

The Changing Role of Rice in the Marianas Islands¹

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I

The native inhabitants of the Marianas Islands, from the time of discovery to the present day, have spoken the Chamorro language, the easternmost outlier of the Indonesian sub-family of Malayo-Polynesian. Culturally, until the visit of Magellan in 1521, the Chamorros remained isolated from any metal-using people, employing such neolithic traits as tools of polished stone and shell, monolithic house posts, outrigger canoes, pottery, and horticulture.

Ethnographically, the aboriginal Chamorros are usually grouped with the Caroline Islanders to the south and east as Micronesians, but they are in several ways atypical. The oldest Marianas pottery (a feature entirely lacking in most of Micronesia), like the language, seems to link the Chamorros with the Philippines, 1500 miles to the west (Spoehr, 1957, pp. 174-175). Entirely unique to the Marianas, among all outlying Pacific islands, is the cultivation of rice in aboriginal times—a fact which would seem to justify classing the ancient Chamorros, along with the “Proto-Malay,” as stone-age Indonesians. Finally, Filipino influence during the long Spanish colonial period left contemporary Chamorro culture undoubtedly Hispano-Indonesian.

II

We shall now trace the changing fortunes of rice as a cultivated plant in the Marianas, and its relation to the total economic effort of the Chamorros, from aboriginal times through the Spanish, German, Japanese and American regimes to the present. Historically, it is logical to follow Safford (1905, pp. 153-154) in believing that rice cultivation was brought out onto the Malayan islands from the Asiatic mainland after the departure of the Polynesians, but before the migration which peopled the Marianas. It is interesting to note that the Chamorro word for unhulled rice, *fai*, is closer to the Javanese *bai* than to the Filipino form *palai*.

Recently, Ichiro Yawata (1961, pp. 91-92) has identified the aboriginal rice of the Marianas as the “long-awned” (bearded) Javanese variety, called in Indonesia *boeloe*, now found also in Bali, Celebes, the Philippines and Taiwan—a distribution which he correlates with that of the Proto-Malays or Palaeo-Indonesians. Chamorros distinguish several types of rice by name, but some of these varieties are believed to be post-Spanish introductions. At least we can agree with Yawata that the early Chamorros brought with them both a liking for rice and techniques for cultivating it. Yawata ingeniously traces the design of the outwardly-slanting

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cap stones of the famous Marianas *latte* stone house posts to a wooden prototype still used to keep rats out of rice granaries in northern Luzon (Yawata, 1961, p. 92)—an area, also, of linguistic similarity to Chamorro. The aboriginality of rice as a grain in the Marianas seems substantiated archaeologically by Yawata's finding, before World War, II, of charred rice husks, associated with two human skeletons and several objects of stone and shell in a cave on Asunción Island in the far Northern Marianas. Unfortunately the specimens could not be identified as wet or dry rice, nor could radiocarbon dates be expected. (Yawata, 1961, p. 92).

Even were other evidence lacking, the frequent mention of rice production in the Marianas by European voyagers between discovery in the early 16th century and Spanish pacification and settlement late in the 17th century would be sufficient evidence for the presence of that grain while the Chamorros still had the islands to themselves. Rice was offered to Magellan in 1521, to Legazpi in 1565, and to Jacob l'Hermite in 1625 (Barrau, 1961, p. 22).

The fact that the Chamorro language has special words for hulled rice (*pugas*) and cooked rice (*hinegsa*), as well as names distinguishing varieties by color, texture, or odor, bespeaks the aboriginal emphasis on this grain. Starting with Fr. Sanvitores, the first missionary to the Marianas, who was martyred in 1672, observers of Chamorro culture (Thompson, 1945, p. 29; 1947, p. 283; Bowers, 1951, p. 213) agree that rice has always been a favored food, essential for feasts even when in short supply.

III

Having established that rice was important aboriginally among the Chamorros, we shall now view briefly the means available in the pre-Spanish Marianas to satisfy this demand for the grain, and their probable actual use. Adzes, axes and chisels of polished stone or shell (Thompson, 1945, pp. 38-39 & Spoehr, 1957, pp. 131-137; 151-154) found archaeologically in the Marianas, in combination with fire, were available to the prehistoric settlers for clearing the dense forests which then covered large areas of the islands. This arduous task was doubtless facilitated by the pattern of cooperative labor exchange called *adalag* still occasionally used among present-day Chamorros. In aboriginal times, the Chamorros doubtless practised "slash-and-burn" cultivation, as they do today for most kinds of crops.

