

# Preliminary Notes on the Excavations in Formosa, 1964-65

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FROM July 1964, to July 1965, archaeological investigations were carried out in Taiwan, the Republic of China, by the Department of Anthropology, Yale University, in collaboration with the Department of Archaeology and Anthropology, National Taiwan University at Taipei. The Yale staff consisted of the present writer, Principal Investigator; Matsuo Tsukada, Research Associate in Palynology; Richard J. Pearson, graduate student and Research Assistant; and Jonathan H. Kress, Research Assistant. The National Taiwan University was represented by Sung Wen-hsün, Associate Professor in Anthropology; Lin Ch'ao-ch'i, Professor of Geology; and Huang Shih-ch'iang, Research Assistant.

Excavations were undertaken at Pa-li, Taipei County, from July to October 1964; at Ying-p'u, Taichung County, in November and December; at Feng-pi-t'ou, Kaohsiung County, in January and February 1965; and at Tung-ho, Taitung County, in June and July. Laboratory analysis, museum research, and field reconnaissance were carried out in the intervals. Except for Tung-ho, for which Yale is solely responsible, all field operations were the joint responsibility of Yale and National Taiwan University; graduate and undergraduate students of the latter institution assumed various roles in the research for varying lengths of time. Yale is responsible for the research and publication of all results except for the Ying-p'u material, which will be undertaken by National Taiwan University. The Ying-p'u project is largely financed by a grant awarded to Sung Wen-hsün by the China Council of East Asian Studies (Taipei, Taiwan). The rest of the year's work was made possible through a generous grant awarded to Yale University by the National Science Foundation, Washington, D.C.

## *Pa-li*

The town of Pa-li is about 20 km northwest of the city of Taipei on the west coast of the island. It is located immediately south of the Tamsui River estuary. Stretching north and south from Pa-li is a small strip of coastal plain between the Formosa Strait to the west and Kuan-yin Volcano to the east. Several prehistoric sites have been located in the district; one of these, Ta-p'en-k'eng, is northeast of Pa-li, on the foothill terraces of the Kuan-yin Volcano, approximately 35 m above the valley floor. It was first discovered in June 1958,

and has subsequently been excavated by the Commission for Historic Research of Taipei County and by the Department of Archaeology and Anthropology, National Taiwan University (Sheng 1960: 96-103; Yang 1961; Liu 1964). A long sequence of cultural phases is reported, phases that represent all major prehistoric cultures in the Taipei Basin. The site was selected for excavation in order to secure minute stratigraphical information about ceramics, stone types, soil and palynology, which would yield a cross-section of Taipei's prehistory in a maximum of aspects within a minimum amount of time.

The general neighborhood of the area investigated is a slope of considerable gradient and is considered to be of poor fertility. Three major plants, bamboo, the *hsiang ssu* tree, and sweet potato cover the slope in patches and groves, and large spots lie barren. Stone implements, potsherds, occasional animal bones and shells have been scattered by recent cultivation. They delineate an area of occupation throughout prehistory of approximately 500 m east-west and 300 m north-south. Twenty  $2 \times 2$  m and six  $1 \times 1$  m pits were excavated in the northern and eastern portions of the site. The depth of cultural deposits ranges from 80 cm to 2 m. In addition to information on soil, pollen, carbon dates, and other non-artifactual features, we obtained post-holes, probable stone wall foundations, a kiln, some 400 stone implements, a single piece of bronze, and approximately 100,000 potsherds from the prehistoric horizons. These were located in the site in terms of combined natural and artificial stratification. Laboratory analysis in conjunction with field observation made possible a site-wide synchronization, and three major cultural occupations were distinguished: Corded Ware, Yuan-shan and Proto-historic.

#### *The Corded Ware Stratum*

The earliest occupation of the site is characterized by its pottery: yellow, red, and brown in color, of very coarse paste with quartz inclusions; low-fired; and of considerable thickness, about 6 mm on the average. The usual form is that of a globular urn, with wide mouth, wider shoulder, and roundish bottom. Occasionally two lugs are attached to the shoulder, and very frequently a ring-foot is appliquéd to the bottom. The ring-foot is invariably low, and occasionally has a small number of round cutouts near the top. Rims are of various shapes, but are always flaring. Characteristically separating the lip from the neck is a ridge, on whose raised surface frequently are seen incised decorative patterns. All the incisions were executed with a pair of instruments, and two basic designs prevail: parallel strokes arranged into triangular or rectangular units, and parallel wavy lines (Pl. I, *a-e, h*). In some cases the incised patterns cover the upper part of the body above the shoulder (Pl. I, *f, g, l*); otherwise the entire pot is impressed with cord-marks. In a few cases incised lines appear on the surface of the upper part of the ring-foot, and quite commonly a red pigment was applied to many parts of the body, sometimes forming recognizable designs. Another important form of this pottery is the bowl, again with a ridge of incised patterns beneath the lip. The sizes of the urns vary, but many are about 30 cm across the shoulders. The bowls are somewhat smaller.

