

FRESHWATER USE CUSTOMS ON ROTA

AN EXPLORATORY STUDY

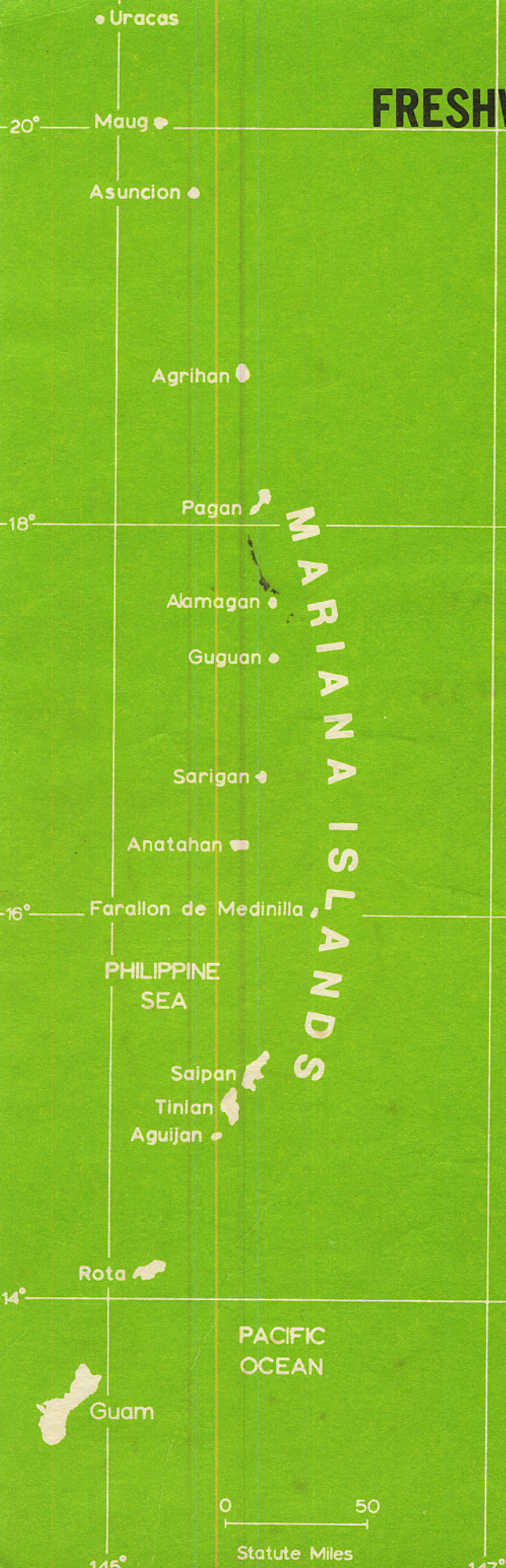
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UNIVERSITY OF GUAM

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By

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Editors

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Partial Project Completion Report

for

SOCIOCULTURAL DETERMINANTS OF FRESHWATER USES IN GUAM

OWRT Project No. A-009-Guam, Grant Agreement Nos. 14-34-0001-8012,9012

Principal Investigator: Rebecca A. Stephenson

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Abstract

The purpose of this study is to delineate cultural aspects of freshwater uses on the island of Rota, Commonwealth of the Northern Marianas. The overriding theme of the study is the significance of freshwater as a natural resource for the people of Rota. Rotanese people interviewed in the course of the research expressed the opinion that there is a sufficient amount of freshwater available on their island to meet their needs. The majority of freshwater that people use is disbursed by a piping system leading down from Matanhanom, the water cave. Rotanese people, however, also make use of rainwater.

Seventy-one Rotanese informants recounted in detail their customs, practices and beliefs concerning freshwater uses before and during World War II to the research team. A key purpose of the study was then met, that of gathering and recording the recollections of the Rotanese in regard to freshwater use customs prior to the "the present". Informants were interviewed on an individual basis; the field instrument was a questionnaire.

An archaeological survey was also conducted to suggest possible locations of freshwater sources on Rota in prehistoric and historic times. Research on the ethnohistory of Rota serves to link the past to the present. Sections of the report on land tenure, place names and world view reinforce the continuum from past to present, and set forth the contemporary perspectives of the people of Rota regarding water as a natural resource on their island.

The results of the research suggest that consistency is shown on Rota from the past to the present in regard to the value of freshwater. Before and during the war, local people were resourceful in building catchments, wells, and the like in order to insure sufficient supplies of freshwater. In the present, Rotanese people express confidence that they will continue to have sufficient supplies of freshwater to meet their daily needs.

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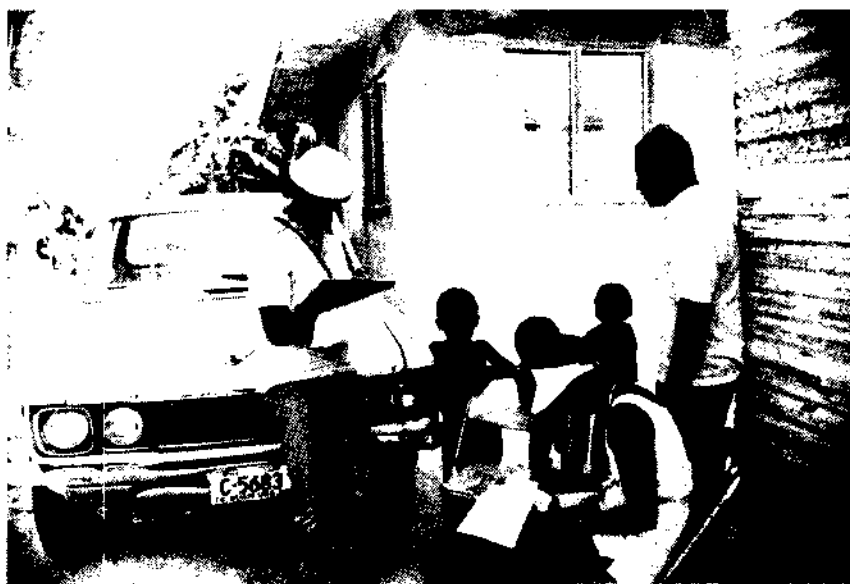
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PROBLEM AND METHODOLOGY

The majority of research projects sponsored by Guam's Water Resources Research Center to date have addressed technical aspects of freshwater: water quality, analysis of groundwater, runoff and flow, and the like. This research report takes a different perspective, that of sociocultural determinants of freshwater uses by human subjects. The site of the field research for this project was the island of Rota, Guam's nearest neighbor in the Northern Mariana Islands chain.

This study compliments an earlier study of cultural aspects of freshwater uses as reported by human subjects on Guam in 1978. Also sponsored by WRRRC, the earlier project was entitled Freshwater Use Customs on Guam: An Exploratory Study (Water Resources Research Center, University of Guam, Technical Report No. 8, April 1979). At the time of the Guam Water Project, local residents were asked to share customs and practices in regard to the use of fresh water with members of the research team. A questionnaire was administered to an availability sample of 265 Chamorro informants over the age of forty. Chamorros of this age bracket had recollections of freshwater use customs and practices prior to World War II, having experienced the pre-War lifeway, as well as a knowledge of freshwater as a natural resources of prime importance to human beings in the post-War era. The Guam Water Project also featured archaeological studies with reference to freshwater sources on Guam, ethnohistorical research, studies of Chamorro language terms for freshwater in its various forms, and place names where people reported collecting and utilizing fresh water.

In the Guam study, it seemed clear that traditional Chamorro freshwater use customs still exist, in the recollections of people if not in actual practice in contemporary times. Archaeological evidence suggested a close correspondence between prehistoric settlement patterns and freshwater sites. The perception of freshwater as a natural phenomenon within the context of the Chamorro language was shown to be in a state of change. The ethnohistory section of the Guam study documented that having a sufficient supply of freshwater in order to meet the daily needs of local people has been a continuing problem on Guam from contact times up to the present. Responses gleaned from the questionnaire, however, indicate that Chamorro people over the age of forty do not recall difficulties in obtaining a sufficient supply of freshwater in times past. In comparing and contrasting village of residence and water resources utilized in the natural environment, Chamorro informants of



Photos 1 & 2. Interviewing informants.



Photos 3 & 4.
Collecting data.

the Guam Water Project supplied locally derived names for both, names that are not consistently found on presentday maps of Guam. This suggests that our informants had a precise and personal knowledge of the environment in which they lived, and a continuing and regular interaction within the same.

As a follow-up to the Guam study, the Rota Water Project was initiated, with a similar focus and research design. Like the Guam study, the Rota project began with the assumption that freshwater is an extremely important natural resource in the daily lives of human beings. Like the Guam study, the purpose of the Rota Water Project was to collect and record customs and habits of local people in regard to fresh water uses, consumption practices, and the like. The time frame under particular consideration is "before the present", i.e., before piped water was commonplace in all of the homes. For Rota, "before the present" in this context focuses on pre-1945, life on Rota before the end of World War II.

For the most part, those personnel involved in the Guam Water Project also staffed the Rota Water Project. Similar field techniques were employed in both projects: eventually the data from the two projects can be compared and contrasted in greater detail. The current project report is preliminary in nature. Dr. Rebecca Stephenson served as Principal Investigator of the projects, aided by Anthropology and Geography students at University of Guam. The questionnaire utilized on Rota was prepared on Guam in January-February 1979, while project members also conducted library reference research about Rota, completed map work, and discussed field techniques. In early March 1979, Dr. Stephenson and Research Aide Darlene Moore traveled to Rota to lay the groundwork for the field project. The first field team, eight students in the company of Dr. Stephenson, conducted household interviews on Rota and completed preliminary aspects of the project during a five day stay on the island from March 22-26. The second field team of ten students conducted field research on Rota from April 19-23. Half of the students completed the remaining household interviews with selected Rotanese informants, directed by Dr. Stephenson. The other group of students, working in connection with Guam's Territorial Archaeology Laboratory under the direction of Marvin Montvel-Cohen, Guam's Territorial Archaeologist, surveyed key archaeological sites on Rota. This team sought evidence of the availability of fresh water in prehistoric times, water storage facilities located in association with traditional village sites, and the like.

For the remainder of Spring Semester 1979, the students coded and analyzed the data collected on Rota in the project's research headquarters at House Number 11, Deans' Circle, University of Guam. The students were required to prepare individual papers for Spring Semester course credit at the University of Guam, dealing with a particular aspect of the Rota Water Project. Their papers as edited appear in this volume.



Photo 5. Guam student and Rotanese research assistant.



Photo 6. Typical interview situation.

The final sample of questionnaires includes the responses of 71 Rotanese informants over the age of forty. An availability sample, the sample was restricted to persons of this age category for they would have the most vivid recollections of social and cultural water use customs and practices on Rota prior to World War II.

For the most part, personal interviews were conducted directly between field research team members from Guam and Rotanese informants. A majority of the interviews were conducted in the Chamorro language, necessitating the presence of at least one Chamorro language speaker in each interviewing party, either a student from Guam or a Rotanese research aide. Two or three persons comprised each field party, for in each case an interviewer was needed, a scribe, and the Chamorro language speaker to translate the remarks of the informants.

Standard anthropological field techniques were employed for gathering, analyzing, and interpreting the data, including library reference research, map surveys, and formal and informal interviews. Participant-observation was a highlight of our field research on Rota. Field team members were regularly invited into homes, to fiestas, and to other social gatherings. Rapport was enhanced as field team members talked with new friends and acquaintances interested in the research project, and new ideas and insights were shared.

We stress that this project, like the Guam Water Project, is presented here as an exploratory study. The project is informant-oriented. Data gathered and presented in this report is as personal and as subjective as our Rotanese informants cared to make it. Further studies of sociocultural determinants of freshwater uses in the Western Pacific are recommended to compare and contrast data gathered on Guam and Rota in further detail, and to explore other issues and themes of a cultural nature in regard to freshwater as brought to light in the two above-mentioned projects.

ROTA: PLACE AND PEOPLE

Rota, one of several populated islands in the Mariana archipelago, is located between Guam, which lies some 32 nautical miles to the southwest and Aguijan, lying some 55 miles north-northeast. Its location is approximately 14°8' north latitude and 145°8' east longitude (Dela Cruz and Kapileo, 1972:1). The third largest of the islands constituting the Northern Marianas, Rota has a land area of approximately 21,124 acres of 32.9 square miles and is about 10.5 miles long and 3 miles wide at its widest point (Dela Cruz and Kapileo, 1972:1). Like most of the other islands in the Marianas, Rota is primarily composed of a volcanic core upon which limestone terraces have formed, thereby creating varied geography ranging from steep cliffs to plateaus and coastal lowlands.



Photo 7. Rota coastline.



Photo 8. View of Taipingot ("Wedding Cake") from across the bay.

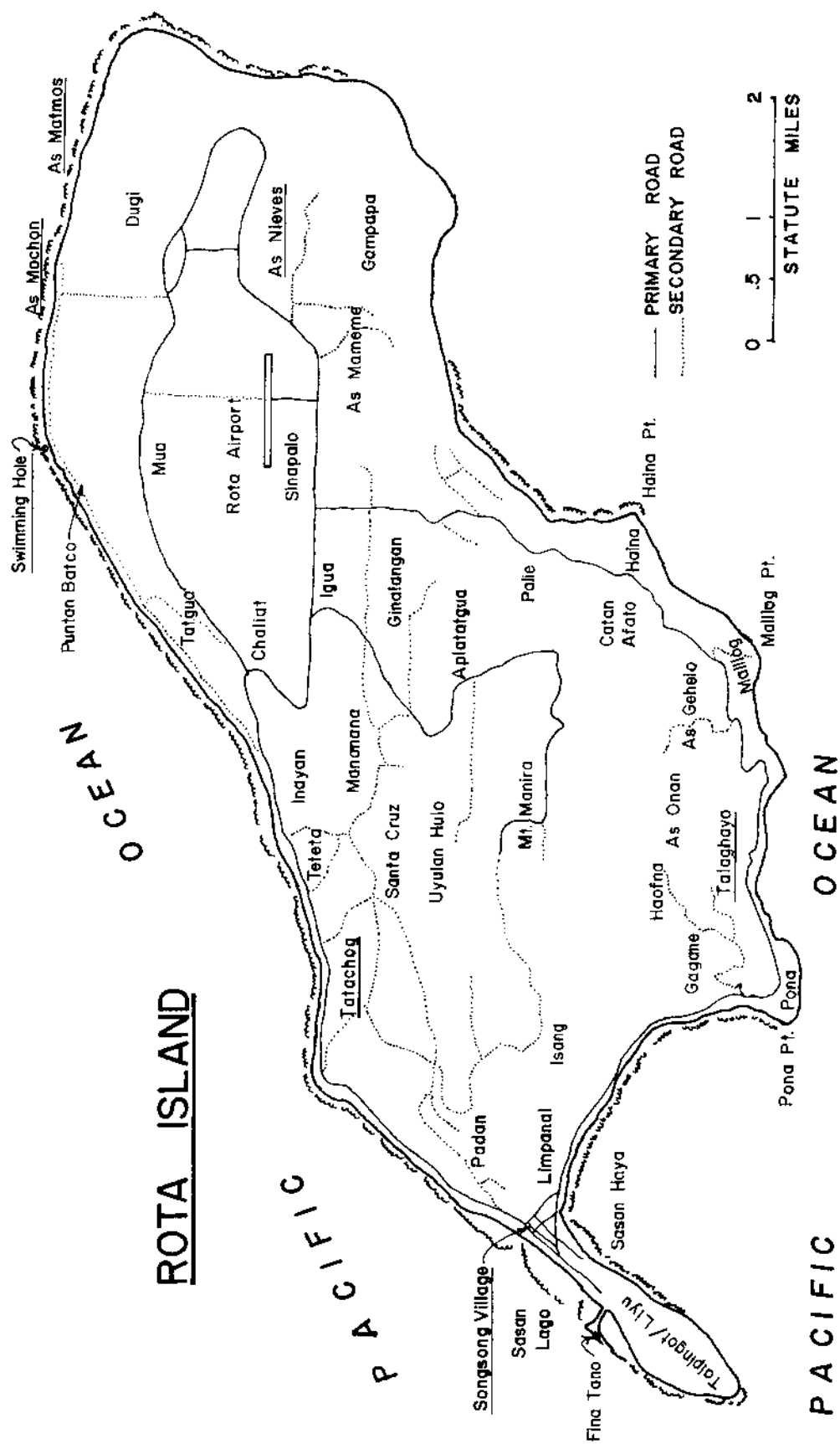


Illustration 1. Map of Rota

The island can best be described as a series of terraces rising to approximately 1,610 feet on the southern Sabana. Mt. Manira, the highest peak, is about 1,625 feet in elevation (Dela Cruz and Kapileo, 1972:12). The village of Songsong is located on the coastal lowland which is actually an isthmus linking Taipingot, a small 469-foot high terraced island, to the main island.

Fresh water percolation through limestone terraces on Rota provides ideal conditions for the formation of numerous caves. One of the largest caves is located near the village of Songsong and has served as a shelter for village residents during typhoons. According to Rotanese informants, the cave was also used during the Japanese period as a bomb shelter.

The coastline of Rota consists of narrow reefs, coral flats, beach strands and cliffs of uplifted coral. No natural deep water harbors exist along the coastline, although work is currently in process to complete a harbor which will allow small cargo ships to unload at dock-side.

The island terrain supports a varied plant community, described in detail by Fosberg (1960:49-51). Plants and animals are ecologically diversified. Rota is characterized by its pleasant tropical climate throughout the year. The rainy season is a time of shifting winds and typhoons. In the dry season, northeast trade winds blow continuously. A mean maximum temperature of approximately 88°F and a mean minimum temperature of about 78°F have been reported (Dela Cruz and Kapileo, 1972:1).

Rota's rainfall averages from 85 to 90 inches per year, equivalent to four million gallons per square mile per day (Mink 1969:64). Heavy rainfall is experienced between July and September with frequent squalls occurring from July to October, the wet season. The dry season begins in December and continues until June. Relative humidity is high, averaging 78% to 84%.

Rota, like the nearby islands of Saipan and Tinian, has practically no surface water. Perennial stream systems are absent; there is very little surface water run-off. Rainfall quickly infiltrates the island's limestone surface to become ground water. The volcanic subsurface acts as a barrier to the vertical drainage of water from the limestone. This situation causes the formation of a very large subsurface water recharge. It is this ground water which serves as the major recoverable fresh water resource for Rota.