Breaking up the soil, once it had been cleared, was accomplished in aboriginal times principally with a simple, pointed, wooden digging stick, called *dagau*, another similar type, called *tanum*, being used for planting. Another ancient Chamorro farming implement was the *akoa*, a kind of long-handled spade or thrusting hoe² with a flat, sharp stone blade attached vertically. Such blades

² I purposely use here the usual English translation for the contemporary Chamorro word *fosiños*, a distinctive hand-forged iron implement which is the main farming tool of the present-day Marianas. The long handle, its function, and associated motor habits, are those of the aboriginal *akoa*. Extensive search of the literature of Iberian folk agriculture fails to reveal a single implement at all similar to the Marianas *fosiños*. If there were one, it would not be called *fosiños*, because that word, and related forms, in several dialects of Spanish and Portuguese, always refers to some kind of short-handled sickle or bill-hook. Apparently only the name was transferred, along with the change of material from stone or shell to metal.

have been found archaeologically (Thompson, 1932, Pl. 6, #k). Both the *akoa* and the *dagau* are illustrated in the report of the Freycinet expedition, which visited Guam in 1819 (Freycinet, *Atlas Historique*, 1825, Pl. 62, & Pl. 79, #4 respectively), although no such specimens could be found in the Marianas today. No aboriginal digging stick nor hoe so far described or illustrated from the Marianas seems to have had a projection or shoulder to which foot pressure could be applied. Digging sticks flattened and broadened at the end, to approach the shape of a spatula or shovel, are mentioned for several oceanian areas, including Melanesia and Yap, by Barrau in his surveys of subsistence agriculture (Barrau, 1958, pp. 9-10, & 1961, p. 15), who also reports *Tridacna* shell spades from atolls in the Carolines (1961, p. 15).

In the same plate illustrating objects used by ancient inhabitants of the Marianas, Freycinet (*Atlas Historique*, 1825, Pl. 79, #12 & #13) includes a large conch-like shell³ with radiating spines, and an implement made from it, which is labelled as a "sickle (*faucille*) for cutting rice." Presumably this tool, called in Chamorro *sainan-dogas*, possibly meaning "superior mussel-shell" (Callistus, 1910, pp. 158; 112), is similar to the "U"-shaped mussel-shell rice-harvesting knife mentioned for Luzon by Heine-Geldern (1923, *Illustrierte Völkerkunde* II: 806-807), and considered a prototype for a metal knife of similar shape used for the same purpose in parts of Indonesia and Southeast Asia.

Thus we cannot doubt that the stone-age Chamorros possessed both the tools and the social patterns necessary for rice-growing, including kin-determined local groups.

IV

The most accessible ethnographic accounts of the native culture of the Marianas, by Thompson (1932, 1945 & 1947) and Spoehr (1954 & 1957) fail to specify whether aboriginal rice culture was by the wet or the dry method, although Thompson (1945, p. 29) doubts the prehistoric use of irrigation. It would be a convenient oversimplification to conclude that the aboriginal Chamorros cultivated only dry rice with hand tools, and that this was gradually replaced by wet rice after the Spainards introduced the plow, with cattle and water buffaloes to pull it, from the Philippines. For Southeast Asia in general, there does seem to be an old association between dry rice and shifting, slash-and-burn cultivation—such as the *caingin* method in the Philippines (Spencer, 1951, p. 308). Indeed, in some areas, such as Assam, the rice yield from dry forest-clearings is said to be superior in quality and quantity to that from flooded terraces sometimes used by the same peoples (Heine-Geldern, 1923, *Illustrierte Völkerkunde* II: 808). In 1900, a Guamanian well-informed on rice culture stated (Safford, 1905, p. 339) that dry rice had formerly been grown there—presumably as far back as the pre-spanish period. Yawata feels that the ancient Chamorros produced both wet and dry rice (Yawata, 1961, p. 92).

