

Preliminary Archaeological Investigations on Ponape and other Eastern Caroline Islands

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Introduction

As archaeological investigations are undertaken in more areas of Oceania, and results begin to be made available, the lack of research in Eastern Micronesia becomes more noticeable and more regrettable. In this paper, I shall describe briefly some of the less spectacular and little known archaeological evidence from Ponape and neighbouring islands, and attempt to indicate the potential of this area for future archaeological research as it is increasingly necessary to add to our knowledge of the area itself, and its relationships with other parts of Oceania, particularly Western Polynesia and Eastern Melanesia.

The opportunity to make a preliminary survey of archaeological sites on Ponape presented itself when I spent three weeks on the island in March 1965 awaiting transportation to the atoll of Nukuoro. After leaving Nukuoro I was able to visit briefly several other islands in the Ponape Administrative District.¹ As the total time spent on the survey comprised two weeks on Ponape, a few hours each on the atolls of Mokil, Pingelap, and Ngatik, barely one hour on Pakihn, and two days on Kusaie, it is obvious that the work involved was very preliminary. The results are presented here in the hope that they may serve as a guide for future research.

The area here defined as Eastern Micronesia is divided today into three Administrative Districts, Truk, the Marshalls, and Ponape. This paper is concerned only with the Ponape District, but it must be emphasised that the other districts, though completely unknown archaeologically, would appear to be equally important to an understanding of the area's prehistory. The Marshall Islands, small and scattered, may not afford such opportunities for archaeological research, but there is every reason to suppose that Truk and its neighbours will prove to be rich in archaeological material, even though they lack the most obvious attractions of monumental stone masonry, and pottery.

Ponape District includes two volcanic islands and eight atolls inhabited by more than one distinct cultural group. The two southernmost atolls, Nukuoro and

¹ The survey on Ponape could not have been undertaken without the generous hospitality and assistance of Fr. Costigan and Fr. Cavanagh of the Catholic Mission at Madolenihm, who made available guides and informants, transport, and advice, and encouraged me in every way. To them, and to the many Ponapeans who assisted I am particularly indebted. I should also like to thank the District Administrator on Ponape and his staff, for enabling me to visit the other islands, and the District Administrator's Representative on Kusaie, Mr. F. Muhlemen and his family, for encouraging me to visit Kusaie, and offering hospitality and assistance.

Kapingamarangi, are considered to be Polynesian Outliers.² The remaining islands are inhabited by speakers of East Micronesian languages, who are culturally related, but who also differ slightly from island to island. Today And, Pakihn, and Oroluk are temporarily inhabited by Ponapeans engaged in agricultural activities, while the remaining atolls, together with Ponape and Kusaie are permanently occupied by populations who consider themselves distinct from each other, though the atoll dwellers are thought to be more closely related in language and culture to Ponape than to Kusaie.

Ponape, the largest land mass, with an area of approximately 120 square miles, consists of a rocky volcanic island, several smaller rocky islands and several islets of coral sand, within a single coral reef. Kusaie, 42 square miles in area, consists of a main rocky island with extensive sandy coastal fringes on the east, and several smaller rocky and sandy islets.

The atolls, of which only And and Pakihn are within sight of Ponape or of any other island, all have less than $\frac{3}{4}$ square mile of land.³ Pingelap is the most populous.

Until excavations were undertaken on Nukuoro the atolls had been entirely neglected archaeologically. Research on Ponape had been largely confined to the spectacular ruins at Nan Madol, and on Kusaie, entirely to the corresponding ruins at Lele.

The Atolls

The lack of archaeological investigations on coral atolls up to the present time has been due to the prevailing belief that they would offer little in the way of archaeological material. It was thought that storms would have swept them bare of habitation residues, while the inhabitants of such limited land areas would probably have adopted a practice of dumping refuse in the sea in any case. Excavations on Nukuoro demonstrated that at least one atoll lying outside the normal paths of typhoons or hurricanes could be extremely productive of archaeological material. Brief visits to other atolls in the same general area showed that Nukuoro is by no means unique in this respect.

On Nukuoro, stratified midden deposits reaching a height of several meters had accumulated in the present village area, forming an extensive irregularly shaped mound, with smaller mounds around its outskirts. Erosion had nowhere exposed beach sections; thus the numerous culture layers beneath the ground surface were not exposed to casual inspection, and were revealed only by systematic excavation.⁴

The present settlement patterns on Mokil and Pingelap closely resemble that found on Nukuoro. In each case the single village is located on the lagoon shore of one of the islets of the atoll. Close by is a large taro excavation. On both these atolls the land in and around the village is significantly higher than the land further away. It is reasonable to assume that on these atolls, as on Nukuoro,

² Fischer and Fischer 1957: 7.

