35 cm; b. earthenware jar with low ring foot and shallow vertical grooves, rim diameter 11.7 cm; c. brass cup, rim diameter 6 cm; d. socketed bronze spearhead 35.2 cm long; e. socketed iron spearhead, 29.1 cm long; f. brass (?) bell for water buffalo, 9.2 cm long; g. tanged iron spade head, 20.0 cm long; h. glazed stoneware sherd; i. incised stoneware sherd; j. stone tool (?); k. polished stone adze.

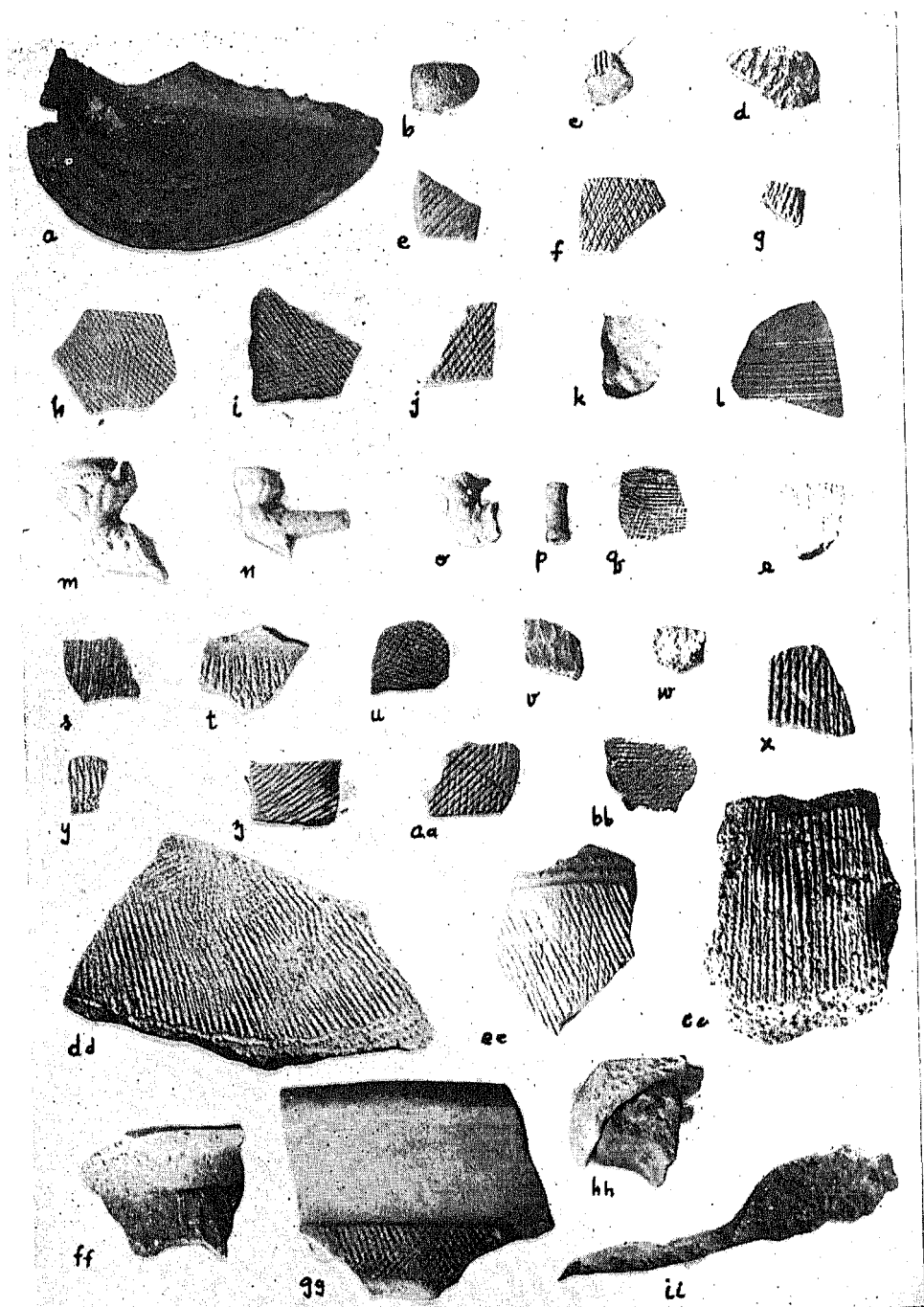


Plate XXV. Finds from NP 6 (a.-p.), NP 7 (q.-u.), and NP 8 (v.-ii.): a. mollusk, length 18 cm; b. tektite fragment; c.-k. earthenware sherds; l. incised stoneware sherd; m.-p. fragments of clay pipes; q.-u. cord-marked sherds; v.-w. possible basket-marked sherds; x.-cc. cord-marked sherds; ff. rim sherd with parallel ribbed or basket-marked body; gg. rim sherd with cord-marked body; hh. two closely fitting rim sherds; ii. tanged iron blade.