A few stone implements were recovered from this stratum. The most common form is a polished projectile point, with straight base and a perforation at the center; in all cases they are made of greenish grey slate, about 4 or 5 cm in length, 1.5-2 cm wide at the base, and only 3 or 4 mm thick. A few polished stone adzes were found, invariably rectangular in cross-section. Two of them have rudimentary steps on a broad face.

In one pit, the cultural debris of this stratum had collected to a depth of 40 cm. Observable ceramic changes had taken place during its accumulation. This indicates that the occupation

of this culture was not brief. Tiny bits of charcoal were collected from various layers, but their Carbon-14 determinations are not conclusive. A talus formation of andecite rocks separates the Corded Ware stratum from the overlying Yuan-shan occupation, and various features of the soil indicate that considerable weathering took place on the surface of this horizon. Culturally there is little continuity between this stratum and the next, even though a few traits can be said to have survived. It appears likely, therefore, that a considerable time interval separates these two cultures in the Taipei Basin. According to the C-14 chronology that has been determined for the Yuan-shan Culture, a date of 3000-4000 B.C. can be given for termination of this cultural phase at the site.

### *The Yuan-shan Stratum*

The Yuan-shan Culture, first recognized at the Yuan-shan Shellmound in the city of Taipei, is the best-known and perhaps the most important culture in the northern part of the island. Prior to our work, its pottery, stone and bone characteristics had been amply defined through the excavations of several important sites in the Taipei Basin (Chang 1954; Sung 1954-55, 1964; Sheng, Liu and Wu 1961). Important questions remained, however. Among them were its dating, historic affinities, changes during its duration, and its relationship to the Corded Ware stratum on the one hand and to the Impressed Ware phases that in this area stratigraphically follow the Yuan-shan on the other.

The bulk of the remains excavated from the site fall into the Yuan-shan Culture layer, which is in places 1.6 m thick. Here and there, isolated post-holes were encountered, but probably due to heavy disturbance no overall patterns could be discerned. A large number of rocks and slabs were found at one portion of the site; one post-hole was found surrounded by slabs, and traces of mud plaster adhered to the surface of some rocks. It is possible that some of these slabs derived from collapsed wall foundations (rocks cemented with mud still constitute foundations of house walls in a nearby village), but the evidence is by no means conclusive. From a pit a horseshoe-like structure was uncovered from the middle of the Yuan-shan occupation, the opening facing north and down-slope. The clay has cracked into hundreds of pieces, in which are impressions of reed. It is possibly the outline of a pottery kiln base.

The kiln serves as a convenient time-marker, since according to both field observation and laboratory analysis of ceramics it marks the introduction of new varieties of pottery. In the pre-kiln layers the pottery is uniformly of the Yuan-shan type: sandy, with yellow or grey core and brownish or buff coating, mostly of plain surface but not infrequently incised with very simple geometric designs. The predominant form is a jar with wide shoulder, ring-foot, and two vertical loop-handles attached to the rim at one end and to the shoulder at the other. Shortly after the kiln horizon, several new wares were added to the basic Yuan-shan substratum: a hard, sandy, red ware, of plain surface and characteristically basin-like in shape; a fine-grained, hard, brown ware, mostly in the shape of a bowl; and Geometric-impressed sherds of varying pastes, largely buff or reddish-brown in color, with the globular jar as the leading form. Over 95 per cent of the geometric impressions are checks, but lozenges, chevrons, and herring-bones were also found. The sequence of wares—Yuan-shan preceding Geometric-impressed—was noted by the excavators in 1963, but they stated that the Yuan-shan and Geometric-impressed were two separate phases of culture stratified at the site. Our findings warrant the inference of only one cultural stratum, with internal changes in the ceramic wares. The significance of this will be stated later.

The stone implements are characterized chiefly by chipped stone hoes, shouldered axes, stepped adzes, and triangular, perforated projectile points, the last three being characteristic also of the Yuan-shan Shellmound stone inventory. Serpentine and jade ornaments—beads and bracelets—again recall the findings at the Shellmound. Lumps of rocks roughly in the shape of a pyramid probably served as pot-supporters, in place of earthen ones as at the Shellmound. A bronze fragment—probably a bracelet—was uncovered, lending greater credence to the bronze arrowhead of Shang Dynasty type brought to light at the same site in 1963.

No kitchen midden was located at Ta-p'en-k'eng. No bone and antler industry is represented in our finds, probably due to the absence of good conditions for the preservation of middens. Shellfish-collecting can be assumed, but from the list of stone artifacts it is clear that the inhabitants based their subsistence mainly on agriculture and hunting.