³ Maps of the Islands of Micronesia 1963: 3.

⁴ A full report of excavations on Nukuoro is in preparation. See also Davidson 1966.

the village has been on the same site for a considerable period of time, and that the land surface has gradually risen, as midden deposits accumulated.

Pingelap particularly resembles Nukuoro in the surface features of the village area. There is an extensive area of higher ground which continues further inland than the present village limits. Within the village the surface is fairly level, but inland there are many mounds and depressions, extending as far as the present taro excavation. Some of the disturbance of the ground here may be due to the remains of abandoned individual taro patches, but there would appear to be considerable scope for excavations in deposits which may be expected to contain artifacts in stratified contexts.

Mokil has less extensive deposits than Pingelap; none-the-less, cultural deposits are still much greater than one might expect, given the prevailing view that such deposits are lacking on atolls. In much of the present village area of Mokil deposits are only about one meter deep, judging from sections revealed by well shafts, garbage pits, and an eroding beach section on the reef side of the main islet. As Mokil is said to have been afflicted by a severe hurricane in the immediately prehistoric period⁵ the noticeably shallower deposits may be a reflection of this event.

In contrast to most of the village area there is one portion which has been artificially built up to a height greater than anything observed on the other atolls. This high area was apparently formed by a combination of midden accumulation and structural activity involving the use of coral blocks in constructing platforms and facings. This high area may be relatively recent, but certainly offers opportunities for archaeological investigation. Mokil is the only atoll on which such a complex structure was observed.

On Ngatik a form of settlement rather different from the lagoon edge village prevails. The population lives on a roughly circular islet entirely surrounded by reef, with no easy canoe access. The centre of the islet is occupied by a taro patch which gives the impression of having once been much larger than it is today. A short distance from the beach, a modern stone wall, built to confine pigs to its seaward side entirely surrounds the islet. Inland of the wall, a path circles the island, and houses are scattered at intervals along this path. The greatest accumulation of midden deposits appears to be along the inland side of this path, roughly in the vicinity of present houses, sometimes inland of them. Here also there appear to be promising sites for excavation.

Structures in coral which formerly existed on Ngatik⁶ have been largely pulled down and robbed of their coral boulders, probably for the construction of the pig wall, leaving little prospect for a survey of structures.

Of the two satellite atolls of Ponape itself, I visited only Pakihn, although And was suggested by several residents of Ponape as a likely place for archaeological investigation, as it figures prominently in Ponapean traditions. According to O'Connell,⁷ the inhabitants of Pakihn in the first half of the nineteenth century were essentially similar to Ponapeans in language and culture and often visited

⁵ Lessa 1962: 340.

⁶ Eilers 1934: Ngatik, pl. 2.

⁷ O'Connell 1841: 181-182.

Ponape, whereas And was at that time uninhabited and visited only sporadically by Ponapeans. Both atolls are now considered uninviting satellites of Ponape, yet I encountered a surprisingly large amount of archaeological evidence on Pakihn during the very short time spent ashore. A large platform of typically Ponapean type was located, and several high areas were noted which seemed suitable for excavation. It appears that the atoll has midden deposits comparable in depth and extent to those of other atolls, while structures have not been destroyed as they have on Ngatik. The island is so close to Ponape that its inhabitants could hardly have diverged much from the main Ponapean culture. The same conditions apply to And, which with its considerable traditional importance, would be a profitable place to excavate if suitable deposits were also found to exist there.

On every atoll visited at least some surface artifacts were found. Small shell adzes were found on each, while Ngatik and Pingelap also yielded cut pearl shell and other items. One location on Ngatik was particularly profitable and appeared a promising site for excavation.

Ponape

From the time of their first discovery, the large and impressive stone remains of Nan Madol have attracted the attention of travellers and anthropologists alike. Investigations of Ponapean prehistory have always centred on Nan Madol, while the presence of numerous lesser structures on the main island has been mentioned briefly, or not at all. Nan Madol has been described and investigated by German, Japanese and other scientists,⁸ and most recently by a team from the Smithsonian Institution. Only an excellent short account⁹ by an early missionary indicates the actual range and extent of the archaeological evidence, of which Nan Madol is only a small portion.