Springs or natural water caves occur where the limestone makes contact with the volcanic base. Along the western sector of the escarpment, between Haofna and As Onan in the Talaghaya area, several caves are situated about 700 feet above sea level. The island's major

source of fresh water is supplied by these caves. Fresh water from the cave known as Matanhanum is gravity-fed through a pipeline system, designed and installed during Japanese times, to Songsong village, about six miles away. A Japanese six-cylinder engine was used to pump water from a concrete holding tank next to the large water cave through the pipes (Dela Cruz and Kapileo, 1972:3). This system is still operational in the present, and supplies all the freshwater needed in Songsong village. During the Japanese occupation, water from a small spring along the eastern sector of the escarpment was used to supply water to the airport region (Mink, 1969:65). This water supply system is apparently no longer in use.

The only available data regarding fresh water production capability on Rota is that the larger western cave is capable of producing at least 700,000 gallons of fresh water per day, more than enough to support the needs of the present population, allowing for extra consumption (Dela Cruz and Kapileo, 1972:5).

Fresh water on Rota also occurs in the form of seeps along the northern beach areas. Rota's Swimming Hole is an example of this type of seep, where fresh water mixes with the salt water just below the waterline. Observations made by several individuals during the different seasons of the year over a 30 year period seems to indicate that the combined flow or discharge from springs and other seepages does not correspond to the probable recharge (Mink, 1970:65).

It has been suggested that to efficiently utilize the overflow of the western springs, large storage facilities would have to be constructed on Rota. Wells could be used to take advantage of the natural underground storage system, if aquifers exist. However, the possibility of development of Rota's water resources beyond the springs of the Sabana escarpment is dependent upon knowledge gained from exploratory techniques and programs. Such development, if successful, could assist in the establishment of widespread irrigation possibilities on Rota.

The indigenous people of the Mariana Islands are called Chamorros. In physical appearance and culturally, the Rotanese resemble the Chamorros of Guam and Saipan. Presently, there are approximately 1,500 people of Rotanese ethnicity living on the island. A single extended family on Rota is of Carolinian origin. A few expatriate Japanese, Koreans, Carolinians and Americans constitute a small percentage of the population. While the field project was taking place, one young temporary Rota resident was of Samoan ethnicity.

Rotanese are regarded as speaking the Chamorro language with a singsong quality or musical lilt and cadence. Chamorro people of Guam say that the Rotanese speak a more pristine form of the Chamorro language than do the Guamanians.

Life on Rota is primarily oriented toward the rural rather than the urban. Some Rotanese are employed by the government, some are farmers and fishermen, and others own or manage small businesses. An average family has about eight members. From our work with informants, we suggest that the Rotanese are family oriented and appear to have a cultural preference for large families. According to our informants, however, in the present time a family with ten or more children is quite rare on the island. Such a large family is viewed as an economic burden.

The majority of the population is located in the main village of Songsong. Churches, schools, government offices and commercial establishments are situated here or nearby. A few people live in outlying areas or in the new village of Teneto which was subdivided for homesteads in 1975. As the population pressures increase, areas in other parts of the island will be further developed for residential purposes. The most recent area being set aside for future village habitation is at Sinapalo, near the airport (Hawaii Architects & Engineers; 1973:18-19).

Almost every household in Songsong village has piped water outside, if not inside the home. Currently there is no water tax on Rota: an abundance of fresh water is equally available to all residents. People who leave their outdoor water faucets turned on and running are not charged a fee. Some of the people of Rota prefer rain water to piped water, and continue to use water catchments to meet their requirements. A number of homes in the village of Songsong at present have outdoor pit toilets. The majority of the homes also have outdoor kitchen or cooking areas, featuring a cement sink raised up off the ground, connected to a piped water outlet. The sinks are used for numerous purposes, including laundry. Photograph No. 9 shows a typical sink.

Regarding contemporary land use on Rota, a large percentage of the lands lie idle with the exception of areas used in village and agricultural homesteading, administrative or governmental uses, and those areas being used in milpa agricultural programs. Arable lands are abundant; some, under lease arrangements, are being used as grazing lands. Irrigation water is plentiful and is now dependable owing to the recent installation of the irrigation system which is near completion. This system supplies water to the areas around Sinapalo.

Almost every family maintains a lancho 'ranch' where enough produce is raised to provide the family with vegetables and fruits. Rain catchments are frequently utilized for watering the stock on the ranches. However, during the dry season, people were observed hauling water to their ranches in 50 gallon drums loaded onto the back of pickup trucks.



Photo 9. Outdoor kitchen with cement sink.



Photo 10. Peace Memorial.

In terms of Rota's attractions, long stretches of segmented coral sand beaches are found along the western coastal areas of the island, extending from Songsong village to As Matmos. Several other similar beaches are found on the island's southeastern side. Historic and scenic sites are numerous and are potentially valuable as tourist attractions when restored, renovated and properly preserved. As Nieves quarry, where huge latte stones were hewn out but never removed from the ground, is particularly impressive, along with the latte stones on the Mendiola family land. In more recent times, a beautiful Peace Memorial was constructed at the top of the Sabana (Photo No. 10).

ARCHAEOLOGY AND WATER RESOURCES ON ROTA

A cultural reconnaissance survey was undertaken on Rota between April 19 and 23, 1979. The purpose of the survey was to relate the extent latte sites to water sources, thereby developing data regarding any relationships between prehistoric freshwater distribution and Latte Period settlement patterns. Field work was limited to on-site observations. No excavations were attempted and no surface collections were made in this phase of the research effort. The survey was selective, concentrating on three areas owing to time constraints. The primary foci of the field investigations were the Mochon Latte complex, As Nieves Quarry area, and the water cave, Matanhanum.

The latte of Rota have not gone unnoticed by observers. Spoehr (1957) reflected that..."Rota abounds in coastal latte sites, with the greatest concentration along the north coast, particularly in the Muchon (sic)¹ point area". Twenty years later, Takayama and Egami (1971) affirmed that..."there are literally dozens of latte in the Muchon area". Earlier Yawata (1944) gave the designation of Muchon No. 1 (M-1) to one of the largest sets, a designation followed by Takayama in his report on its excavation.

Takayama suggests that the considerable number of extant, largely intact latte sets invite further study toward understanding settlement patterns. The extensive destruction of latte carried out in the course of commercial and residential development on Guam has not taken place on Rota. The Physical Development Master Plan for the Commonwealth of the Northern Marianas Islands (1978) emphasized the conservation of latte sites as part of public education and recreation. Recently, the Northern Marianas Commonwealth Historic Preservation Office has undertaken a program to assure the appropriate management of these cultural resources.

¹As no standard Chamorro orthography exists to date, the words Muchon and Mochon are used interchangeably, according to the preference of each individual author.

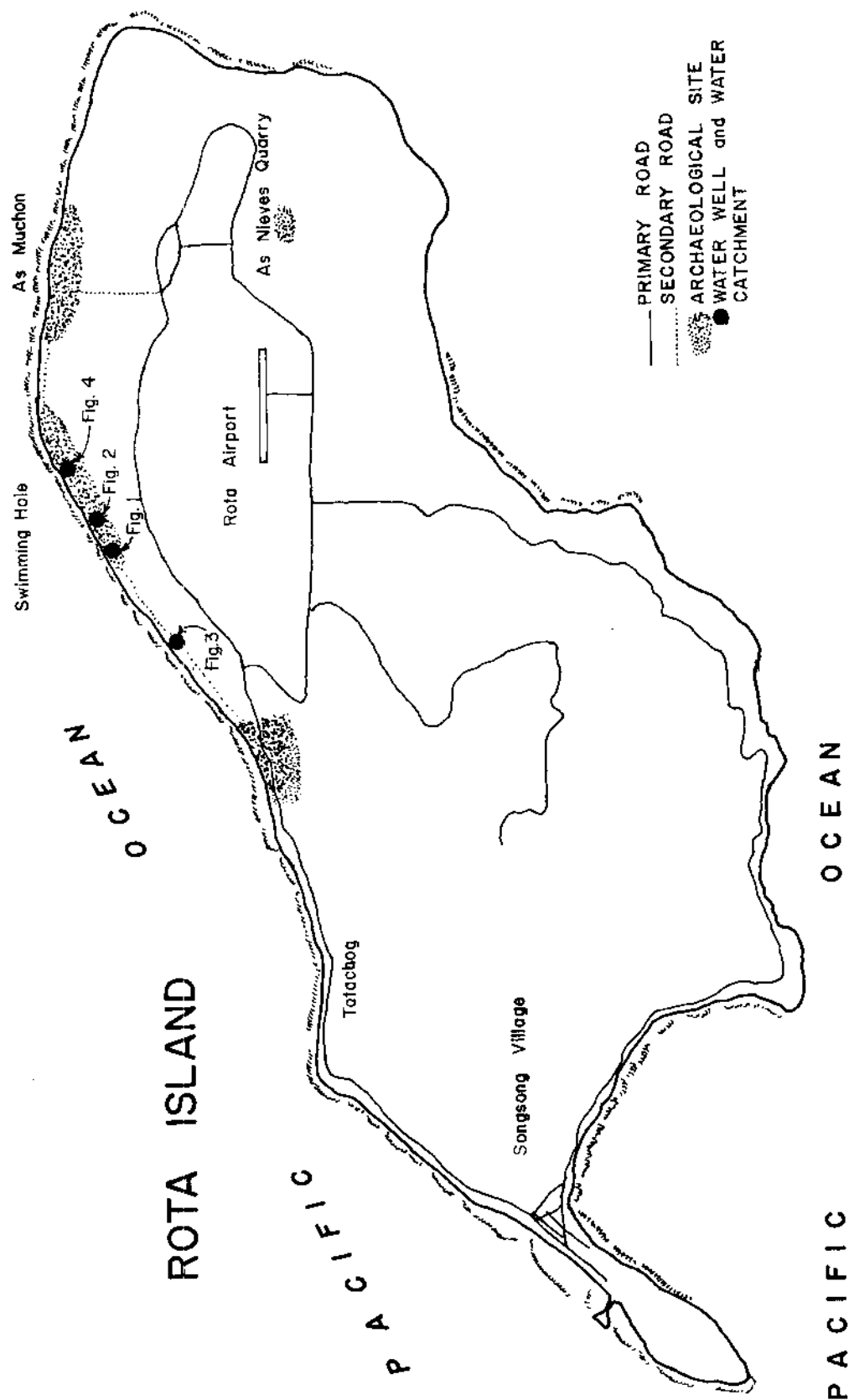


Illustration 2. Map of Rota showing roads, archaeological sites and water wells and catchments.

A count of latte sets on the coastal area between Guata and Muchon Point on Rota yielded an impressive total of sets. The Muchon complex of megalithic house supports is associated with a fresh water well which is still operable. More importantly, numerous freshets occur at the junction of the fresh water table and the beach strand: habitation sites along the coast must have thus been sufficiently supplied with fresh water. Rainfall available to the island supports an abundance of fresh vegetation. It is not unreasonable to speculate that these two sources were sufficient to supply water for the abundant population that the presence of the latte structures indicate.

Based on the work of Spoehr, Reinman, Osborne, Reed, Thompson and others, the prehistory of the Marianas is considered to be a sequence of two culture periods:

- 1) the pre-latte phase from 2000 (?) B.C. to 500-800 A.D. and the
- 2) Latte phase from 800 A.D. to the 17th century.

This division into broad periods is based on the megalithic features, the latte. They are composed of uprights or pillars set into the ground and topped with separate hemispherical capstones. These usually appear as opposite pairs in two parallel rows. Sets containing varying numbers of pairs ranging from three to eight have been observed in the Marianas. Sets also range in height from less than three feet to sixteen feet tall. Cultural material associated with these features, such as mortars which are used for food processing, and stone and shell tools, as well as pottery, suggest they may have served as house supports. The means by which early Chamorros quarried latte stones and the way in which the latte were transported to their current locations are still being studied.

Pre-latte material recently excavated from Ypao Beach Park located on Guam's mid-northwest coast indicate a more advanced technology than previously recognized for this period. Pre-latte material has not been well represented in other excavations. The beads and other decorative objects seem to be carefully crafted, ranging in size from minute specimens measuring 2.66 millimeters in diameter to possible ear pendants and bracelets of assorted sizes as large as 3 inches or more in diameter (Guam Insular Arts Council 1978).

The pottery of the pre-latte phase seems to be characterized by small, thin-walled vessels. Two major types of pottery occurring in pre-latte material have been identified:

- 1) Marianas Redware, characterized by Spoehr to be a thin walled undecorated type with a curved rim and,



Photo 11. As Nieves Quarry.

- 2) Lime filled, impressed trade ware, characterized by Spoehr to be simple in design, delicate in execution and precisely decorated with geometric designs.

The decorative elements include circles, semi-circles, chevrons, diagonal lines, parallel lines, and diamond shaped forms. These were first incised into clay, which was then apparently fired and rubbed with lime. So far, the earliest carbon dates on pre-latte material are 1527 B.C. by Spoehr from material on Saipan, and 1320 B.C. by Reinman on material from Nomna Bay, Guam. The pottery associated with the latte phase is characterized by Spoehr as Marianas Plain. These sherds show no indication of slipping but some have been found to be decorated by combing, cordmarking, or mat impressing. Slingstones are also associated with the latte period. Other artifacts such as fish hooks, net sinkers, and stone and shell tools are found in both periods.

The As Nieves Latte Stone Quarry site, nominated to the National Register of Historic Places in 1974, is located on the eastern plateau of Rota, near the present airport. Although the area was no doubt known to the residents of the island previously, As Nieves was not given formal acknowledgement until the 1920's when it was documented by Hornbostel. He spent six weeks in 1925 collecting place names and conducting archaeological investigations on Rota under the auspices of the Bernice P. Bishop Museum of Honolulu, where the collection was subsequently stored. Laura Thompson, who had access to Hornbostel's collection and field notes, compiled some of his material in her study, Archaeology of the Marianas Islands (1932). Other archaeological research included work done by Japanese archaeologists:

- 1) Yawata investigated the rice fields in the Talakaya area in the 1930's, suggesting they had been used since ancient times. This conclusion was based on his observations of the terraces and the type of rice (1963: 91-92). He also visited the Muchon site in the early 1940's, noting the numerous latte sets situated there.
- 2) Takayama and Egami (1971) excavated twelve (12) separate two meter square test pits in Muchon in 1970-1971, producing the most extensive archaeological data for Rota thus far collected. Three potsherds were recovered which had imprints of rice husks on the surface. A carbon date from charcoal associated with these sherds yielded a date of A.D. 1335 \pm 100. Evidence of the early practice of rice cultivation in the Marianas prior to European contact was thereby supported. The site also produced 11 metal artifacts. One fragment seemed to be of particular interest because of the possible adze-like shape and the proposed age of the metal. It was located 60 cm. from the surface. Material associated with the fragment yielded a carbon date

of 615 \pm B.P., suggesting pre-European knowledge of metal in these islands. Other cultural material recovered during excavation consisted of pottery, stone and shell tools, beads and pendants, fish hooks, spear points and awls. Burials were also encountered.

Takayama and Egami concluded, based on carbon dates, that the Muchon Site was occupied until 1780 \pm 80, well into the Spanish Period of administration of the Islands. Spoehr made a brief archaeological survey in 1950 as part of his research in the Marianas. He surveyed the northern coast to Muchon Point and the southern coast to Mariiru Point, locating concentrations of latte sites along the northern coast. He identified the Muchon Latte site as possibly containing the most latte sets of any site in the Marianas.

Field Research

In this particular field effort, the reconnaissance was conducted in four phases:

- 1) A survey of Muchon complex east of Mr. Mendiola's house to Muchon Point.
- 2) A survey of Muchon complex west of Mr. Mendiola's house to the intersection of the main road and the Muchon Dirt Road.
- 3) A survey of the water cave.
- 4) A survey of the As Nieves Quarry.

The first step of the survey was to record any water sources in the Muchon complex. The main well encountered was located approximately 20 meters west of the Mendiolas' residence. After the well was measured and plotted, the survey party proceeded east to determine how many latte sets were associated with the water source.

Twenty-seven sets were counted east of the Mendiolas' residence. Numerous sherds, stone and shell were apparent on the surface associated with the sets. Surveying of the eastern section consumed the entire day.

On the second day the western section of the Muchon complex was surveyed. The group was divided into two teams to cover the section west of Mr. Mendiola's house. Team #1 started from the intersection of the main road and the Muchon dirt road working east. Team #2 proceeded from Mr. Mendiola's house. West of Aguson Beach Park,

familiarly known as the Swimming Hole, Team #1 found a well associated with a five cave set used for the Japanese coastal trench system. Team #2 found a well and 13 latte sets. Numerous sherds and stone and shell tools were observed on the surface. A total of 56 latte sets were recorded during the survey.

The survey of the water cave, Matanhanum, was conducted by all members of the team. We noted a Japanese water pump, a 6-cylinder engine used by the Japanese to pump water from the concrete water tank connected to the reservoir at the mouth of the water cave. Only two major springs that originate from these caves are presently being used for water.

On the final day of the survey, the archaeology team visited the As Nieves Quarry Site, exploring the surrounding wooded area on foot. After a thorough search of the land contiguous to the cleared Quarry site, no water sources were encountered in close proximity of it. However, a densely thicketed area east of the quarry in what was formerly understood to be the complete quarry provided additional features. This area was apparently quarried previously as it revealed a surface containing many mounds and depressions. These were hypothesized to be related to the removal of stone to provide latte features.

In summary, a small-scale reconnaissance of the north shore of Rota from Guata to Muchon point yielded the figure of 56 latte sets recognized to be in recordable condition. The still operable well in the Mendiola's residence property may have served to provide for the households in the immediate area during prehistoric times as it has done in recent history. The preponderant proportion of the latte are situated at such a distance from this source that hauling water would have been arduous as well as inconvenient. Rota's abundant rainfall would have provided sufficiently for supporting gardens and for daily needs. Rainfall would have been collected by traditional methods such as tree catchments with ceramic containers (tinajan hanum), coconut tree catchments (Tok-no), man-made well catchments (topo) and bamboo vessels (bongbung). Traditional Chamorro methods of rainwater collection are discussed in Stephenson, (1979).