The Radiocarbon Laboratory, Yale University, reported Carbon-14 dates for samples taken from this site: for the pre-kiln phase, a determination of  $2850 \pm 200$  B.P. (Y-1551); for the post-kiln phase,  $2030 \pm 80$  B.P. (Y-1498). In addition, carbon samples taken from the Yuan-shan Shellmound at various depths yielded the following dates:  $3490 \pm 80$  B.P. (Y-1549) from shell at 40 cm from the ground surface;  $3840 \pm 80$  B.P. (Y-1548) from charcoal at 140 cm from the surface; and  $4160 \pm 80$  B.P. (Y-1547) from shell at 200 cm from the surface. Converted into B.C. dates, the following sequence results:

$2210 \pm 80$ B.C.	(Bottom of Yuan-shan Shellmound)
$1800 \pm 80$ B.C.	(Middle of Yuan-shan Shellmound)
$1540 \pm 80$ B.C.	(Near top of Yuan-shan Shellmound)
$900 \pm 200$ B.C.	(Pre-kiln period of Yuan-shan Culture at Ta-p'en-k'eng)
$80 \pm 80$ B.C.	(Post-kiln period of Yuan-shan Culture at Ta-p'en-k'eng)

The information derived from this chronological sequence is significant in several ways. It indicates that the Yuan-shan Culture at Ta-p'en-k'eng postdates the entire Yuan-shan Shellmound series, and that the core of the culture underwent very little change throughout a span of more than 2,000 years. Not until near its end did the Yuan-shan Culture exhibit any evidence of the Geometric-impressed pottery, a fact of importance to the prehistory of the island in general and of the Taipei Basin in particular. The Yuan-shan Culture, of such long duration, exerted surprisingly little influence on its neighboring cultures to the south. These latter cultures, of a comparable age (see below), are without serious doubt a part of the Lungshanoid horizon on the southeastern coast of China. Radically different from the Lungshanoid, but proven to be of the same time range, the Yuan-shan Culture must be regarded as a separate cultural entity originating elsewhere. The shouldered axe hints at a westerly origin, but more conclusive statements must await further comparative studies. The beginning date of the Yuan-shan Culture also sheds light on the chronology of the preceding Corded Ware stratum. A  $4880 \pm 300$  B.P. date for the Taipei Peat (Lin 1964) places the beginning of the Yuan-shan Culture immediately after the peat formation. This formation is so extensive in the Taipei Basin, as is the Corded Ware distribution in the same area, that these two events appear to be mutually exclusive in time. It is thus probable that the Corded Ware preceded the Peat, a fact rendering likely the 3000-4000 B.C. date for its termination at specific sites given above.

#### *The Proto-historic Stratum*

After Yuan-shan occupation, the site of Ta-p'en-k'eng was apparently abandoned for a considerable period before cultural remains began to re-accumulate. These were left by the

Ketagalans, who are known through ethnographic accounts, and are characterized by thin, hard, grey pottery impressed with large and irregularly shaped checks, porcelain sherds, iron implements, and paste beads. Chinese coins found here show that the Ketagalans occupied the site as late as the 17th and 18th centuries, but the beginning of this occupation could be of considerable antiquity. Two Carbon-14 dates are reported from the Shih-san-hang Site, of the same culture, down the coast:  $1044 \pm 209$  B.P. (NTU-7) from shell and  $1145 \pm 206$  B.P. (NTU-8) from charcoal, both dates processed by the Carbon-14 Laboratory of the National Taiwan University. But the remains of this culture are not extensive in the area of the site we excavated, and it was given little more than passing attention.

#### *Ying-p'u*

Prehistoric remains were first discovered in 1953 on the northern bank of the Tatu River, in west-central Formosa in Taichung County, near the modern village of Ying-p'u. It was at this site that the first Lungshanoid culture occupation was recognized in Formosa (Kanaseki and Kokubu 1949). Our excavations were carried out in a small area about 20 m<sup>2</sup>, disclosing several occupation layers of a single culture characterized by sandy, fine, grey and black pottery. A few stone implements were discovered, and a large number of carbonized seeds were collected. On a potsherd was found a deep impression possibly made by a paddy grain. Sung Wen-hsün's projected report of this site will undoubtedly throw light on prehistoric subsistence in this region.

A series of three Carbon-14 determinations have been reported by the Yale Radiocarbon Laboratory:  $2970 \pm 80$  B.P. (Y-1630),  $2810 \pm 100$  B.P. (Y-1631), and  $2250 \pm 60$  B.P. (Y-1632). These place the Lungshanoid occupation in the central part of the island in the first half of the first millennium B.C., approximately the same time level as the Yuan-shan Culture in the north. This, however, need not be considered the beginning of intensive agriculture in this part of Formosa. Farther inland from Ying-p'u from the highland lake of Jih-yueh T'an (Sun-Moon Lake), two cores were collected by Tsukada for palynological analysis. Preliminary laboratory work has shown that pollens of *Liquidambar* became abundant at -170-179 cm in one core and at -540-550 cm in another. The Carbon-14 date of the former level is  $4200 \pm 60$  B.P. (Y-1612), and of the latter,  $4130 \pm 80$  B.P. (Y-1617). If the abrupt increase of *Liquidambar* pollen grains can be taken to mean the intensification of agricultural activities, then such activities probably began in central Taiwan as early as around 2000 B.C., a date of considerable significance when considered together with the chronology of the Feng-pi-t'ou Site.