In view of the amount of data already available on Nan Madol, and the corresponding lack of descriptions of other archaeological remains in Ponape, I decided to concentrate on locating and assessing other sites. Two days were spent at Nan Madol, with local informants who had previously worked with archaeologists there; the remaining time was spent visiting other sites in the district of Madolenihm. Familiarity with the types of site occurring at Nan Madol enabled sites elsewhere to be more easily understood. Nan Madol is composed of a number of artificial islets formed by placing large and small blocks of basalt and coral in a shallow part of the lagoon close to a natural hilly island. The islets themselves are similar throughout; they vary considerably in the structures built upon them. Most common are structures said to be burial enclosures and house sites, although there are several specialised structures, such as an enclosed pool said to be for "farming" edible shell fish.

Close similarities exist between the structures found at Nan Madol and the numerous stone structures occurring on the mainland, and on smaller islands. Certain problems arise however, in interpreting these satisfactorily on present

⁸ e.g. Clark 1852, Christian 1899, Hambruch 1936, Koyama 1932, Kubary 1874, Maranushi 1942, Whiting 1956, Yawata 1932 a and 1932 b.

⁹ Gulick 1857.

evidence. Only some can be described in functional terms. Others must be classified according to their form.

In Hambruch's day, Ponapean informants identified stone structures as burial sites, feast places, and religious structures, though he saw few examples of each category.¹⁰ Today, to the majority of Ponapeans, all structures are merely *Ihm en Mahs*, or houses of the old days. My informants,¹¹ who had some knowledge of and interest in the subject, identified most structures as either burial sites, or house platforms. A large number of structures were identified as burial places by their form, rather than by prior traditional knowledge that these were burial grounds in the past. The important feature of a burial place is apparently its possession of a central vault constructed at least partly with dike stones (basalt prisms), and usually surrounded by a simple or more elaborate enclosure, after the manner of the burial enclosures such as the famous Nan Douwas, at Nan Madol. All vaults at Nan Madol and elsewhere, which have been excavated to date, proved to contain burials, so there are some grounds for accepting the presence of a vault as a criterion for burial sites.

The other structures recognised by my informants, were house platforms. As these included in practice all platforms which were not demonstrably burial places, I have merely grouped them as platforms and avoided functional interpretation until more data are available. While it is almost certain that some were indeed house sites, it is not possible to prove that all were.

Several kinds of platforms are said to have supported houses inhabited by known individuals during the nineteenth century, immediately before traditional house types went out of fashion, but it is not certain in every case that it is the actual structure rather than the named piece of land which is remembered. On the other hand, of numerous structures on Na Island, a small sandy islet near the Madolenihm pass, one was definitely pointed out as the foundation of a house inhabited in about 1836 by the then *Nahnmwarki* (high ranking chief) of Madolenihm, who lived there with a Catholic priest named Bachelot.

My informants also identified as house sites platforms which themselves had no traditional associations, but which were similar in form to platforms believed to be house sites at Nan Madol. These, together with the former group of house sites, and the remaining sites for which no convincing interpretation was advanced, are all grouped together as "platforms".

A final group of structures, of which only three examples were seen, is stone enclosures. One of these was identified as a feasting enclosure, apparently more by the name of the land, than from traditional knowledge of the site itself, though it is probable that the land derived its name from the structure. No interpretation was advanced for the other two, though K. Hadley was not present when they were discovered.

The various types of sites are described below, and summarised in Table 1. Many sites are not well preserved, as there is little or no feeling of superstition

¹⁰ Hambruch 1936: 96.

¹¹ While most of the Ponapeans who worked with me had some knowledge of traditional history I relied particularly on Kesner Hadley, Nan Madau en Idehd, whose information was translated by Fr. Cavanagh.

attached to most of them, and Ponapeans have no hesitation in disturbing them. Those in coastal situations are pulled apart by youngsters looking for crabs, those further inland are robbed of their stones, or converted into pig pens. Consequently there is a real need to study them before the majority are so damaged that their original form cannot be determined.

Burial Sites:

The simplest form of burial site was a single vault with no surrounding enclosure. One example, on Na Island, had been excavated by K. Hadley, who had recovered human bones and artifacts from it. The vault was incorporated in a low rectangular platform constructed partly from coral and basalt boulders, and partly from dike stones.