We concluded that, if fresh water is sought in close proximity to ancient household sites, it will be most commonly found in the form of one of the numerous freshets that trickle out close to the reef. As at the edge of the northern aquifer of Guam, freshwater emerges at the juncture of the water lens and the level of the ocean. The intrinsic techno-potential of this process is made apparent by digging around rocks close to the sea shore. There, freshwater, albeit with a slightly saline flavor, is provided. It can be reasonably assumed that such sources of fresh water as described above were exploited by the population of Rota, thus supporting a prehistoric population of some 8,000 persons (Thompson, 1932).

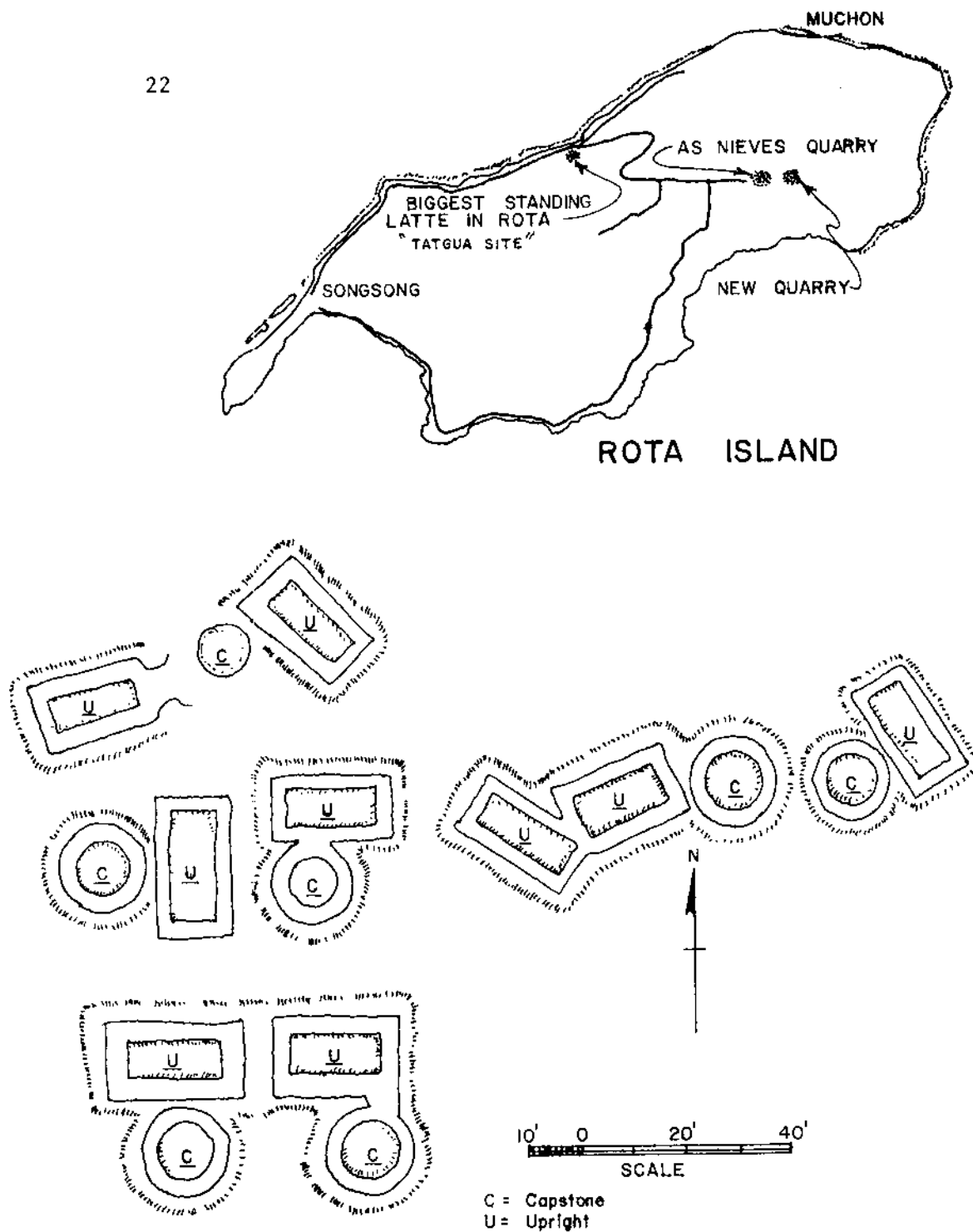
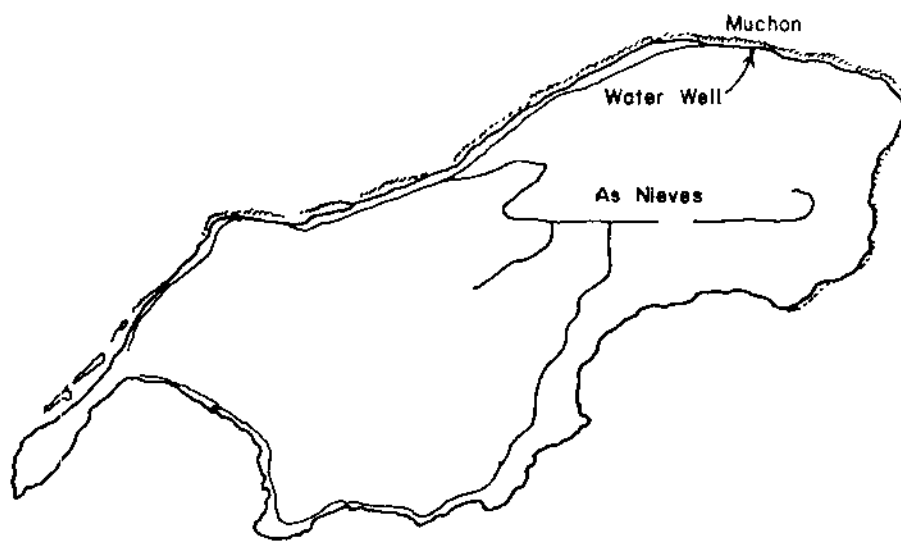


Illustration 3. Map of As Nieves Quarry.



MAP OF ROTA

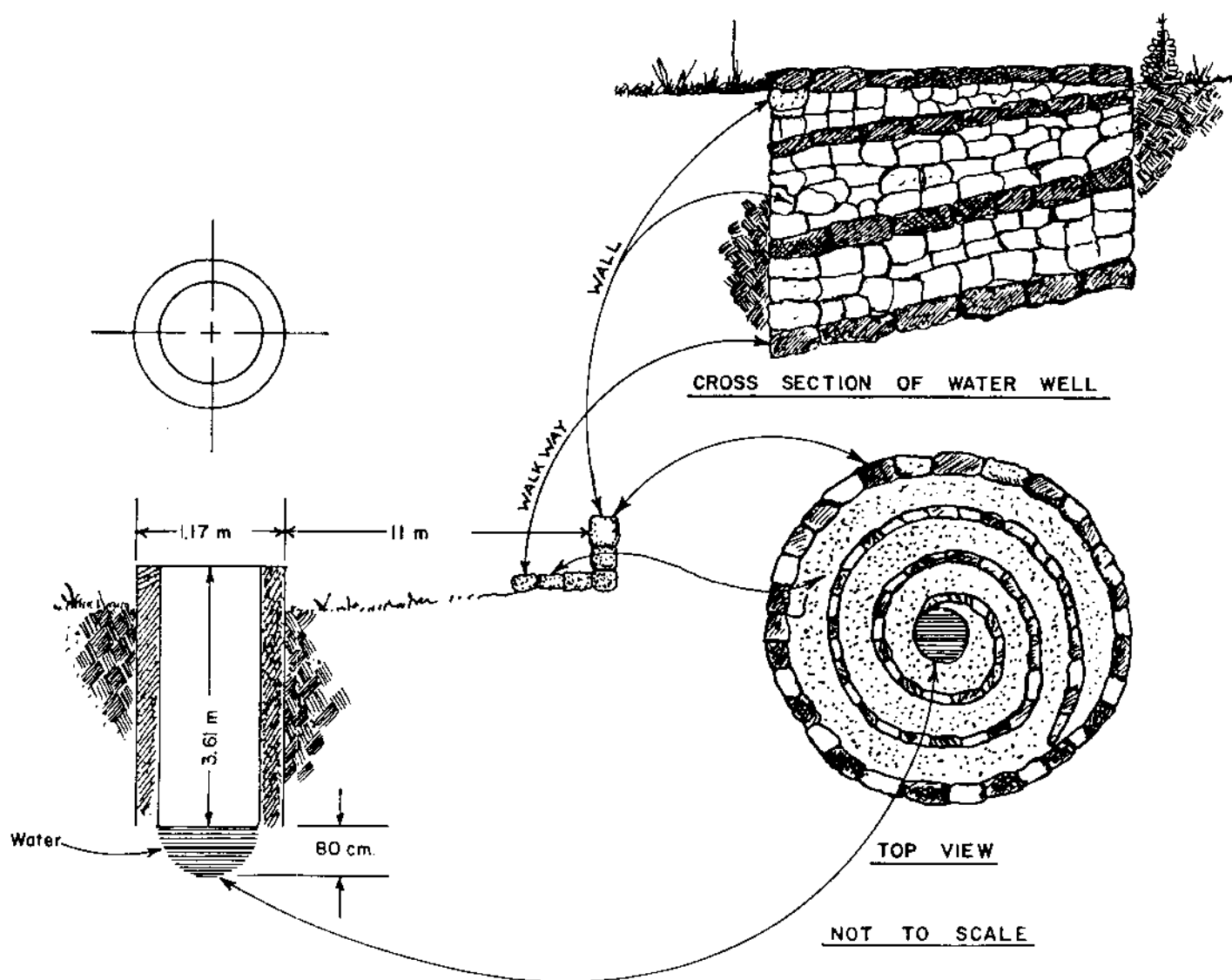


Illustration 4. Water well at Muchon.



Photo 12. Water well.



Photo 13. Basaltic mortar

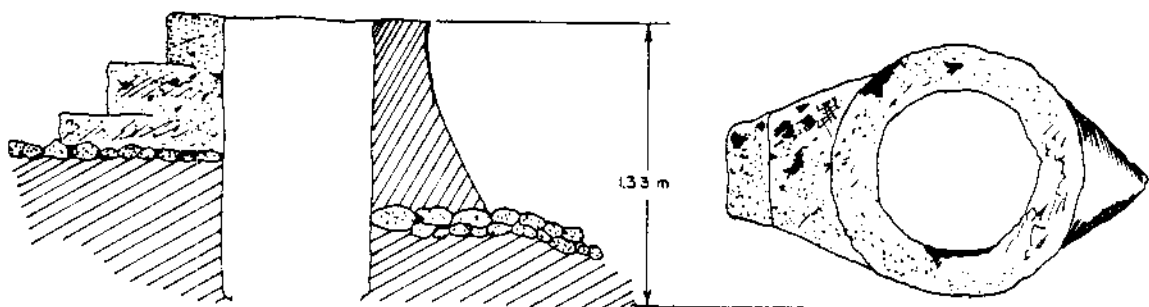


Illustration 5. Freshwater well near the beach.



Photo 14. Freshwater well near the beach.

ETHNOHISTORY

The Ethnohistory section of the Rota Water Project report consists of a concentrated literature review of various historical documents pertaining to the traditional lifestyle of the Chamorros prior to European contact. It also includes a look at the Spanish, German and Japanese periods of administration of the Mariana Islands. Finally, documents concerning the contemporary period extending from World War II to the present are reviewed. The ethnohistory section focuses upon the development of freshwater resources on the island of Rota.

Precontact Rota

The greatest amount of information regarding the traditional lifestyle of the Chamorros prior to European Contact is gleaned from accounts of European missionaries and explorers of the sixteenth and seventeenth centuries. Several researchers have attempted to reconstruct Chamorro history and culture based upon these early records; e.g., Thompson 1945, 1947; Spoehr 1957; Garcia 1683; et al. Alkire makes a summary statement in the opening pages of An Introduction to the Peoples and Cultures of Micronesia (1977):

The villages of the Marianas ranged in size from 50 to 600 individuals and were found scattered along the coasts of the major islands. Only on the three largest islands--Guam, Tinian, and Saipan--did population density result in the establishment of permanent interior settlements. The Chamorro subsistence economy was based on agriculture, fishing, and a small amount of supplementary hunting (birds, bats, and crabs) and gathering of wild vegetable products.

The agricultural technology was simple and depended on digging sticks and stone-bladed spades. Most agricultural work, from clearing of land and planting through harvesting, was done by men. Women, on the other hand, fished the fringing reefs that surrounded most islands, using small hand nets; occasionally they "stored" part of their catch in fish ponds built of stones along the shore. Women prepared the food for day-to-day consumption by boiling in locally manufactured earthenware pots.

Chamorro households were probably made up on an extended family based on a descent line or lineage that was part of a large matrilineal clan. Within the clan, seniority of descent was emphasized and measured through eldest daughters in the matri-lines.

There were three distinct classes---nobles (matua), an elite of high-ranking commoners (atchaot), and low-ranking commoners (mangatchang). The precise definitions of these classes are not clear, but it is quite likely that rank and class were determined by clan affiliation and land ownership---the nobles and elite were landholders, and the commoners lived and worked on land controlled by one of the other classes.

The major islands of the Marianas were traditionally divided into a number of relatively autonomous districts each under the control of the highest-ranking chief (maga or maga-lahe) in the district (who was most likely the highest-ranking man of the senior class of the district). Rank seems clearly related to landholding...

The research team was interested in trying to obtain information regarding the possible correlation between traditional settlement pattern distribution and fresh water resources. Accordingly, data describing the size and distribution of Rota's population at contact was given special attention. The names of several villages appeared in the literature for that period. Father Peter Coomens, who was stationed on Rota, wrote in 1683 that a church had been built on the northern end of the island in a village called Agusan. Coomens indicated that . . . "natives dwelling in difficult and trackless places were summoned to assist in building the church" (Repetti, 1940:319-320). The villages of Muchon and Fuuna were also mentioned in the literature (Garcia 1937:57-58, 78). None of these places are contemporary village sites. Current maps of Rota show these places as being located along the northern and northeastern coastal beach areas of the island.

It was determined that traditional villages on Rota were not always found close to fresh water springs or streams. Although there are springs and streams in the southern part of Rota, there is no mention in the available literature of villages associated with these water sources. However, the literature does indicate that the area was utilized for rice cultivation prior to contact.

The discovery of potsherds containing imprints of rice husks indicate that rice was cultivated on Rota as early as 1335 A.D. (Shutler, 1975:92). Yawata, who has conducted some archaeological work in the southern portion of the island known to have produced rice in the 1800's, has noted that:

The terraced rice fields at Taragaja were irrigated by river water. This system exists among the Bontok, Ifugao, Kankani, Navaloj, and Tinguian mountain tribes of northern Luzon, and

therefore it is plausible to consider the Chamorros as having been connected with the mountain tribes of Luzon (1963:91-92).

Fresh water seeps occur along the northern beaches even today and they may have provided fresh water to villages located in that area in traditional times. It seems apparent that other factors, either ecological or social, were more important in determining where villages would be situated than the availability of fresh water from springs and streams.

Information in regard to pre-contact population size is limited. Various sources suggest that as many as 8,000 people may have lived on Rota prior to contact (Thompson, 1932; Underwood, 1973:15). Apparently these people were living in the several villages mentioned in the literature. It seems that there must have been many more villages not mentioned in the literature to accommodate such a sizeable population. Perhaps Underwood assessed the situation more correctly, in taking the position that:

Estimates of native population size during this period could only have been based on unfounded speculation, prior to the arrival of the Sanvitores mission in 1668, while by this later date, the results of over a century and a half of contact experience may have influenced the size and distribution of the native population, as well as its composition (1973:14).

The first recorded census on Rota occurred in 1710. Perhaps archaeological evidence will suggest more correct figures regarding Rota's population size and distribution prior to contact. Whatever the correct population figures and distribution are, it can be assumed that the people of Rota had developed adaptation techniques to provide sufficient fresh water resources to meet their consumption and utilization requirements.

SPANISH PERIOD

The Spanish administration of the Marianas began with Magellan's discovery of these islands during his voyage around the world in 1521. Although actual Spanish administration occurred much later, Magellan's first contact paved the way for the formal administration which was to follow. Magellan first anchored in the Bay of Umatac, Guam, to obtain water and provisions for his three remaining ships. Records kept during that voyage provided the first data about Chamorro people and their culture to the outside world.

Although Rota was not directly affected by Magellan's visit, the events set in motion by his "discovery" soon affected Rota, as well. One of Magellan's ships, La Trinidad, attempted to sail a return passage from the Molluccas to New Spain in 1522 instead of completing the voyage around the world. The ship encountered difficulties. One of the sailors, Gonzalo de Vigo, and several of his shipmates deserted when the ship reached the northern islands of the Marianas' chain (Burney, 1967: Vol. 1:115-117). Some of the deserters were killed by the local islanders, but apparently de Vigo was able to find safety on Rota. The course of his adventure was recorded in an account of Loyosa's 1526 voyage (Safford, 1901:5). According to Safford, the ship was anchored at Guam to replenish provisions and water when ... "to the great surprise of the Spaniards, there came to them from an island named Borta (Rota) one of their own countrymen who had sailed with Magellan".

Perhaps one of the first European ships to actually land on Rota was the Spanish ship, the Santa Margarita, which is reported to have gone aground on Rota in 1600. Twenty-one survivors were picked up by the ship, Jesus Maria, two years later when it approached the island (Burney, 1967, Vol. 2:235, Correy 1968, 22:23). It is reported that the Rota Chamorros confiscated the cargo of the Santa Margarita and divided it among themselves. This bounty may be the origin of the metal artifacts discovered and reported by the Japanese archaeologist, Jun Takayama (1971:25).

Other than the scant information contained in these accounts, specific mention of Rota in the 16th century chronicles was rare. Based on the existing material, it is impossible to determine what cultural changes regarding fresh water use customs may have occurred as a result of these early contacts between Rota Chamorros and Europeans. Unfortunately, if these marooned sailors wrote of their stay in Rota, the documents have not been recognized or translated.