#### *Feng-pi-t'ou*

Southeast of the city of Kaohsiung, the second largest city on the island, is the limestone tableland of Feng-shan, or Phoenix Mountain. Around the southern edges of Feng-shan and on the coastal plain to its northwest is a major concentration of prehistoric sites. At the southern tip of Feng-shan Tableland, no more than one or two km from the present coastline, is a complex of low (about 30-40 m from the floor) and round hills, known as Feng-pi-t'ou, or 'Phoenix's Nose.' A prehistoric site was discovered on top of one of these hills toward the end of the Second World War, and a sequence of several different ceramic phases was reported (Tsuboi 1956). Knowing that some of the most commonly found ceramic types in southern Formosa have been discovered here in stratified relationship, we selected this site for an intensive excavation.

The hill, approximately 500 m east-west and 300 m north-south, is surrounded by sugar

cane fields and is itself covered with patches of sweet potato and sugar cane plots, sisal plants, and modern burials. During the war, Japanese soldiers dug a network of communication trenches about 1 m wide and 1.5 to 2 m deep around and across the hill, exposing sections of cultural debris. Using these trenches as well as surface finds as guides, and avoiding modern tombs, we selected six spots for careful excavation and made extensive surface collections at seven other spots. As a rule,  $2 \times 2$  m<sup>2</sup> pits were used, and were extended in length or width as dictated by underground conditions. Prehistoric cultural debris was encountered at about 30 cm from the present ground surface, and reached a depth in one area of 4 m, yielding the longest and deepest occupational layer yet seen on the island. These 13 spots cover the entire area of prehistoric occupation, and their profiles can be regarded as significantly representative of the whole site. The findings, therefore, are of horizontal as well as stratigraphical interest. By means of Carbon-14 dates, seriation of mollusc-shell species, and ceramic seriation, the six excavated areas can be satisfactorily synchronized into a long sequence of culture at the site. Further results from soil and pollen analyses are expected to support the correlations. At present, four major cultural horizons are distinguished: Corded Ware, Lungshanoid I, Lungshanoid II, and Lungshanoid III. The last three are provisional terms, used here for lack of better nomenclature. They are believed to be three successive stages of the Lungshanoid Culture, each with significant characteristics of its own.

#### *The Corded Ware Stratum*

The bedrock of the hill is Pleistocene coral limestone, which is overlaid by layers of pebbles of various sizes. The pebbles are large at the bottom and become granular near the top. Cord-marked potsherds are found mixed with granular pebbles at the deepest part and in upper levels are encountered in a loamy clay. The pottery is identical to the Corded Ware at Ta-p'en-k'eng in paste and surface treatment, but the rigid rim is not as characteristic and the incised patterns (Pl. I, *i-k*) are not as abundant. The incisions were executed with a group instrument rather than a pair, and the designs are frequently curvilinear. Very few stone artifacts came to light, but a slate point identical in shape to the Ta-p'en-k'eng type is of considerable interest. Fragments of human long bones were found at one of the spots, but they were too scattered to indicate burial patterns and too mineralized to be dated.

#### *Lungshanoid I*

Immediately above the Corded Ware stratum is a cultural layer characterized by an orange-colored, fine-paste ware and a complex of polished stone implements. The pottery is apparently handmade (coiled) and modeled, but is wheel-touched on the rims and the ring-feet and highly polished throughout the body. The body is very often impressed with fine, deep, cord-marks from the shoulder down, and the paste is extremely fine and highly porous. Three shapes predominate: bowls and dishes (and some tripods, see Pl. III, *c*), globular urns and pots, and dishes on pedestals with cutouts (Pl. III, *a, b*). Among the stone implements, hoes of basalt (said to be of Pescadores origin), rectangular adzes (a single one being stepped) of silicified green stone, stemmed arrowheads of slate, and slate knives of both rectangular and semilunar varieties are characteristic. There is a single piece of beautifully polished *hache pediforme*. Many clay ring fragments, highly polished and sometimes decorated spindle-whorls, and serpentine and jade pendants and beads were encountered. Judging from the shapes of pottery and the stone inventory, the culture of this layer is without question an affiliate of the early Lungshanoid Culture on the East China coast. No datable remains are

available, but the date of this phase of culture can probably be placed within the third millennium B.C. on the basis of the Carbon-14 dates for the succeeding phase. Although this time level corresponds to the beginning of intensive cultivation in central Taiwan, comparative studies would probably place the southern Taiwan Lungshanoid slightly earlier than the inception of cultivation in central Taiwan.