In other cases vaults were surrounded by one or more free standing stone walls. In some cases the vault is free standing in the centre of the rectangular enclosure, in others, it is attached to one wall. The height of the vault in relation to the height of the wall, and the size of the enclosure varies considerably. A number of sites were seen containing more than one vault. In some cases two vaults were inside a single enclosure; in others enclosures were subdivided with a vault in each section. The most complex burial sites seen were on Lohd Peninsula. On the other hand the most imposing were in the subdistrict of Tamworohi. At one place, a large structure with single free standing vault and one enclosing wall was situated beside a smaller site with single vault attached to enclosing wall. A small stone pavement adjoined the smaller vault, the only instance of such a feature recorded.

In spite of numerous excavations by visitors and Ponapeans in burial sites there is a lack of information about the types of interments found in these structures, the main preoccupation in the past being with grave goods. There are still many undisturbed burial sites on the mainland which could furnish this much needed information.

Platforms:

The simplest platforms are low rectangular structures of stone or coral with no visible features. None of this type was definitely identified as a house site, except that on Na Island where Bachelot is said to have lived. Unfortunately this and most other examples had been disturbed, so that formerly existing features may have been destroyed.

At Nan Madol, the typical "house platform" is a rectangular stone platform with a shallow pit, shallower than the height of the platform, situated approximately in the centre. Numerous examples of this kind of structure were seen on the mainland, together with what appears to be a variation of it, consisting of a platform with a raised rim around the edge, rather than a pit let into the floor. The effect is the same, the variation is only in the relationship of pit size to total surface area, and in the depth of the pit. The base of the pit, particularly the smaller pits, often contains midden material. House platforms of this type are well documented by nineteenth-century writers.¹²

Another type of platform is that which has two or more tiers. These sites are also rectangular. The only example seen at Nan Madol is said to have been

¹² e.g. O'Connell 1841: 129-130, Christian 1899: facing p. 140, Cabeza 1895: 123-124.

the house of the *Sahudeleur*, or ruler. On the mainland, however, sites with two or more tiers, taller than any at Nan Madol, occur. These sometimes lack a central pit.

On sloping ground, free standing platforms seem to be replaced by stone faced and paved terraces. These tend to be larger than the free standing platforms, are generally rectangular in plan, and none of the examples seen contains a central pit. Some were identified as known house sites.

In places around the edge of the lagoon, rectangular platforms have been built out into the water. All examples except one are presently occupied, but most are said to be old houses reutilised. They lack central pits.

Enclosures:

Three enclosures, formed by rectangular free standing stone walls, and not associated with burial vaults were seen. They are larger in area than most burial sites, though the walls are no higher. Two had apparently no internal features at all, while there appeared to be a pavement, or very low internal structure, associated with the third. One of the former two was confidently identified by informants as a feasting enclosure.

Table 1. Summary of Ponapean Stone Structures

A.	<i>Burial Sites</i> (Sites with dike stone vault)
	1. Single isolated vault.
	2. Vault or vaults enclosed by single stone wall.
	a. single detached vault
	b. single vault attached to wall
	c. double detached vault
	d. double vault attached to one wall.
	3. Structure similar to 2 a but with second enclosing wall.
	4. Complex structure with vaults in more than one section.
B.	<i>Platforms</i>
	1. Rectangular stone or coral platform, no features.
	2. Rectangular platform with central pit.
	a. small central pit as at Nan Madol
	b. pit formed by raised rim at edge of platform.
	3. Platform of two or more tiers, without central pit.
	4. Platform of two or more tiers, with central pit.
	5. Stone faced or paved terrace, rectangular, no central pit.
	6. Rectangular platform built into lagoon, no central pit.
C.	<i>Enclosures</i>
	1. Rectangular enclosure with no internal feature.
	2. Rectangular enclosure with central feature undefined, probably pavement.

Distribution of stone structures:

The few existing accounts of sites on the mainland of Ponape describe sites similar to those discussed here.¹³ The focusing of attention on Nan Madol has led to an impression that other sites are not numerous, but my own observations in Madolenihm District suggest that relatively small stone structures (compared

¹³ Hambruch 1936: 9-116, Christian 1899: 69, 110-121, Gulick 1857, Richards 1948.

with the famous structures of Nan Madol such as Nan Douwas and Kerien) are very numerous as Gulick claimed.¹⁴ Nor are they confined to the mainland. Platforms and burial sites occur on the reef islands in Madolenihm and there are numerous isolated artificial islands with structures apart from the complex of Nan Madol. An interesting example is Likinmahal, a natural sandy island in the lagoon, whose area has been roughly doubled by the addition of two artificial areas, one with platforms, the other with a sizeable burial site.