It was not until 1565 that Legaspi actually claimed the Mariana Islands for Spain, but even then the Spanish did not actively seek to colonize Rota. The original Chamorro name of Rota was Luta. The Spanish called Rota Zarpana for an interim period (le Gobien, 1949:35). Perhaps because "Rota" (the name of a city in Spain) is close to the Chamorro pronunciation of Luta, Rota is the name by which the island became known. Local residents in contemporary times continue to refer to the island as "Luta".

Actual Spanish influence was not significant on Rota until Father Sanvitores and a group of Jesuits arrived on Guam in 1668. Father Casanova of the Jesuits was assigned to Rota in 1669. Garcia, a Spanish historian, wrote in 1683 that Casanova was well received when

he arrived in Rota and that 300 children were baptized during the first few days (Garcia, 1937:40).

The first Spanish census was not conducted until 1710 which was after the decimation of the local population as a results of the Spanish-Chamorro wars. At that time 3,359 people were reported to be living in the Marianas (Smith, 1972:22).

The apparent disparity between pre-contact population estimates of 8,000 and the several hundred reported in the 1700's can be attributed to several factors:

- 1) death from diseases brought in by foreigners
- 2) decimation at the hand of the Spanish militia, and
- 3) relocation of all Chamorros to Guam.

These three factors can be further elaborated upon. The Chamorros of Guam did not easily give up their traditional customs and beliefs to embrace Catholicism. This resistance caused intermittent struggles known as the Spanish-Chamorro wars which continued for almost 30 years and left countless numbers of natives dead. Resistance spread from Guam to the other islands in the Marianas chain.

In fact, Matapang, the Chamorro of Guam responsible for the Jesuit Missionary Sanvitores' death on Guam in 1672, fled to Rota to escape the Spanish militia (le Gobien, 1949:118). A few years later, during a disturbance in 1675, people of the northern Guam village of Tarrague burned a neighboring village, Ritidian. Those responsible for setting the fires also escaped to Rota, which led Spanish historians de la Corte and Calderon to comment that: "all the criminals from Guam gathered in Rota" (1970:49). Subsequently in 1681, Don Joseph de Quiroga arrived in Rota accompanied by his troops to punish the natives. Historian le Gobien indicated that the "trouble makers" were brought in, and a trial and execution conducted (1949:118). But no mention is made of the numbers of natives, Rotanese or Guamanians, who perished during de Quiroga's ten day stay on Rota.

Battles between the Spanish and the Chamorros of Rota continued for several more years. In 1684 Father Boranga who had been stationed on Rota was killed by the native ("Some Historic Figures", 1690:46). Previously Father Antonio San Basilio of Guam was killed during a visit to Rota.

Historians related that the Spanish-Chamorro peace was reached by 1689 and about this time the Chamorros were resettled in population centers on Guam. The resettlement process included removal of Chamorros from their homelands on Rota, Tinian and Saipan. However, Bowers (1951: 224) indicated that a few families on Rota escaped capture by hiding in

caves. Thus, Rota and Guam are the only islands in the Marianas that have had a history of continuous Chamorro occupancy. According to Anttila (1965:92), Chamorros relocated to Guam during this period slowly began moving back to their abandoned islands in about 1816.

Nearly one hundred years elapsed between the resettlement process and the 1790 census at which time 300 people were reported to be living on Rota. Underwood (1973:29) has compiled the following population figures for the Spanish Period on Rota:

ROTA CENSUS IN SPANISH TIMES
After Underwood

<u>Year</u>	<u>Population</u>
1790	300
1832	438
1855	349
1864	335
1872	326
1896	504

Underwood indicated (1973:117) that probably epidemics such as flu, smallpox, and measles accounted for more native deaths than the Spanish-Chamorro battles.

Olive y Garcia also commented on the size of the population of Rota (1887:49):

Rota has 487 inhabitants. Of these, seventy-five are Carolinians. This gives hope that the population may exceed 500 this year, a total which has never been reached as far as is known for certain.

And he commented on the residential distribution of the population (1887:49-50):

All of the inhabitants live in a single village located on the isthmus and bearing the same name as the island. It has eighty-nine houses (some of mamposteria, the others of cana and paja) situated along four streets running parallel to both beaches and along two cross streets. The casa real (pompously called the Palacio) where the alcalde 'mayor' lives is very small and shabby, built of mamposteria and covered with palm fronds. The church, back to back with the casa parroquial, is constructed of the same materials as the casa real.

He also described the people of Rota on the same page:

The character of these people seems to be the same as that of the other Chamorros, although they are reputed to be very unassuming.

On the next page, he comments:

Other writers discussing the island of Rota conjecture that its inhabitants are more indolent and lazy than those of Guajan (i.e., Guam).

Olive y Garcia makes the following summary statement (1887:50-51):

In view of the island's characteristics, its rocks producing an abundance of wild edibles (especially the root called piga -- their principal food -- along with equally abundant fish from the sea) and keeping in mind that great difficulties the Rotanese have making their plantings on those sharp cliffs, it has occurred to us, and we have reported, that "after all, it would be advisable to increase the population in order to enlarge that of the archipelago, but in Rota we believe that even twice the present population of 487 would not find enough food to be well nourished and that, truthfully, an isthmus of sand joining two huge rocks does not hold many attractions, neither does a place where one struggles with great toil to make a living. All of which speaks eloquently for the inhabitants of the island who fulfill so well the divine precept of earning a living by the sweat of one's brow."

Actual reference to fresh water on Rota does not appear in the literature until Arago, draftsman to Captain Freycinet's voyage around the world reported that (1971:277-278):

The inhabitants (of Rota) drink nothing but the water of a natural well a dozen paces from the sea shore on the north-east and about a league and a half from the city. It is two feet and a half in diameter and four feet and a half deep. I thought it a little brackish, though it was deemed good by my comrades.

He also noted:

The Rotanians adopt a very ingenious method of collecting rain water. They fix one of the leaves of the cocoa-tree (coconut palm) to the summit of the trunk, so that the stoutest part of the spine is uppermost; another leaf is fastened to the first, a third to the second, and so on, to within a foot or two of

the ground; all having their leaflets fixed to their stalks. The rain water runs along the leaves as in a channel, and is received into a jar, into which the last leaf enters. An apparatus of this kind is seen on almost every cocoa-tree.

He elaborated on the availability of water on Rota:

The 25th we made an excursion to a river. The road is very difficult...the water of this torrent appeared to us delicious... It flows along a gully shaded on both sides by majestic trees...

Observations made by the Freycinet expedition during their stay on Rota are further elaborated upon by Captain Sanchez y Zayas (Searles, 1931:216-217):

Three wells furnish water to the people of the villages; two of them are artificial, and the water detestable: the third, which is natural, affords better, though it is brackish. On the east coast at five miles from the villages, there is a rivulet of very good water... Water (in general) is scarce, bad and difficult to embark.

Sanchez y Zayas also makes the following summary statements on village life on Rota:

The two villages are more properly two streets which, collectively, are called Rota. They consist of seventy-nine huts of leaves and bamboos, a small hermitage called a church, a house for the padre, and a sort of hovel which they call the Rota house. The priest is the only European, and there were three hundred and thirty-five inhabitants. There is anchorage opposite to either village. The streets are built on the sandy isthmus, which is so low that the sea threatens to break over it in bad weather, when the people take refuge in a cavern near Sosanjaya. This cavern is exceedingly curious, abounding in crystals, and of unknown but great extent.

Although published sources indicate that rice was growing on Rota prior to European contact (Yawata, 1963:91-92), no references to irrigation practices were known in the literature until a translation of Felipe de la Corte's 1875 historical report of the Mariana Islands was located:

The lack of running water is also reason for certain discomfort in Rota, because there is only one stream on the south side which gushes from the top of the slope.

This water is used to water rice fields cultivated on the slope worked in terraces or steps. Apart from this living water,

there are only a few wells at the foot of the hills near the isthmus, where the population lives. They drink this water (1970:155).

De la Corte elaborated that the natural well in the south cove was located so near the sea that, a little further, and it would have filled with salt water. It was indicated that although salt water enters the well during storms or disturbance, the water remains fresh or becomes fresh quickly.

Olive y Garcia (1887:49) also described the fresh water resources of Rota:

There is only one stream which is high up the slope in the southern part of Ugulan. It is used to irrigate some terraced rice fields as well as for drinking water by some of the people. However, most of the population use water from wells. One of these, either natural or artificial, is in a place which at high tide is covered by the sea but which as soon as the tide goes out, is free of any salty taste. We have verified this the three times we have been on the island. This is the well that the natives use most.

It would appear that fresh water from wells as described above and rain catchments were sufficient to meet the requirements of freshwater for Rota's population. A final reference to wells on Rota will be noted here. Mr. Ed Gould² recently called our attention to a particular well from Spanish times on Rota. The well was described in notes dated August 7, 1974, written by Msgr. Oscar L. Calvo, who was at that time assigned to the parish on Rota. In the course of compiling some data on the history of Rota, he described the well as follows:

At the back of the Palasyo near the steps is the legendary well called itipo i manego 'old Chamorro well' with hewn rock steps leading down and the water very sweet, even though very near the seashore.

The ruins of the Palasyo are visable at the present time on Rota. They are located across the street from the Catholic church in Songsong village, near to the beach, and date from the early 1800's. Msgr. Calvo elaborated that, although many elderly people knew the location of the well, they had not seen it. Nor is this well observable in the present day. It must have been filled in and covered with earth at some time in the past. People interviewed on Rota in 1979 for the current project did not mention this particular well in their discussions with us. Perhaps they had forgotten about it.

²Research conducted in 1977 for an Insular Arts Council funded project, "A Preliminary Survey of Historical and Archaeological sites on Rota", Ed Gould and Marvin Montvel-Cohen, principal investigators.

It is not possible to tell at this time what influences the Spanish administration may have had on the development of fresh water resources on the island of Rota during the period 1521-1898. Something of the general administration policies of Spain as a colonizing agent can be reconstructed, however. Spain generally administered her colonies through establishment of population centers associated with missions (Solenberger, 1953-4:132). In fact, the Roman Catholic church exerted much influence regarded the establishment and maintenance of the colonies as well as determining the location of population centers and establishment of missions. The Catholic church was also responsible for administering the educational programs of the colonies. Mission schools were established on Guam as early as 1674 (Anttila, 1965:92). Many of the improvements accredited to the Spanish period relate directly to the church, as it was the priests who encouraged agricultural activities, built schools, and provided the staffs to run them.

The administrative policies applied to the Mariana Island seem to be typical of the general practices carried out in other colonies. Economic interests in the Marianas centered on Guam which served as a Western Pacific provisioning port of Spanish galleons which sailed annually from Mexico on a round trip voyage to the Philippines. These voyages continued for nearly 150 years.

In order to maintain Guam as a colony, a governor was appointed in 1676. Prior to this period, the missionaries were supported by a military garrison (Carano & Sanchez, 1964:75). The Spanish divided Guam into municipalities in order to govern the island effectively. Each municipality consisted of several villages or hamlets under the direction of a native magistrate called the gobunadorcillo (Carano & Sanchez, 1964:58). This native official had complete executive powers within his district and was responsible for the collection of taxes and assignment of work on public projects, such as construction of churches, roads or public buildings.

Very little information is available concerning the specific administrative policies put into effect on Rota. Thompson (1947:60) indicated that Rota and Saipan were provided *alcaldes*, appointed as direct representatives of the governor. These administrators were in charge of municipal affairs for a two year period. Harvey (1920:45) mentioned that a Spanish officer was assigned to Rota. But it is uncertain when this occurred. The settlement of the people into the village of Songsong was probably a result of Spanish influence: it was a practice to concentrate the population near missions. On Rota, however, it is not clear if this resettlement occurred in the early 1700's or much later. At the time Arago (1819:277-8) visited Rota, the population was living in one village called Songsong located on the southwestern tip of the island. This village is either near or on the same location of Rota's contemporary village of Songsong.

Harvey noted that when the Agustinian order arrived on Guam in 1769 to replace the Jesuits, there were only two parishes in the Marianas, one in Agana, Guam and one on Rota. Priests for both parishes resided on Guam (Harvey, 1920:45). Apparently Father Stengel was in Rota where he had gone to hear confessions and administer the annual communion when the Agustiniens arrived; he had to be recalled to Guam (Carano and Sanchez, 1964:103). The mission on Rota was reestablished in 1855 according to Hornbostel (1935:60).

Perhaps the Spanish had less economic interest and therefore less influence on Rota. Since there was not a port of sufficient capacity to provide anchorage for the large sailing vessels of the period, it is likely that less European contact occurred. In fact, Solenberger (1935:132) noted that Chamorros in Rota use a slightly lower percentage of words with a Spanish origin than Chamorros in Agana, which would support the fact that there was less Spanish influence on Rota.

The digging of additional wells on Rota and the use of streams for irrigation purposes may have been introduced by the Spanish. However, as was pointed out earlier, irrigation practices and the terraced rice fields at Taragaja could have been introduced as a result of association with the Philippines. Solenberger (1953-4:101) indicated that no dams or reservoirs were apparent in the Marianas at the end of the Spanish period.

We suggest that, because of the relative isolation of Rota, it is likely that the Chamorros continued traditionally established practices of fresh water acquisition and consumption during the Spanish period, other than for the few possible exceptions already mentioned. We also suggest that rain water catchments and the juice of the coconut were major substitutions for fresh ground water. Apparently the few streams of running fresh water were not considered as important factors in establishing the placement of village sites, as not traditional or historic villages were mentioned in close association with these streams. However, further archaeological research may provide evidence to the contrary.

Perhaps the difference in taste between brackish well water and good 'living' water was not recognized as important because of consumption practices. For example, well water may have been used for washing or cleaning and, by contrast, rain water and coconuts utilized for drinking. However, this conjecture needs to be further substantiated and perhaps will be by our research.

German Rule

The literature review revealed little information regarding the German occupation of Rota. Frequently documents describing the German

administration of the islands dealt with the Micronesian islands as a whole or with individual districts. Generally, data regarding the Marianas made particular reference to Saipan, which served as the administrative center. It is assumed that the majority of the policies and programs described for the Marianas applied to the Rotanese population as well.

Although German traders were engaged in business in parts of Micronesia as early as 1869, it was not until 1898 that actual German rule occurred in the Northern Marianas. At that time, Germany paid the equivalent of four million dollars to the Spanish Government for the purchase of the Caroline and Mariana Islands (Gale, 1979:30). Guam was excluded from this arrangement, as it came under the protection of the United States Government (McKinney, 1947:15). This situation continued until 1915 when, at the onset of World War I, the Japanese assumed domination.

Germany administered the Micronesian colonies from German New Guinea, establishing administrative offices in each of the Island Districts. Headquarters were established in Palau, Yap, Saipan, Truk, Ponape, and Jaluit in the Marshall Islands (Cockrum, 1970:66). Germany administered the island with a relatively small German staff assigned to each of these Island Districts.

The purpose of the German Government in acquiring the islands of Micronesia was to achieve an industrially self contained imperial state (Oliver, 1951:350). The colonies were to provide raw materials, primarily copra, to German industry and in turn furnish a market for German products. Fletcher (1920:74) was of the opinion that. . ."The Germans' trade and labor ideal has been to make as much profit as possible without reference to law or gospel."

Schnee, writing in 1920, stated German administration objectives in terms of economic goals:

The most important problem of administration in these colonies is the exploitation of land, for most of it is still virgin soil. To accomplish this, the most essential requirements are the subjugation of the natives, inclusion of them in our administrative system, extermination of disease, creation of financial resources, increase of schools and spread of the German language (in Hughes and Lingenfelter, 1974:129).

Apparently the Germans did not see the Northern Marianas islands as strategic for military purposes: no records of the establishment of military bases could be found. Neither did the Germans initially conquer the islands by violence.

When Germany acquired the Micronesia colonies, she tried to discourage other countries from engaging in trade with the islands. However, the Japanese had already established significant trade routes in the Pacific and were not easily discouraged (Cockrum, 1970:68-69). Trade figures for 1905 support the fact that Germany was unable to prohibit Japanese trade with the Marianas. In that year 89% of the Marianas' exports went to Japan and 85% of the imports came from Japan (Cockrum, 1970:79). Apparently the Germans encountered difficulty realizing their economic goals with respect to the Marianas Islands.

Local administration and judicial affairs in the Marianas were conducted in Saipan through a German Station Director. District Officer George Fritz resided on Saipan for three and one-half years and was reported being on island for events taking place during the years 1900-1903. During his tenure Fritz initiated an experimental farm on Saipan. The crops he attempted to grow included coffee, cacao, oranges and mango trees (McKinney, 1947:87).

Oliver indicated that the German official assigned to Saipan became disgusted because the area lapsed into unimportance and moved to Yap, rarely visiting his area of responsibility (in Cockrum, 1970:70). At what point in time this situation occurred is not clear. However, it seems possible that the District Officer left Saipan after the disastrous typhoons which are recorded to have occurred in 1904 and 1905. As a result of the typhoons, copra exports were severely diminished for several years. As copra was the chief export product, lack of it would drastically reduce the economic importance of the islands. The German official mentioned above may very well have seized this opportunity to relocate.

For the most part, the Germans maintained the Spanish system of local administration. Local mayors and district officers were responsible for carrying out instructions and supervising work assignments for public projects. It was reported that the Germans considered the preference of the community when establishing local appointments, thereby gaining approval and subsequent cooperation of the people. The duties of the local officials included the maintenance of an accurate registry of the residents in their respective communities, villages or districts; the raising of taxes in accordance with orders decreed by the German Administrator; deciding upon the number of local workers to be supplied each day for the public work projects; keeping an accurate record of such workers; and the like.

There are no references to German difficulties in asserting or maintaining control of the Chamorros of the Marianas. The Germans originally brought in a police force of twelve Malaysians to Saipan, but discovered that they were not needed for maintaining civil control (McKinney, 1947:85). Subsequently, a local police force was established in the context of an educational program.

After receiving training, a few participants who showed special promise commonly left the police force to become plantation overseers and community officials. The literature does not indicate whether or not this program was instituted on Rota. One account described a one-year military training program for the men of Saipan "but not those of Rota" (Costenoble, 1905:56). It is not clear if this reference to military training was the same police training program mentioned above or an entirely different program.