A rectangular house, about 3.5 m wide and of undetermined length, was identified in the eastern part of the terrace top by means of postmolds. The wooden posts were apparently coated with a layer of asphalt, natural products of which have been reported a few km south of this site.

### *Lungshanoid II*

Stratigraphically, the change from the previous stratum to Lungshanoid II is gradual at some places of the site and abrupt at others, but in content it is certain and decisive. The fine, burnished orange ware as a dominant ceramic form gives way to a much sandier ware, red, buff, brown, and greyish in color, with a much rougher surface that is sometimes burnished. The old forms of pottery remain, but there is an emphasis on bowls and urns at the expense of pedestaled dishes. Incisions often appear on the rim and neck, and many painted pieces occur. The painting was done in dark red or brown pigment, applied on the inside and outside of the rim, on the upper part of the body, and sometimes on the outside of the pedestal; the designs are quite elaborate and complex (Pl. II). In addition, this cultural stratum has a significant percentage of polished, thin, black and buff sherds, of very hard paste and frequently decorated with punctates, combed designs, and incisions and engravings (Pl. III, *d-k*). Stone implement types persist from the preceding layer, but slate becomes the leading raw material, and minor typological changes are noted.

For the first time there is also evidence of the utilization of local marine resources: shells (mainly oysters and clams) and shark and other fish vertebrates are found in great quantity. The size of the shells diminishes from the lower levels upward, but the varieties of shells increase, probably suggesting a growing population pressure and/or increasing dependence upon this means of subsistence. In the shell-middens were found a large number of bone, antler, and shell implements and ornaments as well as fragments of animal bones. Awls, chisels, and arrow- and spear-points are the major types. A human burial was excavated in the northern part of the site. It was probably a man of advanced age. It faces up and heads south. Neither grave pit nor grave goods were noted.

The Lungshanoid II is the cultural climax of the Lungshanoid Culture at the site of Fengpi-t'ou and in southern Formosa. It has both the painted pottery and the black pottery so well known in the eastern coastal areas of prehistoric China, although quantitatively neither was the leading ceramic ware in the horizon. Two carbon samples from the lowest part of this layer are still being processed for dates, but a series of five determinations from the upper portions have been reported by the Radiocarbon Laboratory at Yale. These are  $2440 \pm 100$  B.P. (Y-1577);  $2670 \pm 80$  B.P. (Y-1584);  $2780 \pm 80$  B.P. (Y-1578);  $2910 \pm 80$  B.P. (Y-1581); and  $3310 \pm 80$  B.P. (Y-1580). Apparently this cultural phase persisted from the late third or early second millennium B.C. through the middle of the first.

### *Lungshanoid III*

About 500 B.C., the culture at the site apparently began to decline. The cultural inventory as a whole remained little changed, but the most elaborate artifacts—painted and polished