With a few important exceptions, stone structures occur either in isolation or in very small groups. Both burial sites and platforms are numerous, while other sites are rare. Burial sites and platforms have rather different distributions; in certain areas one predominates to the exclusion of the other. For example, platforms are often found in commanding positions on rises and hilltops, while burials are not. On the other hand platforms also occur in situations where burials might equally be expected.

One exception to this distribution is of course the complex at Nan Madol. Another is an extensive settlement located far inland in Madolenihm District. From approximately half way up the 1800 ft. mountain of Senpehn to the summit there is a continuous series of terraces and low stone platforms. These occur in definite clusters, on the only accessible ridge of the steep mountain, separated by steep scarps, but forming a single extensive complex, which ceases abruptly where the ridge widens to become more accessible and less steep. A brief survey of the complex divided it into 18 units, strung out along the ever ascending ridge. The smallest units consisted of one or two earth terraces with no stone work, on steep slopes, while the larger units included up to 12 terraces and platforms, usually in neat rows, with traces of a track between them. The platforms were low and rectangular, and usually only a single course high; 41 were measured.

All stone structures in this complex were platforms or terraces without tiers or pit with the exception of a single two tiered structure with central pit. This was in good condition but did not seem to be in a significant position in relation to other structures. On the other hand, of the structures forming the final unit on the summit of the mountain, none contained a central pit, or tiers, though one was much larger than the rest.

Eighty sites suitable for supporting houses were counted, including low free standing platforms, paved and faced terraces, and earth terraces. In addition there were earthworks in the form of scarps, shallow depressions which may be paths between structures, and several low mounds. There are certainly more structures than we were able to count and measure in the time available.

The location of this complex of sites is a ridge with considerable natural defenses. The sides of the ridge fall away steeply on either side, while man has improved on the natural situation by cutting steep scarps between units. At one point where the ridge is very narrow there are remains of what may be a defensive ditch though this is badly eroded. The occupants of the complex, particularly those on the summit, would be in a strong position to defend themselves. There is no doubt that the location of sites within each unit is deliberate, and

¹⁴ Gulick 1857: 57.

that this complex reflects a quite different settlement pattern from that represented by the larger and more isolated sites closer to the coast.

Other Sites:

During the survey in Madolenihm a number of features other than stone structures were noted which were either not noticed at all by Ponapeans, or not recognised by them as archaeological sites.

Pits, common in coastal areas, are said to be abandoned breadfruit pits. In many Pacific Islands these would be without doubt archaeological sites, but in Ponape they are still in use, and an apparently abandoned pit may be only a few years old.

At several localities besides Senpehn, earth terraces were noted. In one place these were quite near two substantial burial sites and a stone enclosure. Elsewhere they occurred in isolation or in conjunction with, but not necessarily in association with a single house platform. Ponapeans admitted that they were probably man made, but would advance no interpretation.

All over Ponape, long low earthen mounds occur. Sometimes these appear to be associated with weathered trenches. The mounds were pointed out by several American residents, who consider them artificial. Ponapeans, however, asserted that they are natural, and refused to entertain the notion that they might be man made. The examples I saw in Madolenihm seem similar to sites described by Richards¹⁵ in Kiti district, and apparently there regarded as the barrows of mythical heroes. They are certainly not of German or Japanese origin as Christian and Gulick also describe them;¹⁶ whether they are indeed natural or the result of extensive human activity in a period more remote than that represented by stone burial sites and platforms, remains to be seen.

On the low sandy islets of the fringing reef there are areas where the surface consists of fine coral gravel which appears to have been placed there deliberately, rather than deposited by the sea. Surface artifacts are often found on these floors, which are different from the raised platforms also occurring on the islets. Ponapeans, unlike their atoll dwelling neighbours, do not now place coral or other gravel around their houses though they would appear to have done so in the past, at least in these coastal situations.