Population figures for Saipan, Tinian and Rota appear in the literature for 1899, shortly after Germany acquired the Northern Mariana Islands (reported by McKinney, 1947:89). These three islands were the only inhabited islands of the Marianas chain at that time, with the exception of Guam. The population distribution was as follows:

1,253	Chamorro
650	Carolinians
23	Japanese
3	Spanish
3	German
6	Malays and Tagalogs

Total 1,938

It should be pointed out that this ethnic breakdown of the population should be somewhat suspect, as intermarriage between Chamorro and Spanish or Filipinos had been occurring for many years. However, the figures reported for German nationals are, no doubt, correct. It is interesting to reflect upon the fact that only three individuals of German descent were responsible for administering a colony of approximately 2,000 individuals scattered over three islands.

Apparently Germany was not actively encouraging her own people to settle in the Marianas. McKinney (1947:87) reported that the only German colonists to settle in the Marianas arrived as a group of three in Saipan in 1904. However, population figures indicated that the European population had increased to 23 by 1906. This group was composed of six government officials, three missionaries, three planters and traders and their family members (McKinney, 1947:90). It is not known how many of these twenty-three persons, if any, lived on Rota.

Although some Micronesian islands such as Yap experienced diminishing birth rates, and the total population of Micronesia decreased during the German administration, the population of the Marianas increased (Cockrum, 1970:73-74). Population figures of 1907 show a total of 2,640 people: 1,704 Chamorro and 936 Carolinians in the Northern Marianas (McKinney, 1947:90). This is an increase of 702 people over the 1899 figure.

One reason for this population increase was a direct result of a new administrative policy initiated by the Germans. They relocated the natives among the islands of the Northern Marianas. Among reasons given for this policy was the belief that the introduction of new blood through intermarriage would result in healthier and stronger islanders (McKinney, 1947:107). As can be seen from the 1899 population figures, 650 Carolinians were living in the Marianas at that time. It should be pointed out that populations were migrating as early as 1815, however and the size of the Carolinian population not entirely the result of the German relocation policy.

McKinney (1947:107) indicates that natives living on islands south of Palau were relocated to Saipan during the German Period. Rota may also have received new residents at this time. Such enforced migrations were later set aside: it seemed that people were having difficulties in adjusting to and being accepted in their new locations.

To be sure, commerce was Germany's primary concern in developing and administering the Pacific colonies. Oliver (1951:350) takes the position that tolerant respect was demonstrated toward native institutions which did not interfere with that goal. Education was one institution that seems to have been neglected, however, by the Germans. Aside from giving nominal support to a public school in Saipan, other schools in the Northern Marianas were simply left in charge of the Catholic priests (Anttila, 1965:82). Children were required to attend school from the age of seven through the age of 13. The German school in Saipan included a secondary level of instruction, and the courses taught included mathematics and drafting. Notebooks of a student at that school during the same time period, one Joachim Kwiditchay, are in the collection of the Linden Museum, Stuttgart, Germany (Marvin Montvel-Cohen, personal communication).

Fritz (1904:26) reported visiting the Catholic School in Rota which had 49 pupils. These students met for three hours per day to study the history of Christianity (Report to the League of Nations 1924). Juan Taitano (as reported in Hornbostel, 1935:130) served as the school master of the island of Rota during the German period and could speak the German language.

According to Anttila (1956:136), the German Capuchins replaced Spanish priests in the churches of the Marianas. However, Costenoble (1905:36) stated that in 1906 a priest of the Spanish Order of the Agustinian Recollect was assigned to Rota. It may have some time later that the German priest actually arrived on Rota. However, German influence did indeed arrive, as Hornbostel (1935:130) reported seeing a blond, blue-eyed statue of the Virgin Mary during his visit to Rota in 1925. Of this visit he wrote, "All that was left of the German influence on this island was Juan's dog (part dachshund) and a picture of Kaiser Wilhelm, former German Emperor."

Currently, a small chapel built during German times, known as Our Lady of Lourdes, serves as a visual marker of the German period on Rota. It stands on a hillside above the ruins of Tatachog village. Although no written information concerning construction of the chapel has been located, conversations with local people provided the information that the chapel was constructed with a water cistern adjacent to it. Rain water collected in cistern was blessed by the priest. People on Rota told us they used to go to the chapel to pray and they used the water to cure illnesses. The small chapel has recently been restored; it now serves as a shrine and an historical monument.

It has been suggested that the primary concern of the Germans in administering the Pacific colonies was economic in orientation. Accordingly, maintaining a labor force to produce copra was a prime objective. Cockrum (1970:73) takes the position that this was the reason why public health took priority over public education. Substantial public health programs may have been initiated in other parts of Micronesia, but such programs do not seem to have been of great significance in the Northern Marianas. McKinney (1947:112) provided the information that the doctor assigned to Ponape paid annual visits to the Marianas. Medical services also included public or mass vaccinations administered in 1901 and 1905 (McKinney, 1947:90). Many years after Germany acquired the Marianas, a doctor was assigned to Saipan. It is not documented how often that doctor visited Rota. Other researchers, however, take the position that Germany's concern for instituting public health programs along with economic development in the Colonies were simply policies aimed at the improvement of "native life" for the direct benefit of the islanders.

McKinney (1947:84) stated that . . . "The Germans worked assiduously for the improvement of native life." Yet it seems that widespread practices throughout the German colonial empire included the use of forced labor, enforced with widespread indiscriminate floggings of natives (Fletcher, 1920:84). However, in the literature there is no mention made of Germans flogging people in the Northern Marianas. In fact, Anttila (1956:136) reported that the islanders used as laborers were well treated. This observation may have been based on the laws the Germans established for governing the employment of natives. Laws concerning maintenance of health and the restricting of hours of work were formulated, but as McKinney (1947:109) observed, it is not known how effectively these laws were enforced.

In terms of forced labor, Fritz (1904:100) described a system of compulsory labor enforced by the district office in Saipan with the assistance of local officials. Such compulsory labor was utilized for public work projects. Married men were expected to contribute 12 days of work per year and bachelors 20 days per year. Fathers of more than five children were exempted from this practice.

Projects within the scope of public works included improvements such as the construction of roads, public buildings and hospitals (Anttila, 1956:139). It is interesting to note that one of the public work projects dealt with fresh water. An aqueduct utilizing bamboo pipes was constructed to supply water to the main village on Saipan (Leon Guerrero, 1968:5). Such a project could have been initiated on Rota; however, no mention of such a system has been discovered in the existing literature.

The only other mention of fresh water during the German period came from Costenoble (1905:7). He related that there was seldom a water shortage on Saipan, "since the rain, which is frequent even in the dry season, is sufficient to fill the tanks which are set up near the houses, to catch the rain." It is probable that similar tanks were utilized as water catchments on Rota.

Perhaps the most significant influence on the Chamorro traditional practices during the German Period occurred in the concept of land ownership. Formerly, lands were considered to be owned or controlled by groups or clans. The Germans insisted upon a policy of individual ownership of land (Oliver, 1951:350). According to the Laws of 1893 concerning the Lease of Land in the Provinces, "Any native able to prove ownership of land would be able to register it in his name" (Fritz, 1904:78). However, Cockrum (1970:89) stated: "The Germans reissued new land deeds to people cultivating their lands, appropriating land not under cultivation for the government even though valid Spanish deeds were held."

In other words, a person could no longer simply occupy land and claim it. Formal laws concerning land use were instituted and a land survey program initiated. A homesteading program was developed and the formalization of ownership of land through registration procedures was established. The distinction between private and public lands became apparent and created questions regarding government ownership of land as late as the Trust Territory Administration (Hawaii Architects and Engineers, Inc. 1973:3).

Land considered government property was available for lease to colonists or entrepreneurs. However, regulations concerning leased land were strict. Prospective colonists were forbidden to buy or sell land. Although 25-year lease arrangements were possible, upon expiration of the lease, the lessee was subject to the government's terms for renewal or face forfeiture of an investment of time, money and labor. It seems that German colonists were not encouraged or offered much assistance in attempting to establish permanent settlements in the Pacific colonies.

According to Anttila, the Germans encouraged farming and animal husbandry during their administration. In fact, there were regulations requiring local people to plant new groves of coconuts to provide copra, the main economic product of the Marianas (Oliver,

1951:350). However, McKinney (1947:240) reported that the Chamorros preferred harvesting wild coconuts to planting new groves. It is interesting to note that during the German occupation, the Marianas were the least productive of all Germany's island groups. The majority of the copra in the Marianas was produced not by Chamorros, but rather by immigrant Carolinians (Cockrum, 1970:69-70).

Copra yield in the Northern Marianas reached its peak in 1903 (McKinney, 1947:88). However, destructive typhoons hit in 1904 and 1905, destroying the coconut trees. Accordingly, Rota's economic value to the German empire was severely reduced for some period of time.

We suggest that very little German influence was actually felt on Rota. The time span of the German administration in the Northern Marianas was relatively short. Many factors contributed to Rota's low profile: natural disasters; the vast distance separating the Mariana Islands from Germany; competition in trade and business from Japan; dissension in other parts of the German empire; and the lack of an adequate harbor on Rota.

Japanese Occupation

The Japanese mandated islands in the Western Pacific were a constant target for explorers from the outside world. Earlier explorers of Spanish and German heritage sought adventures in the Marianas islands as well as land claims for their mother countries. Many of these explorers reached the island of Rota and recognized the richness of its local environment. Some of these explorers left behind traces of their visits to the island.

The most notable physical improvements and developments on Rota, the evidence of which can still be seen on the landscape, were accomplished by the Japanese. Rotanese informants for the Rota Water Project related events that occurred on Rota during the Japanese era. Such recollections seem to be well retained in the minds of Rotanese people in the present day. According to informants, Japanese administrators indicated a commitment to the island through changes in its superstructure.

The Japanese recognized fresh water resources on Rota to be abundant. The availability of fresh water was fortunate, as much fresh water was needed in order to bring about improvements and developments on the island.

Sufficient water was required for maintaining the Japanese sugar cane and rice plantations. Bowers (1950:258), however, points out that although the Japanese produced rice on Rota in a well developed

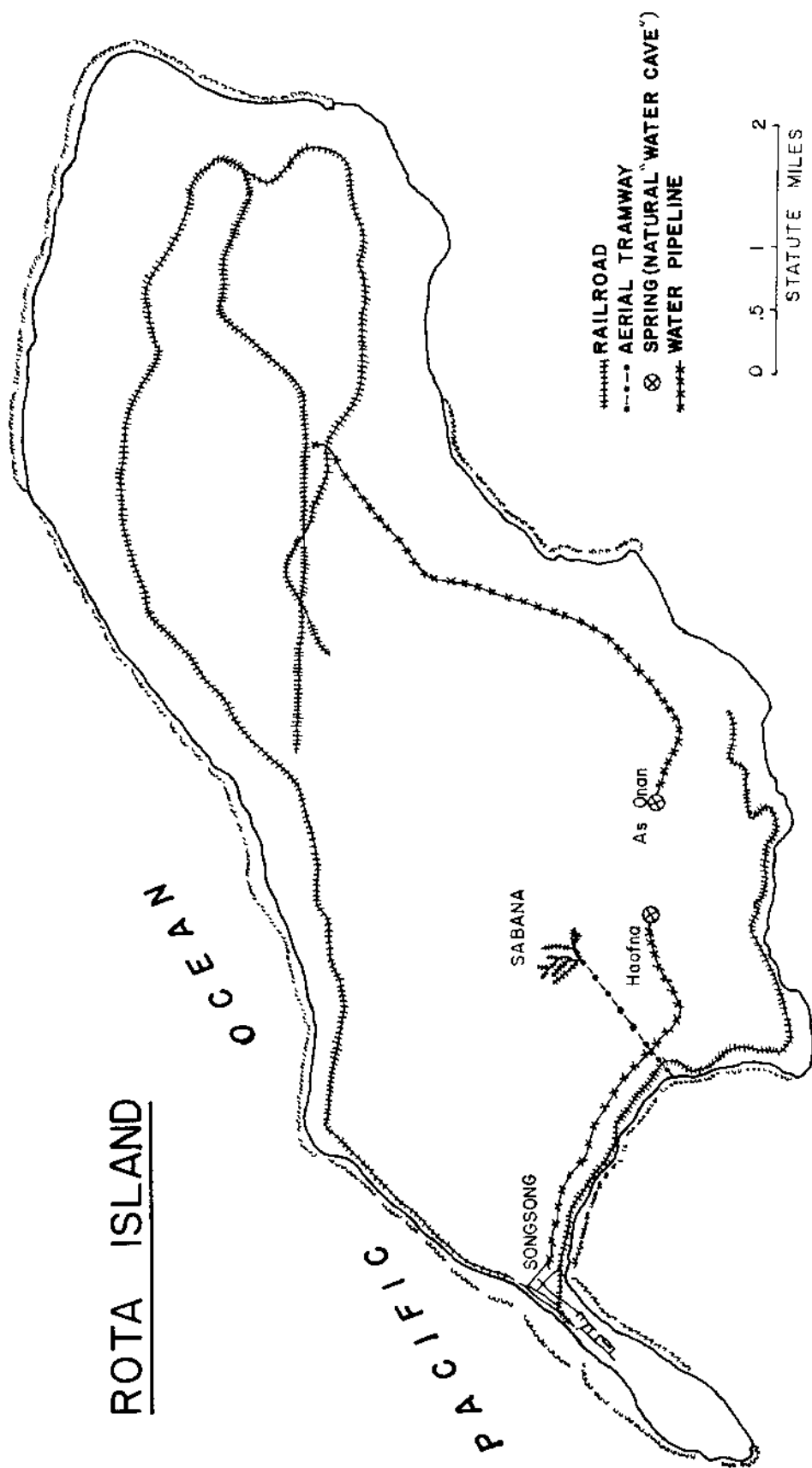


Illustration 6. Map of railroad, aerial tramway, spring and water pipelines.

industry, a lack of surface streams and the rapid draining qualities of the soil served to limit great expansion of the rice industry.³ At any rate, the water supply systems built by the Japanese on Rota, particularly the system that provides piped water to the village of Songsong, is still being utilized in the present day.

Our informants told us that Rota has a significant supply of fresh water, possibly even more fresh water than is available on other islands in the Northern Marianas. Rotanese informants commented that Rota's water is sweeter and tastier than fresh water available on other islands of the Marianas chain. Various types of fresh water are available on Rota. Prior to the Japanese administration, streams, ocean springs, wells and rain water were used by the Rotanese for drinking and for all other purposes.

Fresh running springs and streams were situated in locations removed from villages, in many cases. People in some areas had to walk a long distance in order to obtain good drinking water, but such water was deemed pure and satisfying. Rotanese informants stated that fresh water springs and streams are particularly abundant in the southeastern and northeastern sections of the Talaghaya area of Rota. Not until Japanese times was a means employed of obtaining water from the springs via the water caves by piping. Hoafna and As Onan are the two largest named water caves hooked up to the piping system. Reports have revealed the capability of the fresh water supplied by these caves to be estimated at approximately 700,000 gallons per day (Dela Cruz and Kapileo, 1972).

Water streams originate from overflows of springs between Hoafna and As Onan. The streams flow down cliff lines and spread out into various stream flows and drain into the ocean. In some of these streams, the Japanese built concrete dikes to help prevent soil from being washed away by the running streams. Of these various flowing streams, only two were utilized to supply water to the village of Songsong.

Economic interests of the Japanese predominated in the mandated islands. It was extremely important to obtain water for the plantations; however, no written accounts exist regarding the means by which watering of the crops was carried out. It is presumed that the location of the sugar and rice plantations had to be in close proximity

³While sugar milling was extremely important on Rota, there were problems with the rice operation, as exemplified by the report of a rice pest on Rota (U.S. Commercial Company, 1946:Report No. 6, 1ff). In the same volume is included Report No. 1, "Results of Investigations and Experiments on the Soils of Rota", indicating active interest by the U.S. in post-war Rota's agricultural potential.

to fresh water springs and streams. It is probably correct to assume that at this time water pipelines were installed.

History: The Japanese era in the Marianas. Rota and other German south sea islands were first taken into the custody of Japan in October of 1915. But, properly speaking, the Japanese had already established a toehold in the Marianas during the final years of the German administration. In the last years of the German occupation, Japanese colonists had begun entering the Marianas. The Germans actually encouraged initial Japanese economic endeavors by employing a number of such Japanese colonists (Ronck and Viti, 1977:22). The Mandate Commission of the League of Nations formally placed the German possessions in the Western Pacific under Japan's authority following the signing of the Versailles Peace Treaty on June 28, 1919.

As the new government came into being, the Governor (or Director) of the South Seas Bureau (Nanyo Cho) oversaw the control of the Japanese mandated islands, with Koror island in Palau as the headquarters. Souder explains (n.d.:3):

The governor was responsible to the chief of the South Seas Bureau under the Minister of Greater East Asia. He was also under the minister of Communications with regard to post and telegraph; the Minister of Finance in matters of currency, banking, and customs duty; the Minister of Commerce and Industry in regards to the weights and measures. The Governor could issue necessary ordinances ("Tyorie" South Seas Bureau Ordinances) with penal clauses, but in practice all important matters were regulated by Imperial Ordinance.

The general objective of the Japanese during their reign over the mandated islands was to strengthen Japanese power and control of defense and administration in the Territory. The Japanese naval forces headquarters was established in Truk; garrisons were located on Saipan, Palau, Yap, Ponape, and Jaluit (Great Britain-Naval Intelligence Division, 1945:338). The arrangement was temporary, as the plan was to observe existing German laws and customs. According to the 1945 Naval Intelligence Report, a civilian administration was drawn up in 1918, but the Navy essentially still held control. Japanese naval forces were withdrawn beginning in 1921. In 1922, a system of government was inaugurated which lasted up until 1945.

However, on November 5, 1943, the major districts were redefined to three in number, with headquarters for the eastern area on Truk and the western headquarters established at Palau. We do not have sources at hand that describe details of the decrease of the districts in number; it is presumed that the districts of Ponape and

Jaluit were merged within Truk district to form a single administrative unit, and that Yap district was incorporated with Palau. The third district was centered around Saipan. The emergence of these districts may have corresponded with the establishment of a naval dictatorship in contrast to the earlier civilian government. A vice admiral was appointed to the position of governor of the Nanyo Cho (Souder, n.d.:3). Written evidence of details of the local administration is not available.