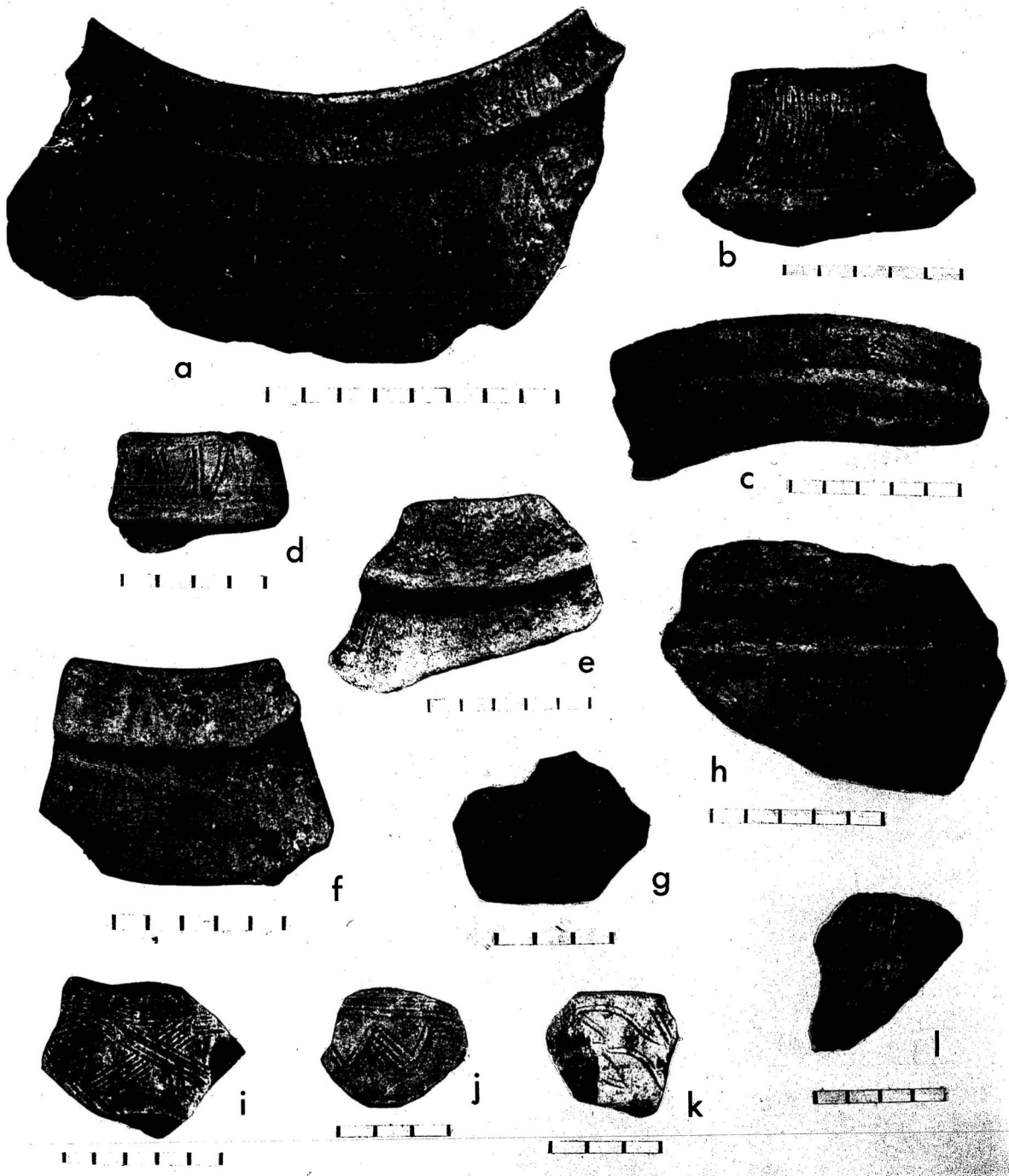


Plate I. Incised Decorative Designs on Cord-marked Pottery *a-h, l*, Ta-p'en-k'eng, *i-k*, Feng-pi-t'ou (Scale: cm)