While structural evidence abounds on Ponape, it is not easy to find sites which may be expected to reveal stratified occupation deposits. Around much of the island hills rise steeply from the lagoon immediately behind the mangroves. Where coastal flats do exist, for instance on the islands of the fringing reef, and on parts of Lohd peninsula, they are very low-lying with barely a foot of cultural deposit above the sterile beach sand. This may be because Madolenihm was severely afflicted by at least one typhoon in early European contact times,¹⁷ and other districts, not so severely hit by the typhoon, may preserve more extensive coastal deposits. Where shallow deposits do exist in Madolenihm, they are so severely riddled by crab burrows as to make any hope of stratified sites unlikely. Although Na Island, for instance, is believed to have been constantly inhabited

¹⁵ Richards 1948: 2.

¹⁶ Christian 1899: 69, Gulick 1857: 57.

¹⁷ Informants constantly referred to a first and second typhoon and the small pox epidemic as disastrous events occurring at approximately the same period.

from before the building of Nan Madol, until the typhoon, and the small-pox epidemic of last century, the remaining archaeological deposit consists of several small and badly disturbed house platforms, one burial vault, and some areas of extremely shallow and disturbed midden deposit.

Caves and rock shelters exist on Ponape, some with thick guano deposits. Some apparently contain cultural deposits and may prove to be valuable excavation sites, though it is doubtful that they would be rich in artifacts. Unless other districts offer greater possibilities of stratified occupation sites, such sites may have to be sought on And and Pakihn, because of their absence on the main island.

Discussion of Ponapean Sites:

Excavations are necessary to extend our knowledge of all kinds of archaeological sites on Ponape, but this is especially true of sites other than stone structures. Only excavations can determine to what extent and over what period of time caves and rock shelters were occupied, and the same is true of coastal midden sites where these exist. Location of deep deposits capable of yielding artifactual sequences may prove to be very difficult, and for this reason I have emphasized the probable existence of extensive deep midden deposits on nearby atolls.

It is difficult to predict whether or not stratified sequences will be found to exist on inland sites. Excavations beneath and around stone structures on the mainland might reveal a series of building activities on individual sites, and test excavations should be carried out to determine this. At the same time excavations are needed to establish the artificial nature of earthen mounds and terraces, and to attempt to determine their functions.

On the other hand, intensive site surveys supplemented by very limited excavations in and around stone structures should be capable of yielding abundant information about these structures themselves, and their relationship to present and past Ponapean social organisation. Considerable information is now available on Nan Madol, while the nature of the complex is such that further investigations of it at this stage are likely to be less profitable than attempts to view it in its correct place as a part only of the extensive archaeological evidence available on Ponape.

Prior to the building of Nan Madol, Ponape was divided into a number of districts, not corresponding to the present districts. The "capital" of one of these districts is traditionally supposed to have been at Senpehn. At some point in the past the whole island was brought under a unified form of government, whose capital was at Nan Madol. At the head of a highly stratified social system were the *Sahudeleur* rulers, who exacted tribute from all parts of the island. It is reasonable to suppose that the unification of the island preceded the construction of the more imposing structures of Nan Madol which could only have been undertaken by a large highly organised population.¹⁸ Eventually the rule of the *Sahudeleurs* was overthrown, according to one account, by invaders from Kusaie, who are also in other accounts credited with the initial building of Nan Madol. The island divided politically into three and ultimately five districts, which still

¹⁸ cf. Fischer 1964: 50.

exist today, and it is presumed that the present system of rank and titles came into being at this time.¹⁹

At the present time each district or *Wehi* possesses two ranked series of titles, culminating in the *Nahnmwarki*, and *Nahniken*. Each district is divided into a number of subdistricts or *Kousapw*, each with a lesser series of ranked titles. In addition certain ceremonial titles exist outside the normal series, and sometimes carry great status. There are no villages other than those which house Americans or immigrants from other islands, and the Ponapeans are dispersed over the land in small hamlets. One or two high ranking persons usually live in each *Kousapw*.

The majority of stone structures are scattered over the landscape in a very similar pattern to the existing hamlets. Ponapeans do not now make a practice of building stone house foundations, though some houses in fact make use of existing structures, nor do they bury their dead in stone vaults. But were they to continue these practices they would be adding to the archaeological evidence in a manner in no way conflicting with existing site distributions. Informants felt that only people of high status were entitled to live on a sizeable platform, or to be buried in a stone vault. The higher the status of the person, the higher and larger the site. Both house platforms and burial sites are described in the nineteenth century,²⁰ though the use of burial vaults was apparently not universal in O'Connell's day, and probably died out soon thereafter, while stone house foundations continued in use till the end of the century.