The South Seas Government appointed administrative leaders for each branch of government. The duties of the branch administrators included the securing of all laws and regulations. Branch Administrators also had to oversee the conduct of other administrators within the former six districts. Saipan was then the capital of administration for all the islands in the Marianas. Native "local" could serve in the capacities of district heads and village heads. Such rights were bestowed on them according to the "Rules of the Native Officials", established in 1922. Such officials' duties primarily were to report to their branch administrators and to oversee the maintenance of laws and regulations among other members of the community. District heads and village heads were responsible to report all activities in the community which followed the letter of the law, both local and imperial. Branch administrators utilized the local officials to get work done. Local officials received moderate salaries, according to the wage scale of the period. Other details of the government as reconstructed from rescued accounts are elaborated upon by the Naval Intelligence report, 1945.

Pre-War Rota. Written accounts vary considerable in their discussions of Rota's pre-war villages according to names and locations. Apparently there were eight villages on Rota during the Japanese administration. Souder (n.d.:2) reports that the principle village of Rota was Songsong (or Rota village), located at Sosanjaya Bay, and that it had approximately 250 buildings. The other villages that he mentions include Teteto village, located west-northwest of the airfield, and the sugar mill village (unnamed) southwest of Songsong village. In 1944, during the bombing of Rota, all of the buildings in Songsong were demolished; extensive damages were felt in the other two villages, as well. In the sugar mill village there were 120 buildings; these buildings were completely destroyed during the bombing. Little is known about the village of Teteto. Those structures or buildings existing prior to the war likely also were destroyed during the bombing. Souder also names a sugar mill village on Sosanjaya Bay, southeast of Songsong, and four other small scattered villages. According to Souder, all of these villages and the buildings within them were demolished during World War II.

Piper (1946:43) reports the following villages for Rota: Rota village, the Japanese mining village of Sabana, and the Japanese village of Shinaparu. He also writes of the former villages of

Rota and Sonson, the former villages of Shinaparu and Taruka, and the native village of Oginao.

There was one other village, according to the writings of Emerick (1958). A village called Tatacho existed prior to World War II. In this particular village, local Rotanese were relocated by the Japanese. Illustration No. 1 shows the location of the village of Tatacho (also spelled Tatachog in some accounts) during the Japanese administration. Souder (n.d.) cites the following population figures for Rota during Japanese times:

The total population of Rota in 1936 was 5,590, which included 4,729 Japanese, 68 Koreans, 787 Chamorro natives, four Kanaka natives and two foreigners. Some 1,400 people lived in Songsong village. The others were scattered around the island on various farms and small villages. Most of the Japanese occupants had been on Rota since 1930.

Songsong village seems to have been one of the original dwelling areas of the Chamorros on Rota. Informants mentioned long residencies in Songsong village to members of the field research team, and this is corroborated by Bowers (1950:181). According to Bowers, at the beginning of Japanese times, Songsong was an isolated village populated by some 480 persons who were primarily subsistence agriculturalists. There was only one store. Except for the fact that the Germans built the coral surfaced streets, the village had changed little in fifty (50) years. Then between 1931-34, the Japanese established policies of land exploitation, relocating of local Rotanese from Songsong village to Tatacho village. Emerick (1958) revealed that the Rotanese who held valid land titles during the German administration in Songsong were given lots in Tatacho by the Japanese of the same shape and size as their former lots in Songsong.⁴

Members of the Rota Project field research team visited the site of Tatacho village. No one lives in this location now, and the concrete structures are slowly eroding away as the jungle advances to reclaim its former land area. Although it is difficult to walk among the ruins owing to thick jungle growth, members of the research team could identify wells that were a central part of the village during its existence. Field team members also found their way up the steps and into the remains of the village church.

⁴It should be noted that the Rotanese cultivated fertile farming areas on the southwestern coast during their residency in Songsong. In being relocated to lands on the western coast in and around Tatacho, they were removed to poorer lands.



Photo 15. Ruins of Tatacho village.

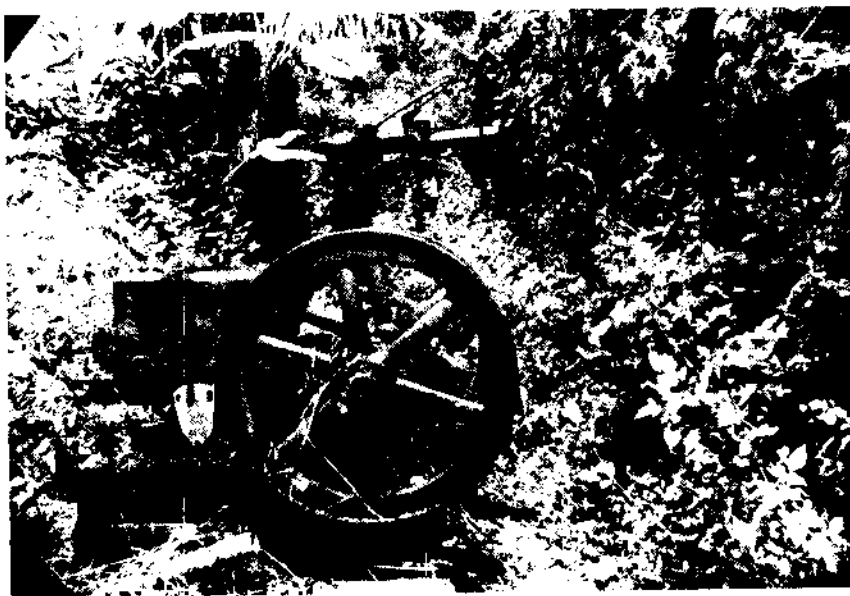


Photo 16. Japanese pump situated at the water cave, no longer in use.



Photo 17. Plate attached to the pump.

The Confidential Report on the Japanese Mandate provides the following information about water on Rota (1943:176):

A small stream on the eastern side of the island provides good water. Two or three wells at the village (village name not given) provide brackish water. Rainwater is collected in concrete tanks with capacities of five to twenty-five (25) tons.

There are two matanhanum "water caves" on Rota that are fed from natural springs. One of the caves is large, the other is small. The caves are situated in the Talaghaya area about 700 feet above sea level. The Japanese developed a piping system to transport the water from the caves into Songsong village, but apparently not until after the Rotanese living in Songsong were relocated to Tatacho village. Illustration No. 6 shows the connections of four inch pipelines which transported the water from the water caves to the village. One of the caves, called Matanhanum, is located in the southwestern savanna area, continuously supplying water to the village of Songsong. The other cave, the smaller one, is located in the northeastern surface area, supplying water to the Sinapalo area of Rota.

Photo No. 19 shows the manner in which the pipelines were connected. The pipelines coming from both caves do not cross or meet. They each have separate supply systems. The pipelines connecting to Songsong may have been extended through Songsong to the sugar mill village; the pipelines connected to Sinapalo were probably utilized for watering the sugar crops on the plantation.

After the Rotanese were relocated, Japanese sugar workers settle into the village of Songsong in order to be close to their work at the sugar mill. The village of Songsong had adequate water resources made available to the village after the piping system from the water cave was built. Houses in Songsong village also had concrete tanks that were used as water catchments. Built by the Japanese, these tanks held a capacity of two to 25 tons of water.

Informants for the Rota Water Project mentioned that the village of Songsong had wells prior to World War II. Such wells served as primary water resources for Songsong until the pipeline system from the water cave was prepared. According to our informants, people living in Songsong before the war who could afford to pay for wells had such wells dug outside their homes for private use. Public wells were also constructed. The water in these wells was clean and potable. People reported that they used the water for all necessary purposes. There were many ways to keep the well water clean. Wells had cement sides that stood at least two feet above ground level so that children could not play in the water. People also placed

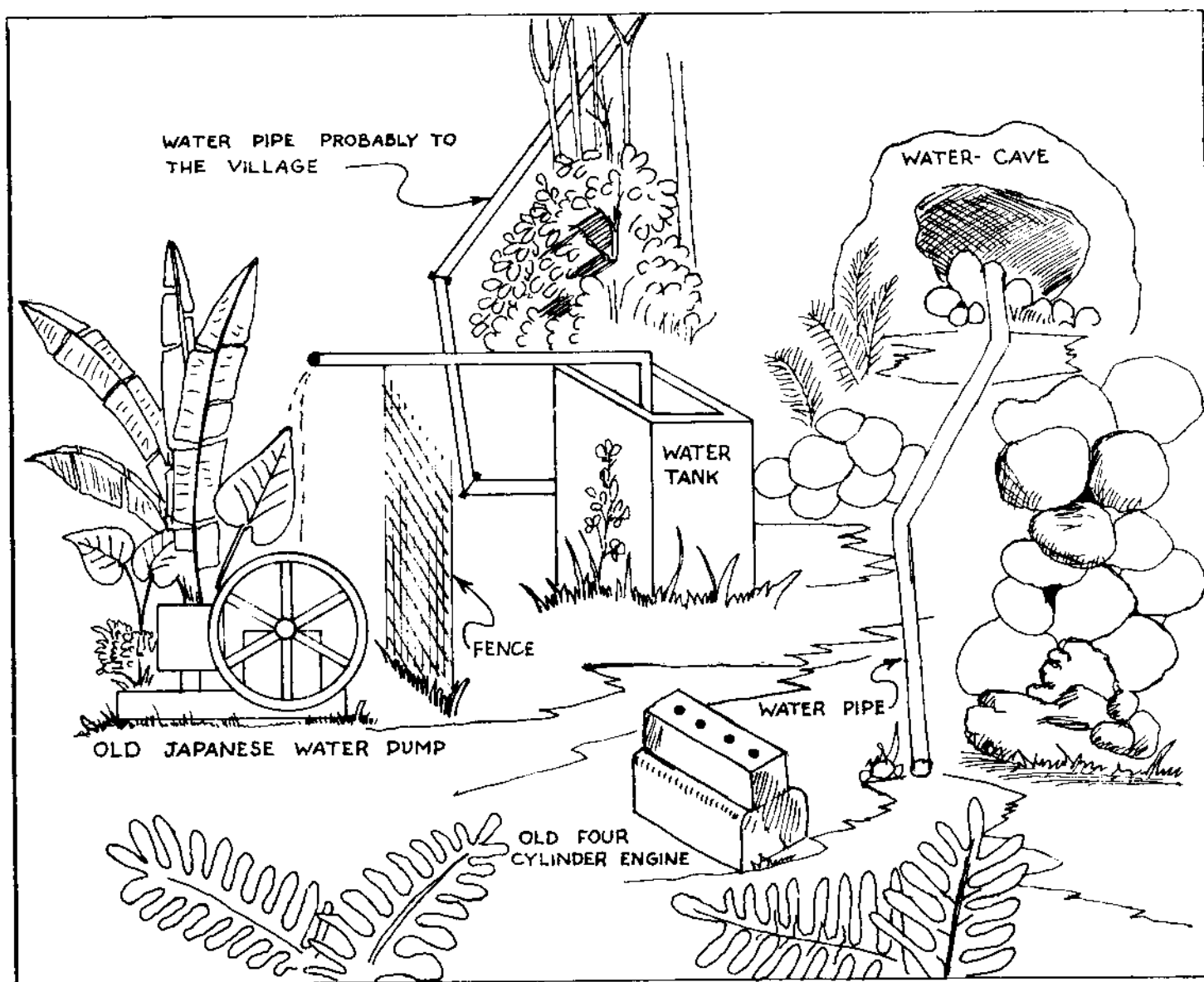


Illustration 7. Drawing of Matanhanum, the water cave.



Photo 18. The water cave.



Photo 19. Pipeline from water cave.

covers made of wood or the like over their wells so that dirt could not act as a contaminant. Illustration No. 4 show the depth of a well from ground level. Old wells still standing demonstrate the differential allowed in the construction design to protect the well from the entrance of dirt.

Water sources for the Rotanese in Tatacho village were built by the Japanese. Informants who could recall the Japanese administration mentioned that six hanum tupu 'cement wells' were dug by the Japanese in Tatacho village, in various locations so that they were convenient and accessible to everyone who lived in the village. One such well measured by the research team was 1.17 meters in diameter. Most of the wells, we were told, were approximately 20 to 25 feet deep. The well water was potable; people who lived in Tatacho reported that they used it as a primary resource because it was convenient. However, in terms of taste, they preferred water collected from water seeps near to the beach. Illustration No. 5 and Photo No. 31 show examples of the types of wells that were dug in the village of Tatacho, including the structure and depth of the wells, and a side view of a typical well.

Some local people reported that they were not satisfied with using the water that the wells provided. Also, the wells simply did not supply enough water for all of Tatacho's population. Many of these people, according to our Rotanese informants, walked to the coastal areas to obtain ocean spring water. They also walked up to the water cave in order to obtain good, satisfying drinking water. During the many times that these people walked for water, such walking events became social activities, according in our informants. Tatacho residents walked in groups to the water cave.

While Rota was being bombed in World War II, the Rotanese living in Tatacho had no choice but to rely to a great extent upon water from the ocean springs. Water was in short supply in the wells of the village, and the ocean spring water was closer to Tatacho village than the water cave was. Many informants commented to the research team that they recalled being afraid to go for water because of the danger from the bombs being dropped on Rota. But their comments were made without rancor.

Ronck (1977:22) offers a possible explanation as to why Rotanese people might view the Japanese occupation in matter-of-fact terms. During the Japanese administration of Micronesia, Rota, as well as the other islands of the Marianas, became important territories; this had not been the case in Spanish and German times. Micronesia was not viewed as a number of separate administrative territories, but at actually a part of the Japanese empire. Ronck suggests that this was because the Japanese were also, culturally, island people. The Japanese viewed the Mariana islands as being of economic and strategic importance. People of the Northern Marianas, particularly, had learned

to speak the Japanese language and had acquired many Japanese practices and customs.

In the early years of the war, it is suggested that life on Rota changed very little for local people. Ronck takes the point of view that Rota was the least affected of all of the Northern Mariana islands, because very few Japanese troops were actually quartered on the island. Protection for Rota was provided by the 29,000 soldiers on Saipan and the 10,000 stationed on Tinian. As the American plans for invasion of the Marianas were prepared, Rota received little attention.

Ronck outlines the reasons (1977:25):

Most of the coast was inaccessible, there were poor anchorage facilities, there was only one airfield, and few Japanese fortifications. Regular bombing of Rota was mindful of the American presence, but it was to be of moderate nature and duration. Guam, Saipan and Tinian received marked attention. American troops finally occupied Rota in September 1945. This, of course, was over a year after the liberation of Guam.

The Japanese will be long remembered by the Rotanese. They were the first administrators of the mandated islands who brought about long lasting changes in terms of physical developments on Rota. Some of the remains from Japanese times are presently undergoing restoration on Rota. Such remains include the ruins of the sugar mill, the old sugarcane train, the aerial tramway towers, the hospital, coastal gun emplacements (the one near to Songsong village is locally known as "the canyon", a Chamorro pronunciation of the English word cannon). These remains are being preserved for the purposes of better understanding of previous cultural influences on Rota. Bowers (1950:262) includes in his publication a photograph of the ruins of the sugar mill just outside of Songsong village (reproduced in this report, Photo No. 20).

The sugar cane train was utilized by the Japanese to transport sugar from the plantation to the mill. Illustration No. 6 (also after Bowers, 1950:263) shows that the railroad tracks began at the Sinapalo area in the northeastern section of Rota, making a loop extending in the same general area. From there sugar was transported to the mill, then to the docks for export.⁵ The same diagram shows the primary and secondary roads,

⁵ Bowers, (1950:277) says sugar manufacture was maintained by subsidy and based on non-native workers, low wages, and primitive methods of cultivation. Gallahue (1946:4) also makes some negative remarks about Rota's sugar industry: "However, there are strong indications that Rota did not prove economically suitable for sugarcane production on the scale which was attempted and much of the land, even prior to the beginning of the war, was allowed to lie idle or to return to other growth".

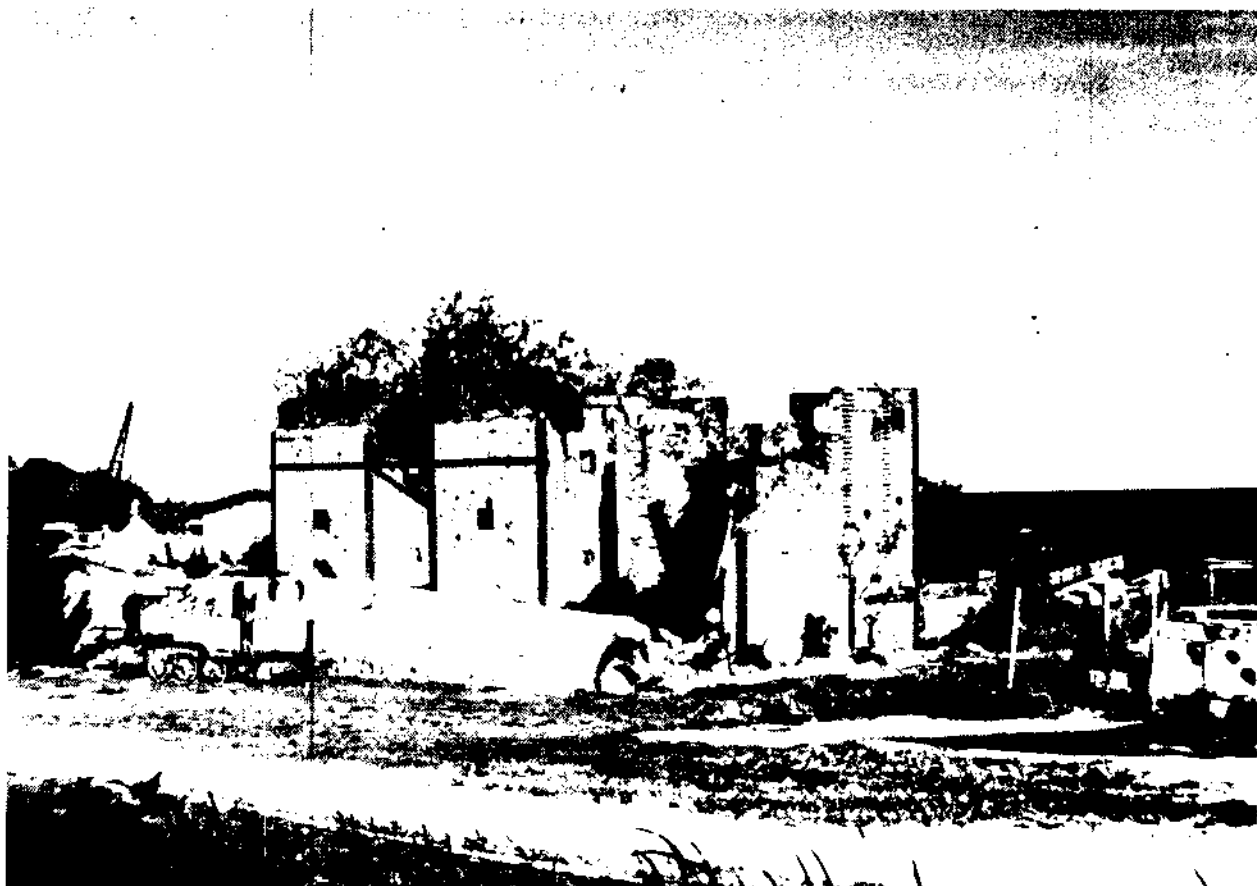


Photo 20. Ruins of the sugar mill near Songsong village.