Plate XXVI. a. Stenciled hands, in red, on wall of shelter NP 9; b. large natural stone formation in the Phu Kao, next to the Nam Pong Reservoir area.

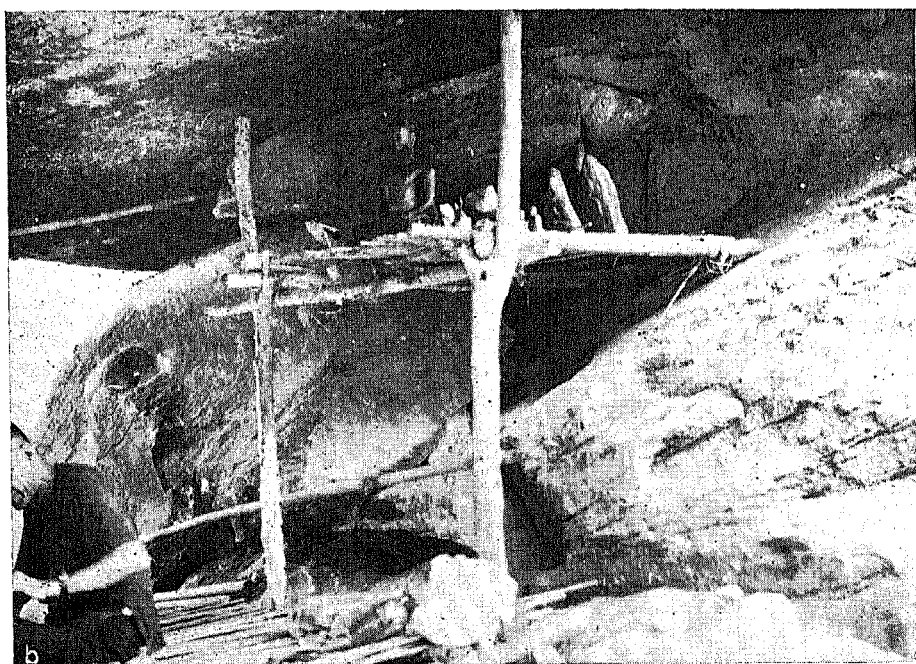


Plate XXVII. Large stone formation in the Phu Kao (a.); b. Buddhist alter beneath rock.

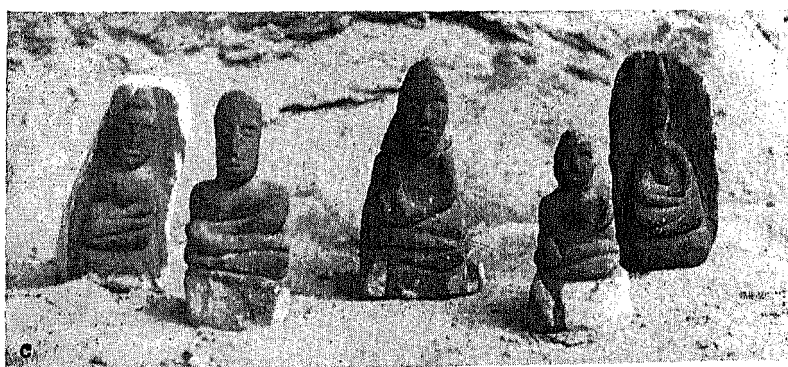
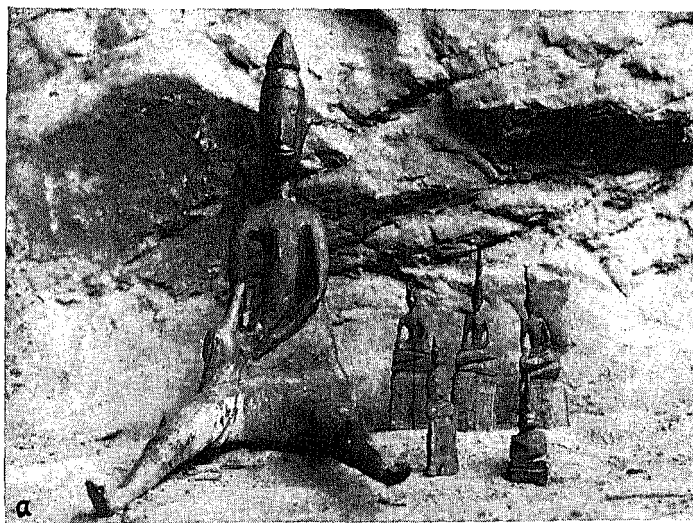


Plate XXVIII. Wood and stone figurines from alter in Plate XXVIIIb.