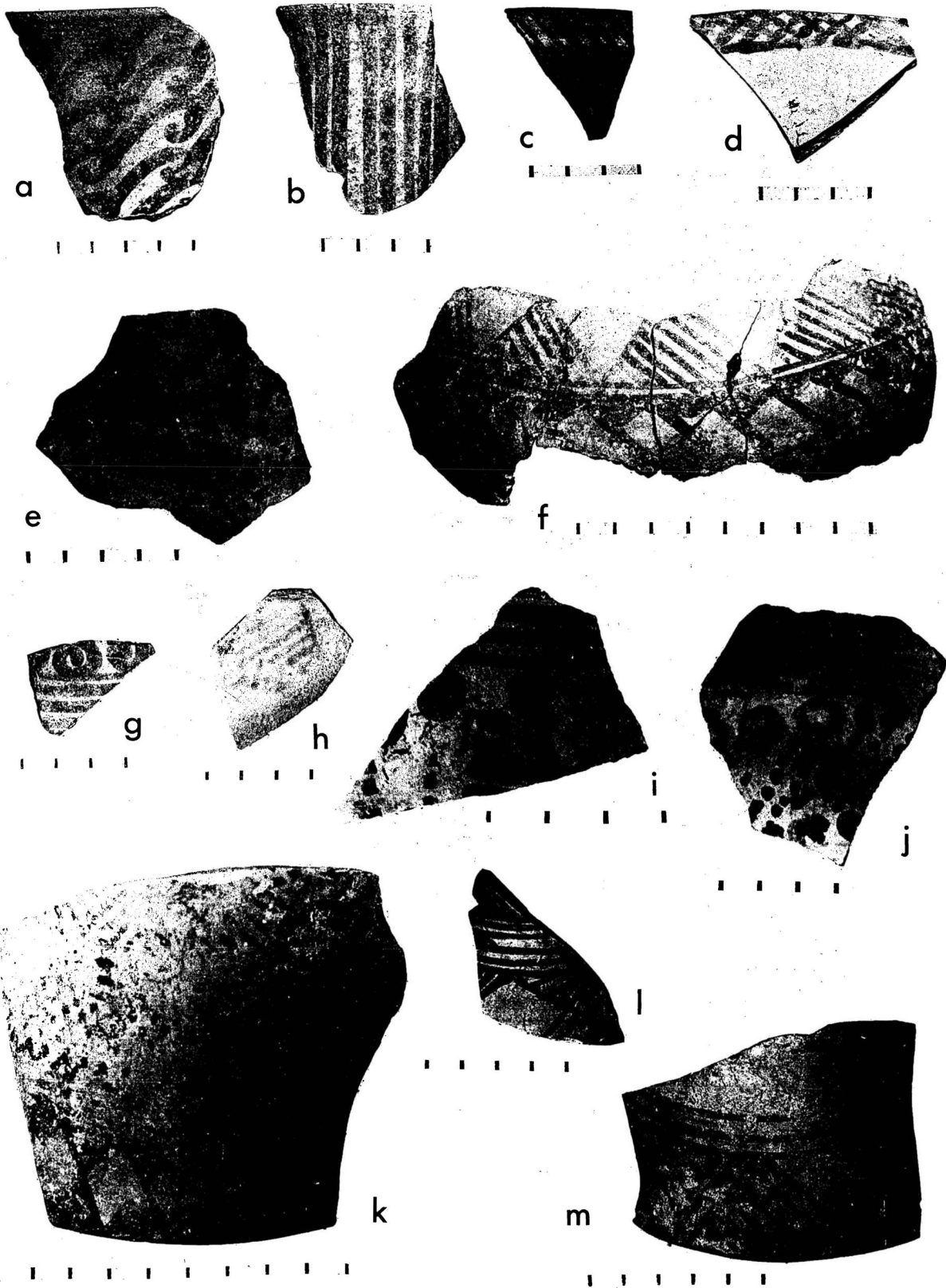


Plate II: Painted Pottery from the Site of Feng-pi-t'ou *a-e*, Rim sherds; *f-j*, body sherds; *k-m*, ring-foot sherds. (Scale: cm)

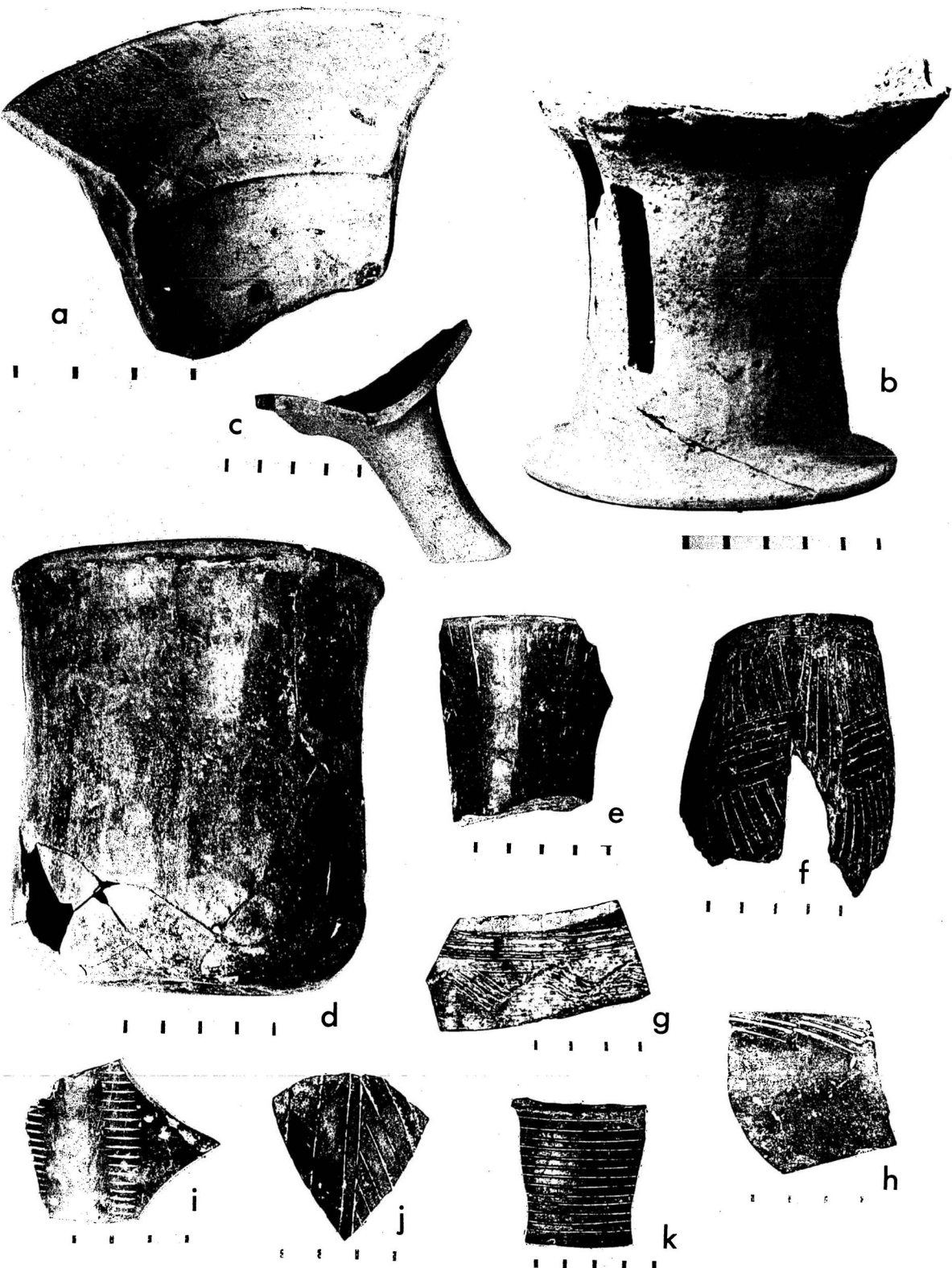


Plate III. Fine Red and Gray-Black Pottery from Feng-pi-t'ou *a-c*, Fine Red Ware; *d-k*, Gray-Black Ware (Scale: cm)

black pottery and bone and stone implements of remarkable workmanship—had passed their peaks. The site can be described as an occupation of the plain, sandy, reddish and greyish pottery that is found extensively in the southern part of the island.