Photo 21. Ruins of the aerial tramway.

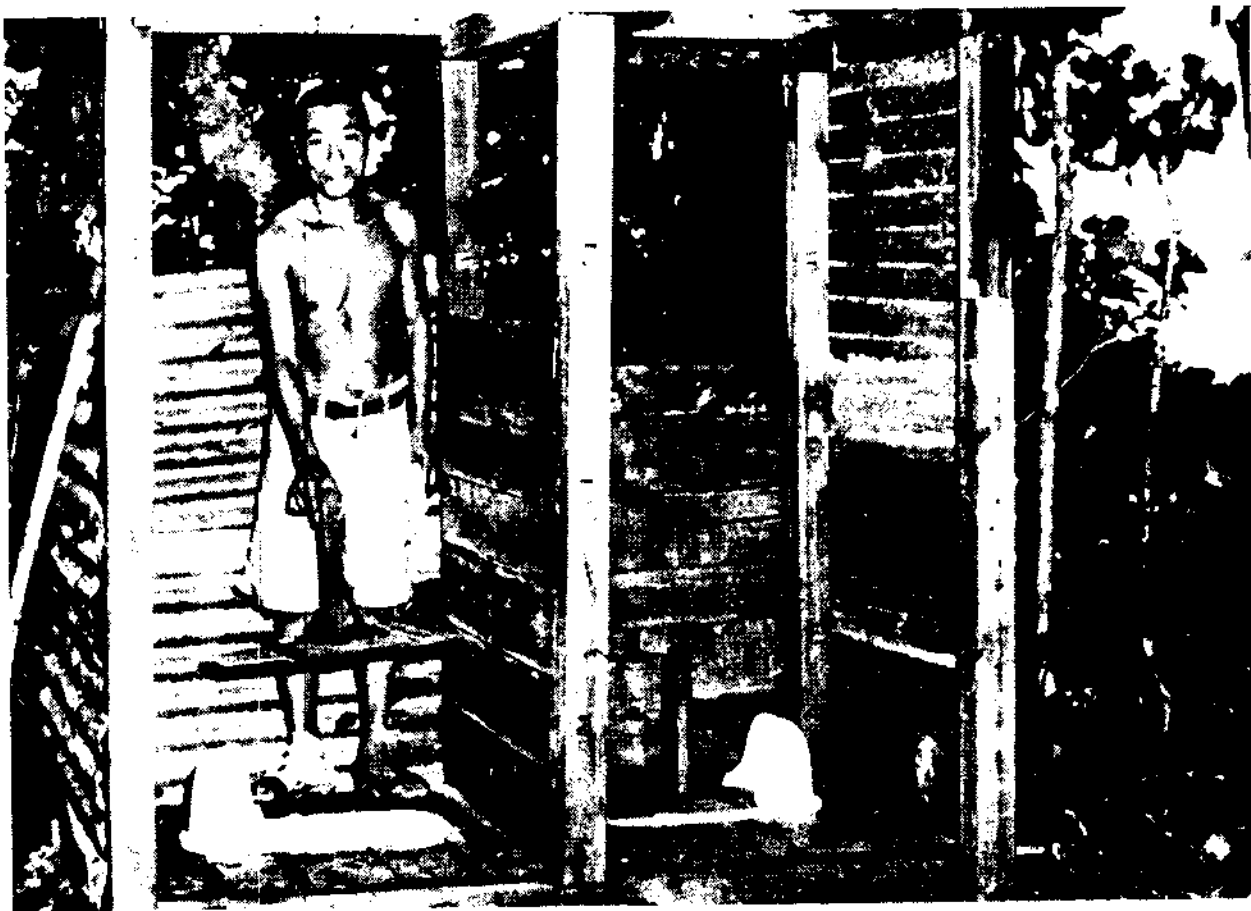


Photo 22. Japanese toilet.

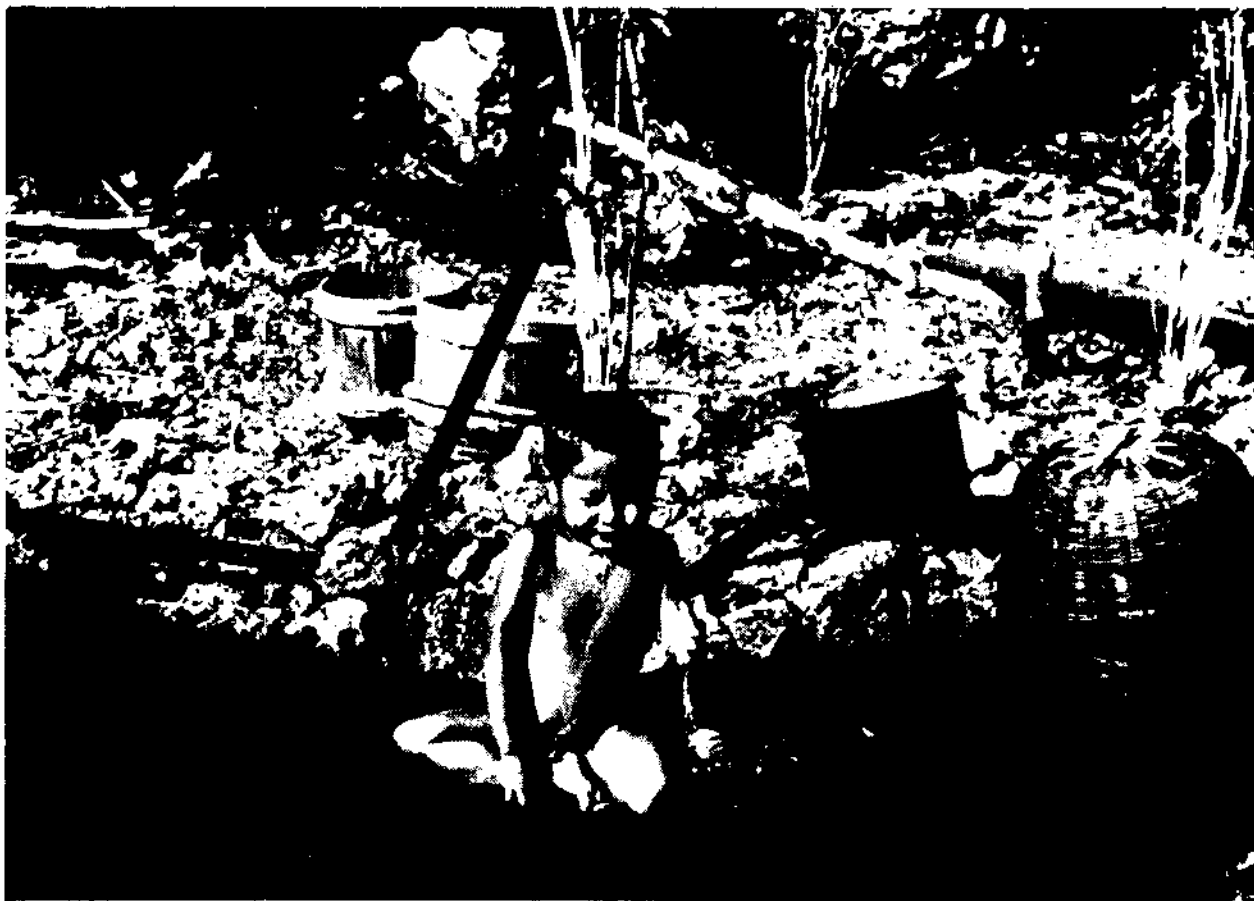


Photo 23. Child bathing in wartime Rota.

the aerial tramway line, and spring, and the water pipeline to Songsong.

The aerial tramway towers were utilized to transport phosphate from the mines located on the eastern slopes of Rota down to the ships waiting below in Tetnon area for the purposes of facilitating exports. During a six year period between 1938-43 the mines produced an annual average of 37,000 tons which was exported to Japan (Physical Development Master Plan 1978:11). The mine was located in the eastern section of the Sabana area in Rota.

There are no written accounts or other documented evidence that we are aware of to substantiate one other accomplishment of the Japanese. It was a community bath or public bath located in Songsong village. Recollections of the bath were shared with us by many of the elderly people of Rota. These elderly people would have observed activities in and around such a public bath. The following information about the public bath is based on interviews with informants.

Between 1935 and 1938, the Japanese built a community bath in District Two in Songsong village. Only a portion of the original structure is currently visible. The bath house on Rota was probably built around the same time that water was piped from the water cave into the village of Songsong. According to our informants, this community bath was constructed as a business enterprise for the purposes of sanitation, hygiene, and the well-being of the people. It has been suggested that the Japanese were concerned about the health of all people in the mandated islands. Because the mandated islands were situated in a temperate zone, tropical diseases could persist. Frequent bathing was an excellent preventive health measure.

Everyone who wanted to could bathe in the community bath, according to some of our informants. People had to pay to bathe, however, because it was a business enterprise. They paid 10¢ or whatever they could afford in order to bathe in it. If they did not have any money and wanted to bathe in the bath house, they could make prior arrangements with the business owner to pay later. People did not have to seek permission to bathe if they could pay for using facility.

Despite the fact that everyone was welcomed to bathe in the community bath, according to some of our informants, most of the Rotanese-Chamorros felt negative responses from the Japanese whenever they bathed in the bath house. The Chamorros did not feel comfortable bathing there. Those Chamorros who bathed regularly had close ties of friendship with some of the Japanese, or were persons of economic means.

The development and construction of a road system on Rota was begun by the Germans. However, the contemporary system of main roads was elaborated upon by the Japanese to facilitate travel around the

island. Ox cart paths were established along the coast and in areas close to farms. The Japanese probably constructed such transportation systems in all of the mandated islands for the purpose of economic development. Japanese-built rice and sugar cane road systems were extremely important to transport sugar cane and rice from the plantations to the sugar mill and then to dockside. On Rota, two main roads were utilized during the Japanese era. Illustration No. 2 shows the location of the primary and a secondary road on Rota in 1937. The primary road was the main roadway system utilized by both the Rotanese and the Japanese to traverse the island. The secondary road was utilized for access to ranch areas located in remote areas of the island. The Japanese expended a considerable amount of money and effort in the construction of these roads. The roads were built to withstand long utilization, and are still used today.

The original airfield on Rota extended 225 feet in width and 5,130 feet in length. This airfield was constructed by the Japanese prior to World War II. It was used extensively for arrivals and departures of their small one passenger fighter planes during and after the second World War. Being constructed of compacted coral, it suffered extensive damages from the heavy bombardment of Rota toward the end of World War II. Expansion of the airfield is being carried on as this report is printed. Rota is currently serviced by small twin engine and DC-6 aircraft. The airfield is located approximately 11 miles east of the village of Songsong on the Sinapalo Plateau.

Post World War II

American troops did not occupy Rota until September 1945. This was over a year after Guam's liberation. Upon the American occupation of Rota, Japanese residents and other foreigners were put into retention camps while the Chamorros of Rota were encouraged to resettle in three temporary villages.

According to Gallahue (1946:9) the population of Rota was 862 people as of July 15, 1946. They were all Chamorros, except for a few Koreans who had married Chamorro wives, and one Carolinian. Rota's postwar population included 187 households, averaging 4.6 persons per household. The population and their places of residence were described by Gallahue: "The population is centered in three post-war villages, Onginao, on the northwest coast, with 126 families, As Malete on the south coast with 54 families, and Songsong Bihu on the south side of the isthmus toward the west end of the island with 7 families". Gallahue pointed out that all of these villages were makeshift villages, having been built out of scrap materials which the local people had managed to salvage from various sources, especially from abandoned villages formerly occupied by the Japanese.



Photo 24. Housing, wartime Rota.



Photo 25. Freshwater facilities, wartime Rota.

Gallahue (1946:37) describes the situation of post-war Rota as follows:

(Prior to the war), Rota used much the same type of capital goods as Saipan. Virtually every native household had their bull cart, plow, fosinos' hoes' and fishing nets, which they used to supply their own needs. These were lost during the war. Chamorros on Rota particularly need fosinos and fishing nets. They have plenty of bull carts for the present, as they picked up extras which were left behind by the Japanese repatriates. Most enterprises using capital goods were operated by the Japanese prior to the war. Chamorros are capable, willing, and anxious to take over many of the enterprises formerly run by the Japanese which are now needed to supply Chamorro needs. They require some assistance in doing so.

Gallahue explained that electricity and water were being supplied to the Rotanese by the military at the time of his writing. Transportation, too, had been severely disrupted. Before the war, the narrow gauge railway built by the sugar company also served as a means of public transportation. A few Chamorros on Saipan had automobiles, but on Rota most of the people depended on bicycles, bullock carts or other forms of private transportation. Gallahue made the following recommendations for Rota: "Chamorros on Rota need rice, flour, sugar, soya, canned fish, meats, coffee, and tea. And . . . numerous household wares. . . pots, pans, pottery, china, cuttlery, beds, mattresses, lamps, mirrors, kerosene or other illuminating oil." He stated that at least 150 new houses were needed for the Chamorros on Rota. Every family needed a new house; not one family lived in the same house they occupied prior to the war. None of the prewar houses were left, and few, if any, of the temporary houses were suitable for continued living. Very little material from the current houses was suitable for re-use. According to Gallahue, "cement is needed, also lumber, hardware, pipe, tile, sheet iron, and sundry other building materials."

Although the island of Rota recovered well from damages sustained during World War II, natural disasters such as typhoons have wreaked considerable havoc on Rota in the post-war years. McMurrough reported in Guam's Pacific Journal on November 16, 1967, that the Journal was collecting donations of such items as clothing, shoes, bedding, household items, and kitchen utensils for the residents of Rota who had just been hit by Typhoon Gilda, the worst typhoon since 1946. Thirty to fifty families on Rota lost homes and all their possessions. Residents sought refuge in Tonga Cave, at the foot of the cliff bordering the village to the north (MARC Vertical File). Likewise, on Christmas Day 1963, gusts of up to 120 knots (Typhoon Susan) brought damages to most homes and severe damage to crops. Members of the 79th Air Rescue and Recovery Squadron and the 54th Weather Reconnaissance Squadron flew a rescue mission to Rota, bringing in rice, canned milk, clothing, canned goods, and building materials. Thirty-seven families were left homeless (MARC

Vertical File). The difficulties encountered by Rota residents during Typhoon Pamela were outlined in the Pacific Daily News, June 1, 1976:22 as follows:

During the storm, 600-700 persons spent 40 hours in a huge cave on the outskirts of the village of Songsong. Seven other families took refuge in a priest's home which had been built about 1800 but was strong enough to withstand the tremendous winds. Six homes on the island were destroyed and another 86 suffered from light to heavy damage. It is estimated that \$500,000.00 damage was done to crops on Rota and perhaps an equal amount to other types of damage (MARC Vertical File).

American administrative authority in the Northern Marianas has changed hand several times since 1945. The U. S. Navy was first given responsibility for administering the islands. The Department of Interior took over administration after the Navy for a short period.

In 1952, Navy rule was returned to all islands of the Marianas except Rota. Rota remained in the hands of the United States Department of the Interior, along with all of the other islands of the Trust Territory. In July 1962, the rest of the Marianas Islands were turned over to the Department of the Interior once again. Rota was finally re-united with its cultural neighbors in the political realm.

It may be safe to assume that administrative handling of Rota from 1945 until the early 1960s was rather haphazard. However, during the early 1960s, relationships between the U.S.A. and the U.S. Trust Territory were altered significantly. Decisions were made at the highest levels of administration to accelerate the social, economic and political development of all of Micronesia, which, of course, included Rota and the Northern Marianas. The annual appropriation of the U.S. Congress for the Trust Territory has increased from \$7.5 million in 1962 to approximately \$66 million (Nevin, 1977:81,30). Significant budget increases were allotted the Northern Marianas, as well. These expended revenues have brought about many changes across the face of Micronesia.

The Congress of Micronesia in the early 1970's requested that master plans for economic development for all islands in the Trust Territory be produced. The Rota Master Plan was generated in 1972 and published in 1973. Among other recommendations, the Plan states that Rota's West Harbor should be improved, that urban areas of the island be expanded, that considerable road repairs were needed, and that an island-wide sewage system was required. The Plan also addresses the issue of the development of Rota's tourist industry. Many of the Plan's recommendations were adopted and are now being implemented on Rota.



Photo 26. Water well, no longer in use.

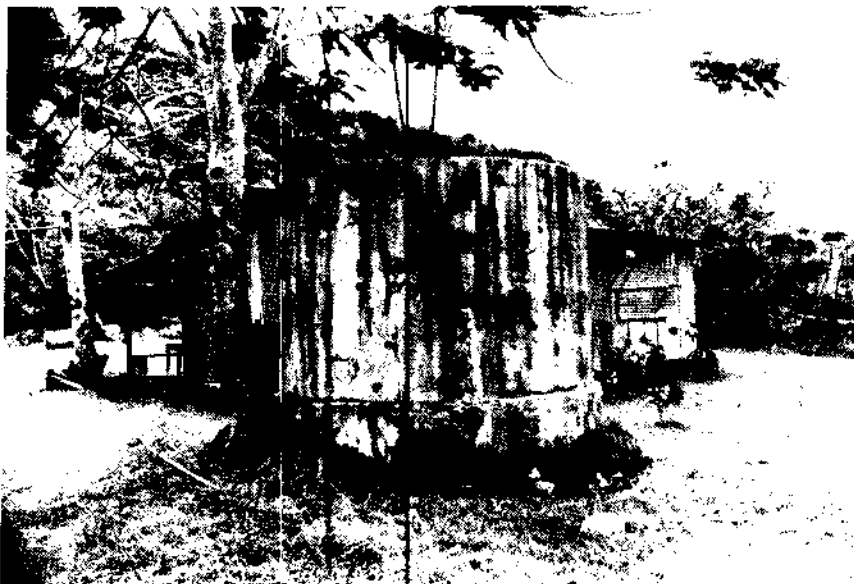


Photo 27. Ruins of water catchment.