A look at the ethnological literature on rice culture in Southeast Asia, however, quickly reveals that not only do the same peoples sometimes grow both wet

³ *Lambis lambis* Linné 1758: identification supplied by Mrs. Virginia Maes, Academy of Sciences, Philadelphia.

and dry rice, but that the wet method is often followed without the use of plows or animal power, simple hand tools such as those of the ancient Chamorros being sufficient. Luzon, Assam, the Ryukyus, and parts of China too poor to feed draft animals are areas where wet rice is frequently cultivated by hand. Nor are a degree of shifting cultivation and the 'wet' method of rice culture mutually exclusive. Recent Chamorro farmers, who do not ordinarily use fertilizers, often allowed their wet rice fields to lie fallow for one or two years, so that weeds as well as rice straw helped restore soil fertility. Unless perhaps pigs were kept in aboriginal times, there would have been even less animal fertilizer—a usual accompaniment of wet rice cultivation—available to the pre-contact Chamorros.

V

Geographers have not hesitated to include wet rice cultivation, for which they use the term "irrigation," among the farming practices characteristic of the Marianas Islanders (Bowers, 1951, p. 213 & Taylor, 1951, pp. 341; 343). For Rota, Bowers seems quite certain that the irrigated rice paddies existed from the time of "early Chamorro settlement" uninterruptedly until World War II (*ibid.*, p. 224). Such cultural continuity is at least possible for Rota, the only island in the Marianas where the aboriginal population has never been displaced.

Flowing streams at several locations on Guam, and one or two on Saipan, as well as swampy areas, watered by run-off, on both islands, make it quite possible that wet rice was cultivated there in aboriginal times. If we may judge by the simple type of wet rice agriculture used in Guam in 1900 (Safford, 1905, pp. 339-340), and on Saipan in the German period (Yawata, 1961, p. 91, after Fritz), depending on natural stream flow without reservoirs or pumps, similar to that described for the Southern Ryukyus by Allan H. Smith (1960, p. 140), such methods should not have been beyond the technology of the aboriginal Chamorros. Irrigation of rice fields directly from rivers in cited by Yawata as an additional cultural link between the Chamorros and the mountain tribes of northern Luzon (Yawata, 1961, p. 92). Even had terraces been needed, their construction does not demand the use of metals or draft animals, as demonstrated by their presence in aboriginal Polynesia (Freeman, 1951, p. 366) and Palau (writer's personal observation) for crops other than rice.

VI

Rice—probably grown by both wet and dry methods—remained abundantly available to voyagers who visited the Marianas during the 16th and early 17th centuries. For example, in 1565 and again in 1625, the Marianas Islanders, presumably still little influenced by European or Filipino technology, were selling rice by the basket or bale (Spoehr, 1954, p. 38 & Thompson, 1954, p. 29). During the period before European settlement, iron from visiting ships was eagerly received by the Chamorros (Spoehr, 1954, pp. 38-39).

Conceivably, even before the first permanent Spanish settlement in 1668, iron implements may have speeded up the clearing of the dense forests of the Marianas, thus facilitating the production of dry rice—and later of introduced

crops. Of the latter, the most significant was surely maize, which gives a more certain yield in the Marianas than rice (Spoehr, 1954, p. 63), even on the thin coral limestone soil of the extensive plateaus. Before his death in 1672, Fr. Sanvitores reported that little rice was being cultivated there, and was saved for feasts (Thompson, 1945, p. 29). Quite possibly, rice had already begun to be replaced by maize, even though Spanish domination of the Marianas was not complete for another generation. The importance of Mexican mercenary soldiers in introducing maize and its uses into the Marianas is still attested by the survival in Chamorro of Aztec-derived words for *metate* and *atole*. Another New World plant partially replacing rice during the colonial period was the sweet potato, for which the name *camote* is retained by the Chamorros.

While Spanish penetration of the Marianas introduced competing crops, it also transformed and made easier the cultivation of rice. With the final pacification of the area, about 1700, began two centuries of close contact with the Philippines, including extensive immigration. From there, water buffalos (*carabao*), and probably the small, black cattle of the Marianas, were brought in by the Spaniards. Presumably the plow came to the Marianas by the same route, Paul Leser (1931 & letter of 6/26/63) having given this as a tentative opinion. Two new varieties of wet rice are known to have been introduced into Guam from the Philippines before 1900 (Safford, pp. 339-340).

Although as yet no dams or reservoirs had appeared in the Marianas even at the end of the Spanish period in 1898, dry rice had already gone out of use, despite the attempts of some late Spanish officials to revive it, and rice cultivation was confined to the heavy, coralline-volcanic colluvial soils of river valleys, where plowing with draft animals was appropriate.