It seems reasonable to assume that the majority of these sites, which are entirely in accordance with the still existing social system, belong to the latest stages of Ponapean prehistory, and the early European period. In a few cases, house sites are still occupied; others are known to have been occupied in the middle or latter parts of last century. Informants state that sparsely populated *Kousapw* where sites are numerous were devastated by the typhoons and small pox epidemic which terminated occupation there. In these cases (for instance the reef islets in Madolenihm) the existing sites are likely to belong for the most part to this terminal occupation.

It has been shown that Nan Madol was no longer densely populated in 1852,²¹ moreover it is likely that had it been flourishing in O'Connell's day he would at least have heard of it. The ruins he describes while geographically in the wrong place are probably in fact those of Nan Madol misplaced in his memory.²² His description of Ponapean society is in accord with the society existing in Gulick's day, and still existing to a considerable degree in the present, rather than the unified political system which probably existed when the great structures of Nan Madol were built.

Most mainland structures resemble those of Nan Madol, and undoubtedly belong to the same culture, but there are some interesting differences of degree. Burial sites on the mainland vary in size and complexity, but none approaches the monumental structures at Nan Madol. Platforms, on the other hand, range

¹⁹ This brief summary of traditions is derived from stories related by Ponapeans and by the priests at Madolenihm, as well as from published information.

²⁰ O'Connell 1841: 129-130, 167-169.

²¹ Fischer 1964.

²² O'Connell 1841: 206-214.

in size from those comparable to examples at Nan Madol, to those which are larger and higher, suggesting that while chiefs *en wehi*, or *en kousapw* lacked the inclination or the opportunity to build monumental tombs after the decline of Nan Madol, they were able to construct for themselves in locations on the mainland platforms greater than any now existing at Nan Madol except the so called council house. At least some of these platforms on the mainland are house sites, and I am not aware of any ethno-historic evidence to support an interpretation of any of them as religious or other sites.

At Nan Madol, many centuries of prehistory are presumably crowded on to a small area, but one which does not lend itself to stratigraphic excavations, and which has more over been much disturbed by curio hunters. On the mainland there are a number of isolated structures which may be presumed to be for the most part contemporary with or younger than the structures of Nan Madol, and which probably reflect the distribution of high ranking people in the later stages of Ponapean prehistory. Thus detailed surveys of sites within *Wehi*, or even within *Kousapw*, in conjunction with limited excavations designed to illuminate burial customs, and to secure material suitable for radiocarbon dating could add immeasurably to our understanding of Ponapean culture, and its relationship to the complex at Nan Madol.

Any group of sites which does not conform to the normal distribution pattern must be of interest. The complex of sites at Senpehn, whatever its age, undoubtedly belongs to a time when a substantial population apparently undifferentiated in status clustered together for reasons of safety in a relatively remote and inaccessible location. Senpehn does not conform with the recent form of dispersed settlement and differentiation of rank, nor with the modern system of secret individual yam gardens. Such a complex obviously warrants detailed study to obtain a more thorough knowledge of its nature, and some indication of its age in relationship to other kinds of site. Hearsay evidence suggests that similar complexes exist in other districts.

Kusaie

On Kusaie, impressive stone ruins utilising huge basaltic crystals also occur, and have attracted the attention of scientists and visitors to the exclusion of all other sites.²³ The ruins at Lele are very similar to those at Nan Madol but their true extent and nature has been obscured by modern occupation. Today, what may once have been a complex of small artificial islands with differentiated structures, is now a single extensive reclamation on which the largest town and Administrative Center of Kusaie is situated. In the center of the town are remains of the old ceremonial area, monumental walls, burial places, assembly places and a canal. These ruins are sometimes said to have been damaged in an excess of early Christian zeal; moreover the encroachments of the surrounding settlement are rapidly reducing them. Whereas Nan Madol remains virtually as it was when Hambruch mapped it, the ruins of Lele have dwindled considerably since

²³ Sarfert 1919: 264-296, Gulick 1861, Christian 1899: 170-174. Yawata 1932 a, Muranushi 1943.

1910. Because Kusaie was unified under one ruler at the time of European contact, and Lele was still functioning as an extensive settlement and ceremonial center, and because the continuing occupation has tended to obscure the probable extent of the prehistoric reclamation, Lele has not aroused the fascinated speculation which Nan Madol has always attracted. It was however, a complex very similar in size and nature, and exhibits exactly the same disadvantages for stratigraphic archaeology as Nan Madol.