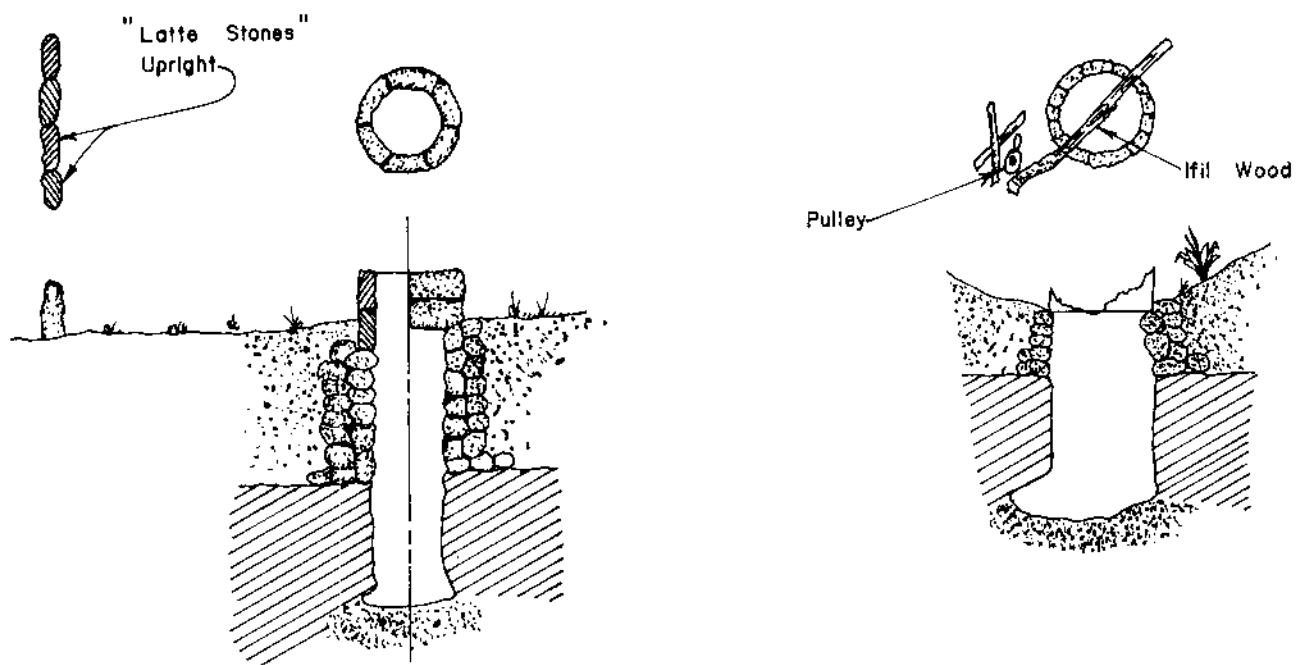


Illustration 8. Water wells.



Photo 28. Water well no longer in use.

Reconstruction work at Rota's airport has just been completed including an extension of the length of the runway. Federal funding made possible the construction of a new terminal building. Rota's harbor is also being enlarged to make possible more ready shipping of Rota's agricultural products to Guam as exports.

At present, the majority of Rota's people live in Songsong village. The 1970 census enumerated 160 households in the village. A new housing subdivision just northeast of the main village now has homesteaders residing on those lands. A completely new village site has been designated on land lying near the airfield "for the future". Such a village would offer Rotanese the advantage of a site very near to their ranchlands.

Rota business endeavors are family owned and operated. There are some 30 small retail enterprises on Rota at present, including variety stores, gas stations, snack shops, and bars. Ronck and Viti (1977:29) report that at least half of the island's families have one of their kin working for the local government in some capacity.

Social, economic and political conditions are changing Rota from an isolated island to that of an accessible tourist destination, with visitors coming principally from Japan via Saipan or Guam. Japanese tourists on Rota usually stay at the Pau-Pau, a new resort hotel built by Japanese investors about a mile away from Songsong village on the peninsula. Residents of Guam find Rota to be a convenient and pleasant weekend hideaway. If visitors from Guam do not camp out or stay with relatives or friends, they commonly stay at one of the two small but comfortable hotels located in Songsong village proper. Sights of interest for visitors to Rota include Tonga Cave typhoon shelter, the old sugar cane train, the wartime gun emplacements and bunkers, the water cave, the swimming hole, the Peace Memorial up on the Sabana, the prehistoric latte stone quarry at As Nieves, other latte sets such as the one at Muchon site, and the like.

It is important to note that Rota is upon the threshold of a major change in its political status. Opening negotiations for changes in the political situation of the islands of Micronesia were begun officially in 1969. The Mariana islands as a group, including Rota but excluding Guam, opted for separate status with close ties to the U.S.A. as early as 1972. A Commonwealth Covenant was produced and affirmed by public referendum. The Covenant bill, after winning approval in both the U.S. House of Representatives and the Senate, was signed into law by President Gerald Ford on March 24, 1976. The approximately 14,000 people of the Commonwealth of the Northern Marianas will enjoy all the rights and privileges of the Commonwealth agreement as soon as the United Nations Trusteeship is terminated.

And yet, Ronck and Viti (1977) characterize Rota as . . . "an island where heritage and culture are still revered and where yesterday



Photo 29. Tinaha.

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Photo 30. Contemporary water catchment system.

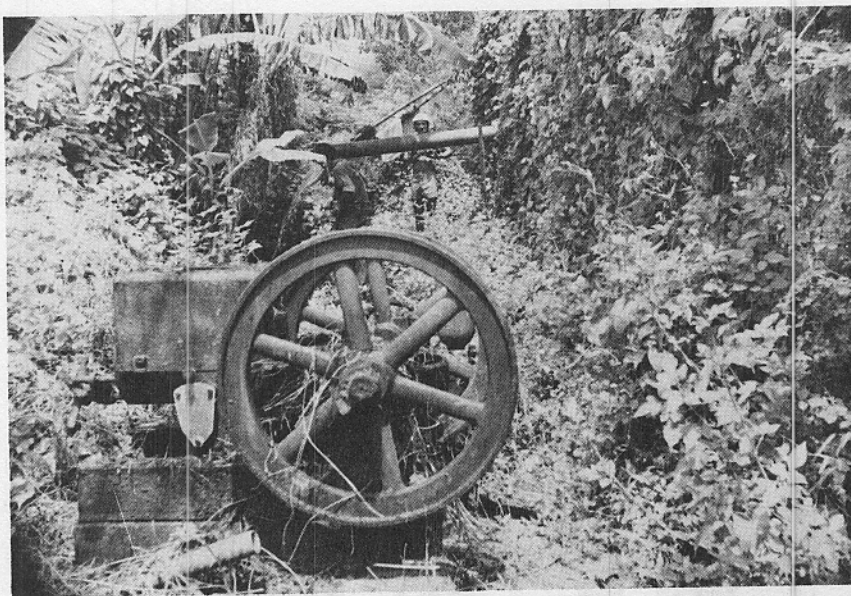


Photo 16. Japanese pump situated at the water cave, no longer in use.



Photo 17. Plate attached to the pump.

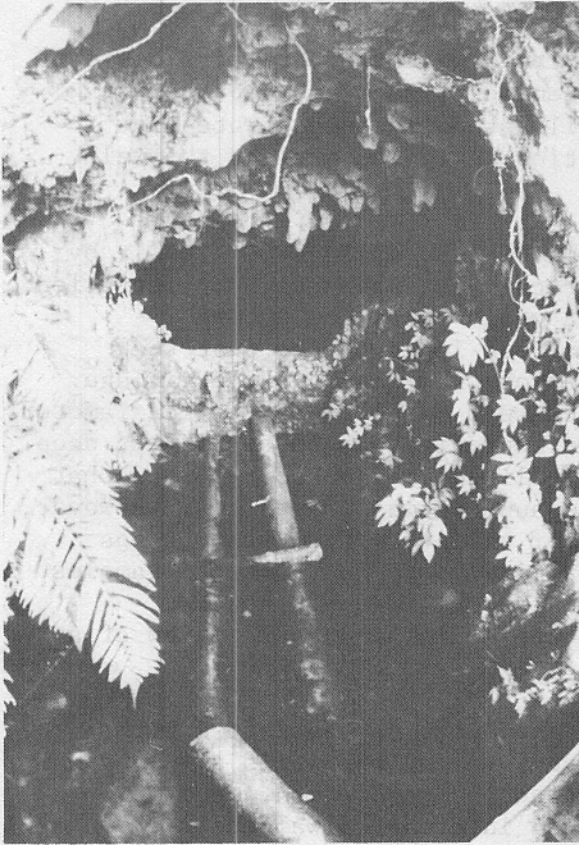


Photo 18. The water cave.

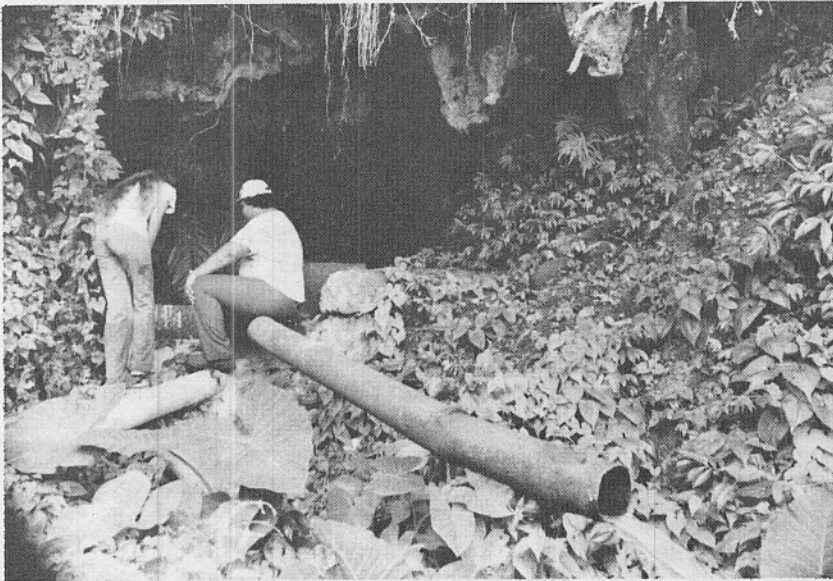


Photo 19. Pipeline from water cave.

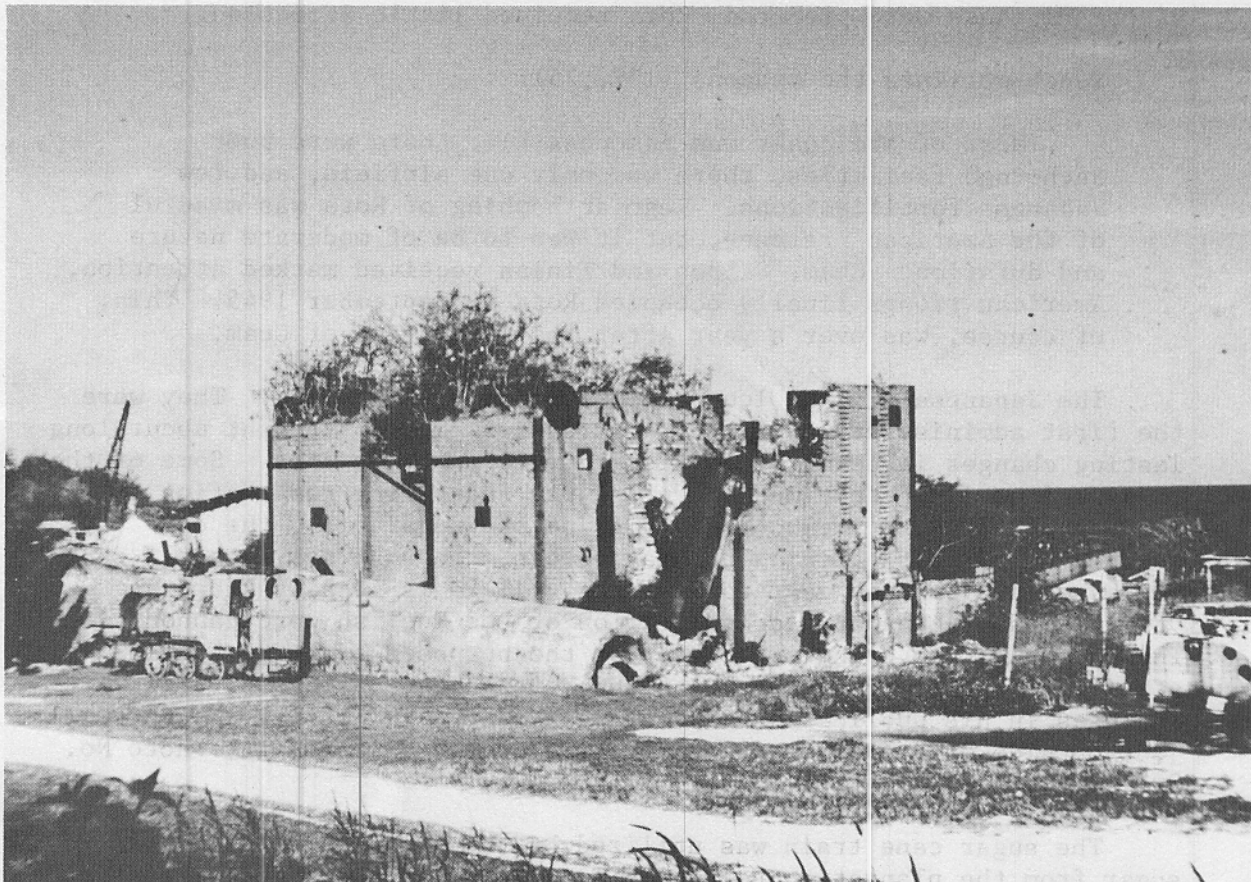


Photo 20. Ruins of the sugar mill near Songsong village.

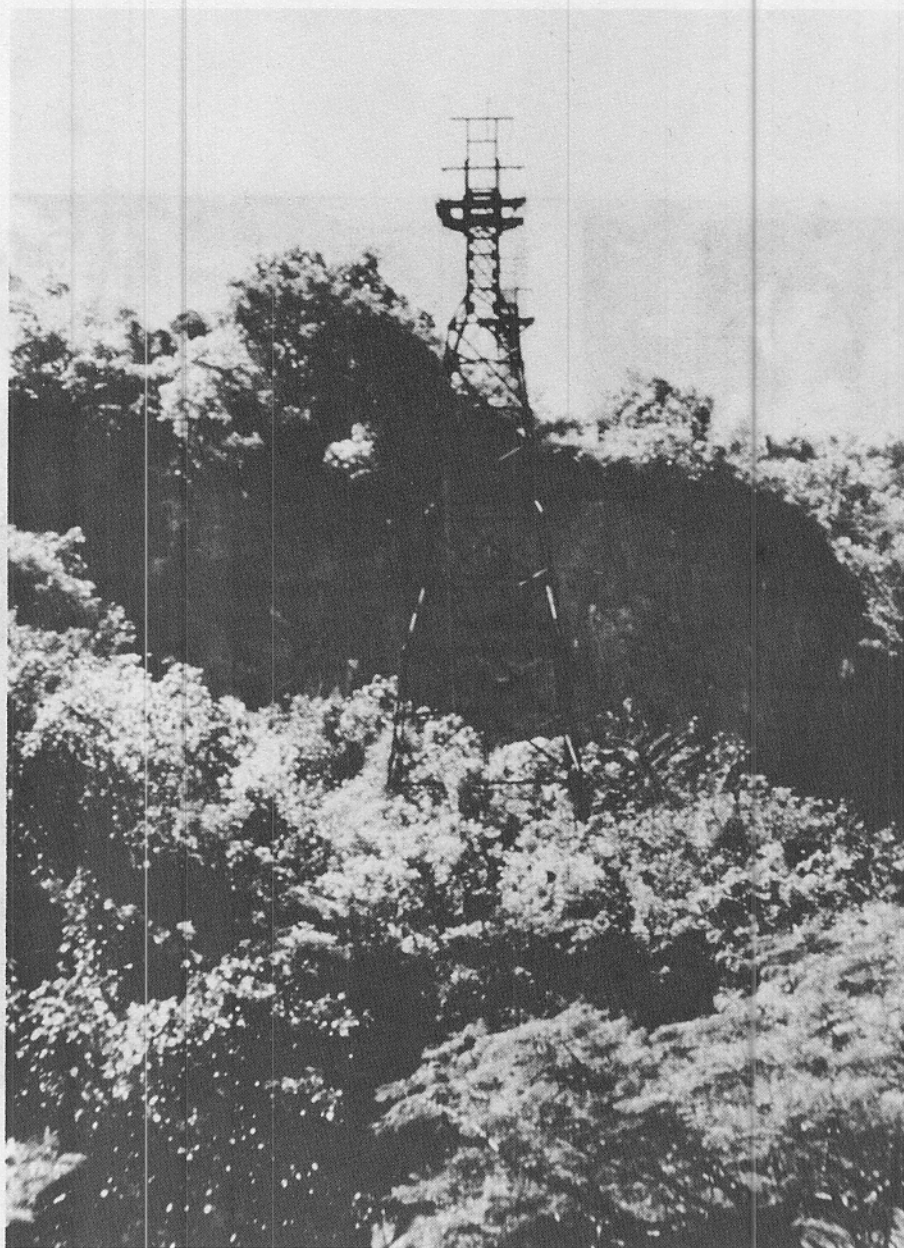


Photo 21. Ruins of the aerial tramway.



Photo 15. Ruins of Tatacho village.