#### *Tung-ho*

The three sites described above are all on the western coast; an integration of the findings will contribute much to a better understanding of that part of the island in prehistory. The east coast, however, remains largely unexplored. Megalithic sites are scattered along the east coast. In addition, many artifacts associated with the Philippine Iron Age have been recovered from a probably later context. However, beyond this, little is known: few excavations have been undertaken, and fewer still have ever been reported.

Our project for 1964–65 did not call for any vigorous reach into the east coast, but preliminary surveys were carried out in order to explore possibilities for future work. Brief excavations were undertaken at the site of Tung-ho, near the town of T'ai-yuan, in Taitung County. They uncovered a large amount of pottery, including Red Ware pottery similar to Yuan-shan and Feng-pi-t'ou types, and stone implements. A report of this work will be presented by Richard J. Pearson elsewhere.

#### *General Remarks*

In an introduction to the *Special Taiwan Section* that appeared in Volume VII of *Asian Perspectives*, the present writer assessed the significance of prehistoric Taiwan in the culture history of East Asia, concluding

'that in further investigations of these various problems [in the early history of the Malayo-Polynesians] the archaeology of Taiwan will play a vital role. The internal framework of time-space relationships of prehistoric cultures on Formosa is of interest and great significance in its own right. To the readers of *Asian Perspectives*, Formosa offers potential resources with a bearing upon the entire cultural history of the Western Pacific. The exploration of such resources demands vigorous efforts with an interdisciplinary orientation' (Chang 1964: 201).

The archaeological work in 1964–65 can be said to be a first step driving toward that goal. For the first time in the history of Formosan archaeology, an interdisciplinary team undertook intensive excavations at important sites. A sequence of prehistoric cultures—known in more aspects than simply pottery—has been firmly established for the western coast of Formosa, and this helps to place this island in the chronological and cultural context of the prehistoric Far East as a whole. The potential of Taiwan archaeology is fully exposed, and further and more intensified investigations will undoubtedly prove necessary and justified.

The first occupants of the island appeared on the scene in the fourth millennium B.C. at the latest, of an origin that is still unclear. Throughout the western coast, this earliest cultural stratum is characterized by a ceramic ware that is simultaneously heterogeneous in paste and color and quite homogeneous in form and decoration. The cord-marks and some of the incised designs vaguely recall the early Jōmon of Honshu, but the two cultures are entirely dissimilar in specific ceramic forms and in general cultural context. The characteristics of painting, low ring-foot with circular cutout, and the rectangular adzes—a few are stepped—resemble the Lungshanoid of eastern coastal China, but the parallel stops there. The ring-foot of the pottery and the adze suggests a certain degree of sedentism, but nothing found at the two sites can be described as a cultivating implement.

During the third millennium B.C., after the Corded Ware stratum, but possibly contemporaneous with its persisting aspects, two new cultures first appeared on the island. One centered in the Taipei Basin and the other on the southwest coast. A few isolated items of culture can be said to have persisted from the previous stratum, but the appearance of both cultures must be accounted for mainly by the arrival of new peoples from the outside. The culture in the north is known as the Yuan-shan Culture, and its southern counterpart is the Lungshanoid horizon which intruded from across the Formosa Strait.

The Lungshanoid Culture of southern Taiwan and the culture of southeastern coastal China obviously changed at the same rate. The chronological sequence of the major ceramic wares—Corded, Painted and incised and Geometric-impressed—agrees with the Neolithic and Proto-historic development of Southeast China in general. The route of diffusion apparently was from Fukien to the Pescadores to southwest Taiwan. Thence it rapidly extended northward and during the first millennium B.C. came into direct contact with the Yuan-shan Culture, already in decline. This contact must account for the appearance of the Geometric-impressed wares in the Taipei Basin known as the Botanical Garden Phase.

The above observations thus give further validity to the Lungshanoid concept, a culture of pioneer farmers moving along the eastern coast of China from the north, looking for new frontiers of settlement and adjusting to each new environment in which they settled. They also raise to the status of a tradition the Yuan-shan Culture, which contrasts with the Lungshanoid in origin and in magnitude of development. The question of to what extent these local histories of cultural development can be related to the larger picture in East and Southeast Asia must await further archaeological work in adjacent regions, especially the Philippines and the South China coast.\*

\* The author served on the visiting faculty at the National Taiwan University in 1964-65, and is greatly indebted to his hosts for various assistances.

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