While I saw no other structures on Kusaie than those at Lele, accounts of structures are not lacking, and it is likely that a survey would soon provide abundant evidence of structures and their distribution. Across the bay from Lele on the mainland are said to be extensive remains of an old settlement, and in the mountains above it a famous religious site. At Utwe in the south several ancestral settlements of the present village are said to exist, at least two in different locations around the bay, and a third, consisting of a number of stone platforms, some distance up the river.²⁴

The present population is clustered in four coastal villages. Malam, traditionally recent, appears to offer little in the way of accumulated midden deposits, while Utwe, being largely an artificial reclamation, offers some of the disadvantages of Lele. Tafunsak in the north seems more likely to provide stratified sites, while a number of coastal areas occupied in early European times and now abandoned may also prove profitable.

Given this limited data, it is only possible at present to say that structures of various kinds exist on Kusaie, and that there is more likelihood of coastal middens occurring on this island than on Ponape, in view of the apparently strong tradition of coastal settlement and the existence of coastal flat areas. While Lele is remarkably similar to Nan Madol, it is likely that other sites may diverge more in form and distribution from those of mainland Ponape. Finally, Kusaie, having been extensively visited and described by European explorers²⁵ offers considerable scope for ethno-historic interpretations of archaeological remains.

Conclusions

This paper has been primarily concerned with Ponape, for which most information is available. It has been seen that there exist on the main island of Ponape numerous stone structures similar in nature to those at Nan Madol, the further investigation of which would throw light on the settlement pattern and burial customs of later phases of Ponapean culture. Not only would this supplement information already available on the complex at Nan Madol, but it would mean that unique settlement could be better understood in relation to those populations living on the main island itself. At the same time, there exist on Ponape other kinds of sites, and complexes of structures which may belong to earlier phases, or to times when the social system now in existence was either disrupted, or not fully developed. These sites also warrant investigation. Knowledge derived from investigations of these various sites would provide a basis for further

²⁴ This information was supplied by the Distad Rep., Mr. Muhlemen and by other American residents on Kusaie, some of whom had visited the inland site of Utwe.

²⁵ especially Duperrey, D'Urville, Lesson, and Lütke.

more systematic investigations, particularly those designed to obtain information on the earlier phases of Ponapean prehistory, before the construction of Nan Madol.

On present evidence deep stratified midden deposits would appear to be rare or non-existent on the main island, but it is suggested that suitable excavation sites of this nature may be found on the neighbouring atolls. Pakihn is sufficiently near Ponape that it has probably never been culturally distinct from the main island. The same consideration would apply to And, unless, as traditions suggest, it was the initial stronghold of alien invaders connected either with the construction or with the overthrow of Nan Madol. If excavations on And should reveal trait unit intrusion at a given point in the sequence, this could be of value in the further elucidation of the history of Nan Madol.

The more distant atolls also offer opportunities for excavation and might be expected to provide artifactual sequences which would add to our understanding of the total area. The majority of artifacts so far recovered from Ponape and Kusaie are made of shell, rather than stone, so that comparisons of material culture would be much easier between high and low islands in Eastern Micronesia than is the case, for instance, in Polynesia. It may well prove that the development of stratified societies on the high islands, and the elaboration of stone structures is not paralleled by any elaboration of material culture. On the other hand it may be found that while utilitarian items such as adzes are similar throughout the area, certain specialised ornament forms belong only to the high status occupants of Nan Madol and Lele. Certainly the atolls should not be neglected entirely in favour of the impressive structures of the high islands, for they provide an important dimension in our knowledge of the area, and could even be viewed as the norm, from which the specialised cultures of Ponape and to a lesser extent Kusaie have diverged.

Kusaie also offers great possibilities for archaeological research, and is vitally necessary to a proper understanding of the monumental ruins. While there are strong similarities between Nan Madol and Lele, differences exist in the present social systems of Kusaie and Ponape, and in the nature and distribution of archaeological sites on the islands. These make it quite evident that the relationship of Nan Madol to Ponapean culture cannot be fully understood without a corresponding knowledge of the position of Lele in Kusaiean culture.

Finally, while it is apparent that an abundance of archaeological material exists in these islands, which raises many fascinating problems within the area itself, the growing body of material from archaeological investigations in other parts of Oceania make a need for comparative material from Eastern Micronesia more and more necessary. This area has a rich potential for archaeological research, and it is to be hoped that it will not continue to be neglected.

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