VII

By the end of the 19th century, even wet rice cultivation was gradually being abandoned in all but the most favorable locations on Guam, the islanders turning increasingly to the cultivation of maize for their own use and coconuts for export. The principal causes for this change were, according to Safford (1905, pp. 339-341), the numerous failures of the rice crop due to uncertain river flow in years of scanty rainfall, and frequent wind-storm damage; as well as impatience with the exacting labor required to keep the rice fields free from weeds. The tendency of the Chamorro male to make farming only one of several daily economic activities, intensified by the growth of wage work, was already placing increasing pressure on his time. Finally, the prevalence among workers in the wet rice paddies of *pasmon manengheng*, or "cold cramps," made this work unpopular.

During the depression of the 1930's, the American administration on Guam encouraged rice production by (a) partially subsidizing the building of dams, creating the first reservoirs in the Marianas; (b) helping finance Chamorro-owned companies to buy and exploit rice lands; and (c) requiring government agencies to buy local rice. By 1937, 640 acres on Guam were being planted to rice (Thompson, 1947, p. 131). But demand continued to exceed supply, and even in an economy perennially short of cash, rice has been imported into the Marianas

continuously since the early 20th century.

As recently as the start of World War II, wet rice lands on Guam often tended to be owned in the name of one heir representing an entire patrilineal extended family, who organized the work of a group of relatives who shared in the harvest (Thompson, 1947, pp. 121-122; 132). Regardless of ownership, rice-growers in the Marianas have usually worked together in communal groups according to a system of work-exchange called *adalag* (Safford, 1905, p. 131 & Spoehr, 1954, pp. 148; 153-154). Since the war, it has been the increasing availability of wage work which has largely broken down this system of work-sharing, thus virtually terminating rice cultivation throughout the Marianas, with the exception of small areas in southern Guam.

In Saipan, both wet and dry rice agriculture are said to have continued until World War II. The Japanese are said to have encouraged wet rice production by the construction of ponds and canals in the natural swamp near the brackish Lake Susupe to receive run-off during the rainy season from the higher slopes to the east of Chalan Kanoa. Since the removal of the Japanese in 1946, little attempt has been made to revive wet rice cultivation, and by 1951 only one Saipanese farmer had a carabao team for that purpose. In fact American officials brought in seed only for dry rice during the post-war period. Despite the efforts of a capable Saipanese agricultural agent, little rice is now grown on Saipan outside the government experimental farm.

Thus in the present-day Marianas, most Chamorros continue to feel that they must have rice to eat at least once a day, but produce virtually none of it themselves. Even in the Northern Marianas, where government wage regulation severely limits cash income, the Chamorros buy California rice at approximately \$15.00 per 100 pound bag—about double the Honolulu retail price in 1952. During a temporary shortage, when few vessels happened to call at Saipan with rice, the islanders manifested great anxiety over running out of rice and were willing to pay high prices to be the first to get any—although many wild and domesticated root and tree crops, such as breadfruit, bananas and taro, were rotting unused. The Carolinian minority on Saipan, however, revert more easily to the traditional Pacific island diet they knew in their home atolls.

That the Marianas Islands are not unique in this somewhat ambivalent situation whereby rice (a) is highly desired as a food, but (b) is not actually necessary for subsistence, and (c) tends to recede in competition with other more practical crops, is indicated by comparison with other parts of the rice area. For example, in the Southern Ryukyus, A. H. Smith (1960, p. 140) states that rice "ranks first among the cultivated plants in prestige, and is made to bulk as large as possible in the family diet," but finds that, for reasons of ease of cultivation, immunity from storm damage, use directly from the field without storage, and suitability for animal food, sweet potatoes are really more practical and are tending to replace rice in the daily diet. For Southeast Asia as a whole, Heine-Geldern (1923, *Illustrierte Völkerkunde* II: 803; 805-806) indicates that the rice holds first place among grain crops originally cultivated by horticulture, but with millet as an older, and maize as a newer, competitor. Even where maize has replaced rice, small quantities of the latter may still be cultivated as a luxury food, or for conversion into alcohol. The former primacy of rice is attested by

its prominence in Southeast Asian mythology and cult practices (Heine-Geldern, loc. cit. & p. 914). Thus the contemporary Marianas merely represent an extreme case of a widespread tendency for rice to be replaced by other food crops.

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